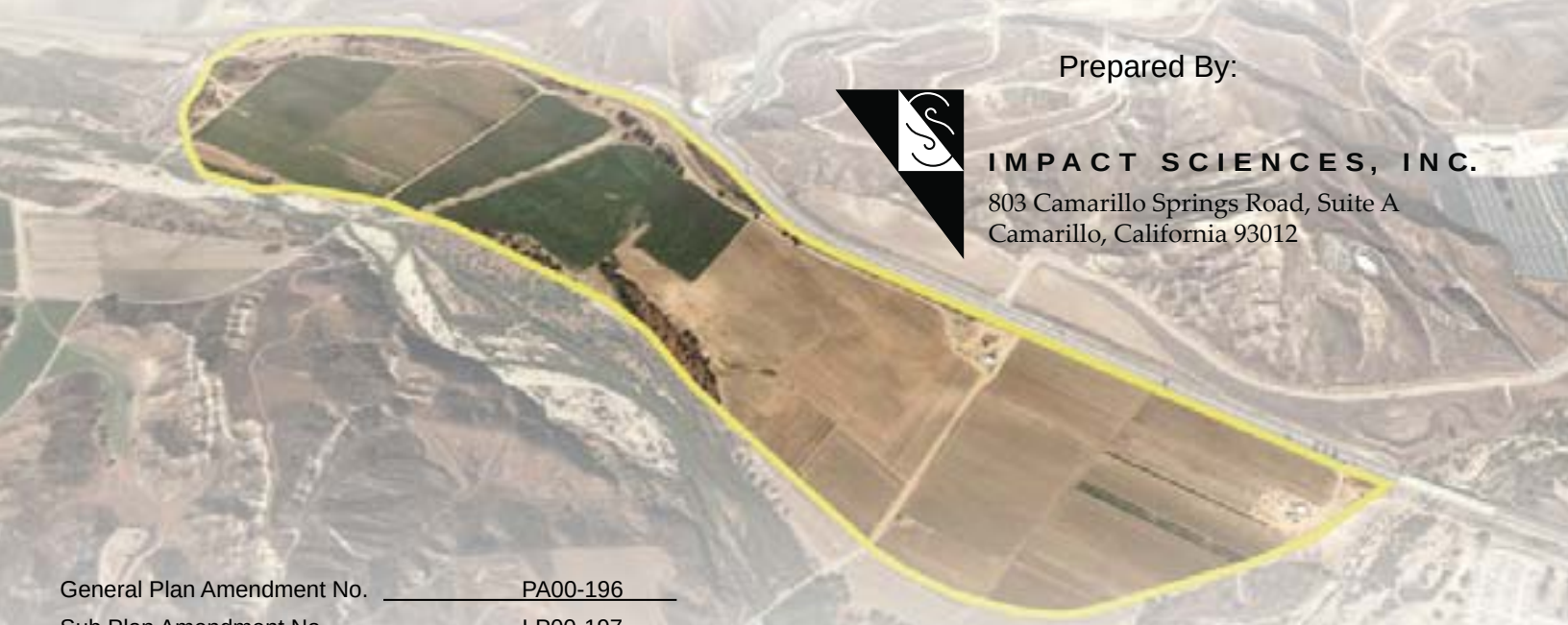
County of Los Angeles

Final Environmental Impact Report

SCH No. 2004021002

Volume IV of V - Appendices

LANDMARK VILLAGE



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Sub Plan Amendment No.	LP00-197
Specific Plan Amendment No.	SP00-198
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SEA Conditional Use Permit No.	RCUP200500112
Oak Tree Permit No.	OTP00-196
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NEWHALL RANCH
Newhall Ranch Company

November 2007

FINAL
ENVIRONMENTAL IMPACT REPORT

for
LANDMARK VILLAGE

SCH No. 2004021002

Volume IV of V
Appendices

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Newhall Ranch Fiscal Impact Analysis, September 2006

Appendix E Cultural/Paleontological Resources
Letter from W&S Consultants, February 15, 2007

Appendix F Land Use
Sustainability Summary
Affordable Housing Program

Appendix G Water Quality
Letter from California Regional Water Quality Control Board, September 11, 2007
Waste Discharge Requirements for the Newhall Ranch Sanitation District (Newhall Ranch Water Reclamation Plant), Discharge to the Santa Clara River, Order No. R4-2007-0046, NPDES No. CA0064556

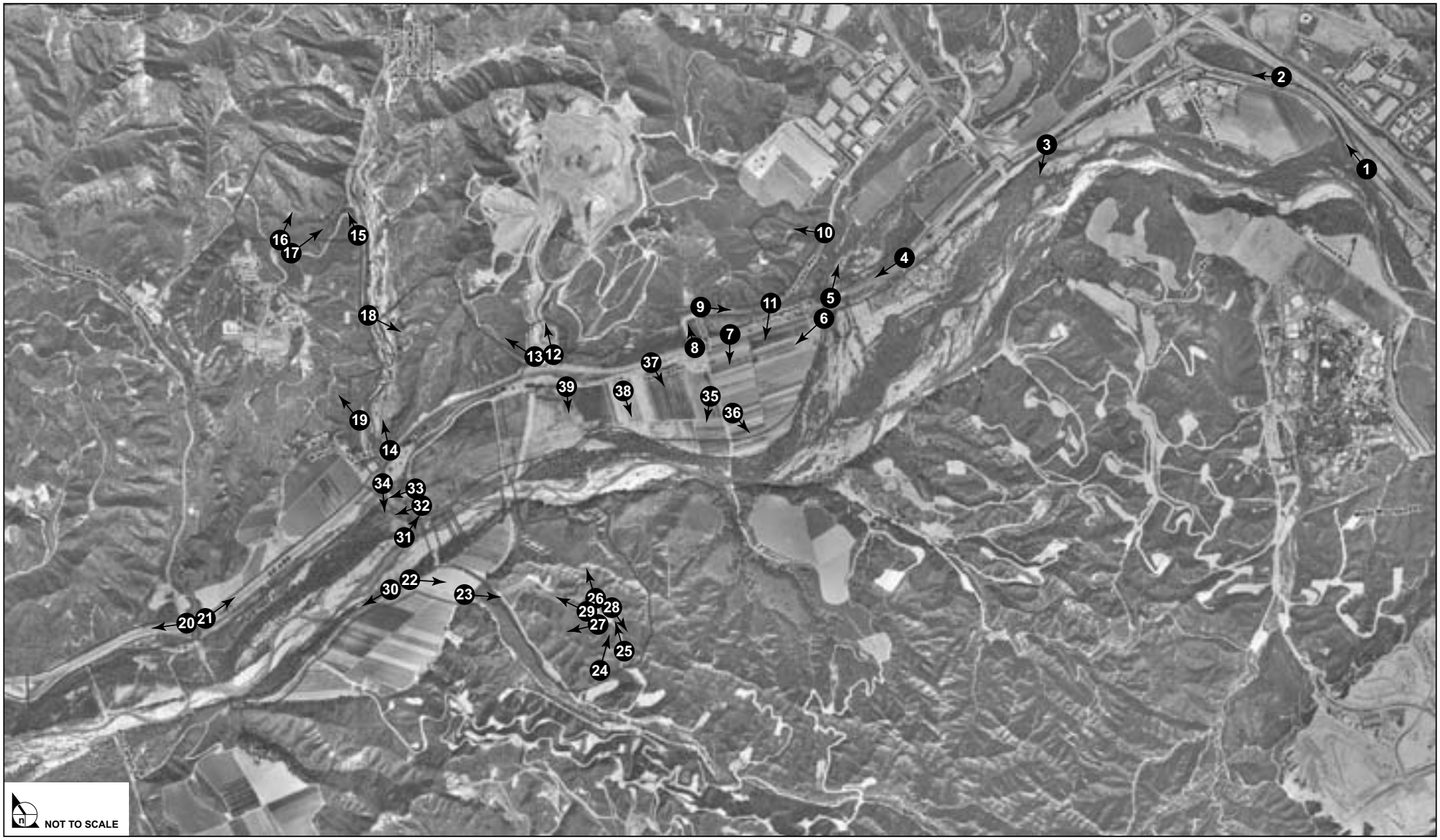
Appendix H Staff Reports
January 31, 2007 Staff Report
February 22, 2007 Staff Report

APPENDIX A

Biological Resources (Continued)

APPENDIX F

Photo Key



SOURCE: Impact Sciences, Inc. – June 2005

APPENDIX **F**

Landmark Village Photo Locations

32-97•06/05

Photo 37

Photo 38

Photo 39

SOURCE: Impact Sciences, Inc. – June 2005

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

SOURCE: Impact Sciences, Inc. – June 2005

Photo 7

Photo 8

Photo 9

Photo 10

Photo 11

Photo 12

SOURCE: Impact Sciences, Inc. – June 2005

Landmark Village Photos 7 – 12

Photo 13

Photo 14

Photo 15

Photo 16

Photo 17

Photo 18

SOURCE: Impact Sciences, Inc. – June 2005

APPENDIX **F**

Landmark Village Photos 13 – 18

32-97•06/05

Photo 19

Photo 20

Photo 21

Photo 22

Photo 23

Photo 24

SOURCE: Impact Sciences, Inc. – June 2005

APPENDIX **F**

Landmark Village Photos 19 – 24

32-97•06/05

Photo 25

Photo 26

Photo 27

Photo 28

Photo 29

Photo 30

SOURCE: Impact Sciences, Inc. – June 2005

APPENDIX **F**

Landmark Village Photos 25 – 30

32-97•06/05

Photo 31

Photo 32

Photo 33

Photo 34

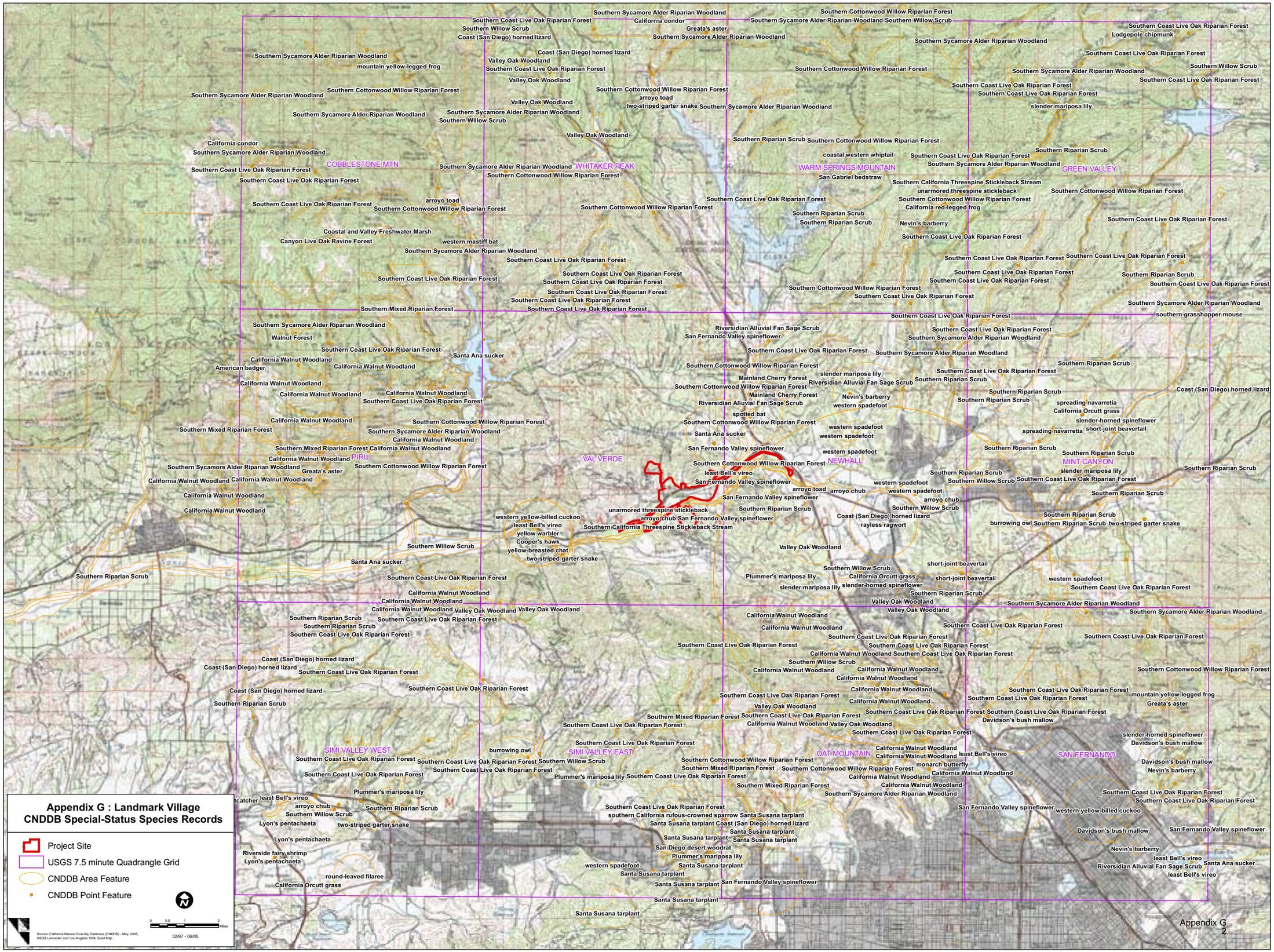
Photo 35

Photo 36

SOURCE: Impact Sciences, Inc. – June 2005

APPENDIX G

California Natural Diversity Data Base


Appendix G : Landmark Village
CNDDB Special-Status Species Records
Project Site
USGS 7.5 minute Quadrangle Grid
CNDDB Area Feature
CNDDB Point Feature
Source: California Natural Diversity Database (CNDDB) - May, 2005, USGS Lancaster and Los Angeles 100k Quad Map
0 0.5 1 2 Miles
32/97 - 06/05
COBBLESTONE MTN
WHITAKER PEAK
WARM SPRINGS MOUNTAIN
GREEN VALLEY
VAL VERDE
PIRU
NEWHALL
MINT CANYON
SIMI VALLEY WEST
SIMI VALLEY EAST
OAT MOUNTAIN
SAN FERNANDO

APPENDIX H

Resumes

Keith W. Babcock

Managing Principal/Director of Biological Services

Mr. Babcock is a Managing Principal and firm-wide Director of Biological Services at Impact Sciences, Inc., with over 18 years of experience in both wildlife biology and project management. He has directed, managed, or conducted a broad range of terrestrial wildlife research and studies, biological resource inventories, sensitive species surveys, environmental impact assessments, biological constraints analysis, habitat conservation/management plans, habitat restoration plans, and mitigation monitoring plans for a variety of private and public sector clients in virtually every major habitat type in California. Mr. Babcock has a thorough understanding of the California Environmental Quality Act, both State and Federal Endangered Species Acts, and state and federal regulations and permits involving biological resources. He has worked on over 250 environmental compliance projects, including EIRs, EISs, Section 10(a) permits, Habitat Conservation Plans, Section 7 consultations, Section 404 permits, and Streambed Alteration Agreements. His biological expertise includes knowledge of a wide range of terrestrial organisms and ecological relationships, with particular emphasis on general ornithology, raptors, threatened and endangered species, and wildlife movement corridors.

Representative Project Experience

Environmental Compliance

- Directing all biological aspects of the Tejon Ranch Valley/Foothill Habitat Conservation Plan covering approximately 80,000 acres of potential development and 18,000 acres of potential preserve area. Directed multiple survey efforts for threatened and endangered plant and animal species. Initiated and currently coordinating all consultation with USFWS and CDFG. The HCP will eventually be a multiple-species plan and will include a mitigation bank component.

- Directing all biological and documentation aspects of the City of Porterville Habitat Conservation Plan for impacts on habitat of the federally listed endangered Valley elderberry longhorn beetle. Managing all survey efforts on an approximate 50-acre habitat site that will serve as a preserve area and mitigation bank for expected impacts citywide on longhorn beetle habitat. Coordinating all meetings with USFWS in the preparation of the HCP document.

- Directing all biological and documentation efforts for a programmatic Section 7 permit for the City of Hercules for potential impacts on the California red-legged frog, a federally listed threatened species. The Section 7 permit will be the result of a consultation between ACOE and USFWS, as mandated by the Federal Endangered Species Act. Coordinating all meetings with ACOE, USFWS, and the City.

- Directing the data collection and monitoring efforts associated with a biological assessment of the potential effects on the dewatering of an extensive water pipeline, owned by the Metropolitan Water District, into the Santa Clara River in Los Angeles County. Significant issues include potential impacts on a number of special-status wildlife species including unarmored threespine stickleback, least Bell's virea, southwestern willow flycatcher, and riparian habitat.

- Directed the Section 7 consultation efforts with USFWS regarding proposed development over approximately 300 acres on Tejon Ranch in the Grapevine area. Directed all surveys and biological assessments for the federally endangered blunt-nosed leopard lizard and San Joaquin kit fox. Prepared a resource management plan that included the set-aside of over 1,100 acres to be managed under a conservation easement. Directed all coordination and meetings between USFWS and Tejon Ranch.

- Directed the field investigations, data collection, and preparation of a detailed technical biological report for Caltrans regarding the widening of a 28-mile section of a state highway in Sonoma County, California. Significant issues included potential impacts on wetlands and creeks, a federally listed wildlife species (including California tiger salamander), and sensitive plant species. A detailed impacts analysis and mitigation plan was prepared as part of the technical report. Coordination with other resource agencies including California Department of Fish and Game and the U.S. Fish and Wildlife Service was required throughout the project.

- Managed field investigations, data collection, and preparation of the biological resources assessment portion of EIRs for the California Department of Corrections for proposed prison facilities throughout northern, central, and southern California. Significant issues included potential impacts on numerous state and federally listed threatened or endangered animal species including desert tortoise, San Joaquin kit fox, Swainson's hawk, blunt-nosed leopard lizard, Tipton kangaroo rat, and California red-legged frog. Potential impacts on wildlife movement corridors were also addressed. In some cases, consultations were conducted with the USFWS and CDFG in preparation of the need for a potential Federal Section 10(a) permit and a state Section 2090 permit.

- Prepared biological section of an EIR for a proposed industrial complex and travel plaza along Interstate 5 near the Grapevine area of Tejon Ranch in southern San Joaquin Valley. Conducted surveys for special-status species including San Joaquin kit fox, blunt-nosed leopard lizard, burrowing owl, and several plant species. Helped prepare documentation for Section 7 consultation with USFWS and ACOE and developed low-effect HCP for potential impacts to the kit fox.

- Directed field surveys, data collection, and preparation of biological resources section of an EIR for the approximately 150-acre proposed Woodridge residential site in Thousand Oaks, California. Important issues included potential impacts on drainages, oak trees, California gnatcatcher, and wildlife movement corridors.

- Directed the field surveys and documentation efforts for a proposed golf course and residential community on an approximately 390-acre site in the City of American Canyon in southeastern Napa County. Tasks involved the mapping and characterization of onsite vegetation communities (primarily oak woodland, grassland, and intermittent drainages), identification of common wildlife species, and assessing the potential for various special-status plant and wildlife species to occur on the site. Focused surveys for several special-status plant species, as well as golden eagle, California tiger salamander, California red-legged frog, and fairy shrimp were conducted on the site. A wetland delineation and negotiations with ACOE and CDFG were also conducted with respect to regulatory permits required for the project.

- Managed the field surveys and documentation efforts for the biological component of the City of Hercules Redevelopment Plan EIR. The project involved the evaluation of four separate sites within the City, ranging in location from the San Francisco Bay to inland areas along Highway 4. Biological issues included the presence of California red-legged frog (a federally listed threatened species), California tiger salamander, nesting raptors, oak and riparian woodlands, and obtaining ACOE Section 404 and CDFG Section 1600 permits for potential impacts on wetland and riparian habitats on the site.

- Directed the biological resources analysis for the proposed Westridge residential and golf course project on approximately 300 acres of open space in northern Los Angeles County. Significant biological issues included oak woodlands and oak trees, raptor foraging habitat, and wildlife movement. A majority of the project site is included within a Los Angeles County Significant Ecological Area (SEA), which required the preparation of a separate biological assessment and impact analysis as well as appearances before a SEA technical advisory committee to present the findings of the analysis and respond to concerns and issues.

- Directed the field surveys and documentation efforts for the biological component of the City of Pleasanton Rolling Hills EIR in Alameda County. A residential community is planned for the approximately 120-acre site. Tasks involved the mapping and characterization of onsite vegetation communities (primarily oak woodland, grassland, riparian woodland, and an active creek), identification of common wildlife species, and assessing the potential for various special-status plant and wildlife species to occur on the site. Focused surveys for several special-status plant species, as well as California tiger salamander, California red-legged frog, and Alameda whipsnake were conducted on the site. An evaluation of the potential of the site to serve as part of a regional wildlife movement corridor was also conducted. Other biological issues included potential impacts to jurisdictional wetland and riparian areas and the need for a Section 7 consultation with USFWS.

- Managed field surveys, data collection, and documentation of sensitive biological resources for a 5,000-acre study area, and participated in preserve area design for a 45,000-acre study area, on the Rancho Mission Viejo ranch in south Orange County, California, for inclusion in the Natural Communities Conservation Planning (NCCP) multispecies habitat management program. Directed and participated in focused surveys for more than 15 sensitive species including the California gnatcatcher, coastal cactus wren, least Bell's vireo, yellow-breasted chat, San Diego horned lizard, orange-throated whiptail, many-stemmed dudleya, Palmer's grappling-hook, southwestern pond turtle, arroyo toad, and several raptor species.

- Directed all aspects of the biological resources section of the North Valencia Annexation EIR in the City of Santa Clarita, California. This complex analysis involved potential impacts on two large riparian systems (San Francisquito Creek and Santa Clara River), threatened and endangered species (unarmored threespined stickleback, least Bell's vireo), riparian and upland habitats, and wildlife movement corridors. The analysis included a riparian buffer study to determine a biologically appropriate upland buffer between proposed development and protected riparian systems to ensure the overall viability of riparian associated wildlife populations. The project involved extensive coordination with ACOE and CDFG regarding permitting for impacts on wetlands and riparian areas.

- Managed the biological resources section of the Centre at La Quinta EIR for a proposed project in La Quinta, California. Significant issues included potential impacts on several special-status wildlife species including Palm Springs ground squirrel, Palm Springs pocket mouse, Coachella Valley fringe-toed lizard, flat-tailed horned lizard, Coachella giant sand treader cricket, Coachella Valley Jerusalem cricket, burrowing owl, and several special-status plant species. Potential impacts on desert scrub and dune communities were also of issue.

- Directed the biological resources analysis and EIR section documentation for the proposed Glenwood Specific Plan on approximately 225 acres in the City of Scotts Valley, Santa Cruz County. Significant biological issues included potential impacts on two threatened or endangered species (Scott's Valley spineflower and California red-legged frog), a species being petitioned for listing (Ohlone tiger beetle) and several other special-status plant and wildlife species, ACOE and CDFG jurisdictional wetlands and riparian areas, heritage trees, wildlife movement, and wildlife habitat. Extensive coordination with CDFG, ACOE, and USFWS was required, as well as participation in several public hearings. The project involved the development of several unique mitigation measures, including a preserve for the Ohlone tiger beetle and several special-status plant species.

- Managed all field studies and documentation efforts for the biological resources assessment and impact analysis component of the 4,200-acre Specific Plan Area 8 EIR for the City of Moorpark, Ventura County. Field evaluations included focused surveys for a number of sensitive plant and animal species, a wildlife movement corridor analysis, tree surveys, and wetland delineations. Meetings were conducted with individuals of the USFWS, CDFG, and other environmental interest groups to gain consensus on field survey methodology and results. All biological information was incorporated into a Geographic Information System (GIS) for impact analysis and land use planning.

- Managed and prepared biological assessments for three proposed projects within the City of Chino in support of preparation of Initial Studies for CEQA review. Biological issues included the presence streams and wetland areas, burrowing owls, and sensitive plant species. Coordinated with ACOE, CDFG, and Regional Water Quality Control Boards in support of permitting activities and CEQA compliance.

- Directed and prepared the biological resources analysis for a Mitigated Negative Declaration for a water main and telecommunications line extension at San Francisco International Airport. Biological issues include potential impacts on California red-legged frog and San Francisco garter snake, both federally listed wildlife species. The Negative Declaration tiered off of the Airport Master Plan Program EIR.

- Directed field investigations and documentation of the biological resources inventory and impact assessment component of a statewide EIR for proposed electrified fences at 29 state prisons

throughout California. Tasks involved determining species at risk of electrocution, managing baseline assessments of habitats and species at each prison site, developing creative measures to mitigate impacts, and consulting with state and federal resource agencies. Coordinated with CDFG and USFWS staff from various regions throughout the project. Also assisted in the management of, and participated in, a similar investigation for two prisons in the state of Washington.

- Directed field surveys and documentation for the biological resources component of a Mitigated Negative Declaration for a seismic upgrade project of a 15-mile portion of the Mokelumne Aqueduct in San Joaquin and Contra Costa Counties. Directed subconsultants to perform wetland delineations, coordinated field verifications and meetings with ACOE, CDFG, and USFWS, and managed all aspects of a Section 404 ACOE wetland fill permit, a Section 7 Consultation with USFWS, and a Section 1600 Streambed Alteration Agreement with CDFG. Potential impacts of the project on the biological resources associated with three major rivers and two sloughs were addressed.

- Directed and prepared the biological resources assessment for the EIR on updates to the Land Use and Circulation Elements of the Hercules General Plan. Biological issues for this program-level EIR , which tiered extensively from the City's General Plan Update EIR, included potential impacts to riparian resources, special-status plants, California red-legged frog, raptors, and wildlife movement corridors.

- Managed the field survey design and methods of focused surveys for the federally listed endangered desert tortoise on a site proposed for a new state prison in eastern Los Angeles County. The survey effort included characterizing and mapping suitable habitat for the tortoise as well as for other special-status species, including Mohave ground squirrel and San Joaquin antelope squirrel. Consultations were conducted with the USFWS and CDFG in preparation of the need for a potential federal Section 10(a) permit and a state Section 2090 permit.

- Managed and conducted field surveys, data collection, and preparation of a biological assessment for potential impacts on the federally listed threatened California gnatcatcher as a result of a proposed project in Chula Vista, San Diego County. The biological assessment was used as a basis for a Section 7 consultation with the USFWS which resulted in a no jeopardy determination. Informal and formal consultations and meetings with USFWS were conducted throughout the process.

- Managed and conducted biological surveys and analysis of potential impacts on the federally listed threatened California gnatcatcher on a proposed OHV Park on the Otay Mesa in southern San Diego County for the California Department of Parks and Recreation. Surveys were also conducted to determine the presence or absence of several other special-status plant and wildlife species. An extensive mitigation plan was developed to minimize potential impacts on the gnatcatcher and other special-status species.

- Directed and conducted field surveys and documentation for the biological resources component of an EIR for proposed gravel mining operation in Yolo County. Analysis focused on the potential impacts of out-of-channel mining along Cache Creek, especially with respect to riparian vegetation and stream associated wildlife. Special-status species issues included valley elderberry longhorn beetle and Swainson's hawk.

- Prepared the biological documentation necessary for the proposed central coast NCCP in Orange County. The NCCP documentation established plans for The Irvine Company (TIC), the Transportation Corridor Agencies (TCA), the County of Orange, and other affected parties to comply with the NCCP Act of 1992, providing a comprehensive approach to resolving inherent conflicts between the need to protect sensitive and critical coastal sage scrub habitat and wildlife, and the need to proceed with TIC, TCA, and other development projects.

- Managed and conducted the field surveys and documentation efforts for the biological components of several environmental compliance documents in northern California including the Rancho Dorado EIR in El Dorado County, two gravel and rock mining projects in Yolo County, the Roseville General Plan in Placer County, the Palos Colorados EIR in Contra Costa County, the North Rocklin Circulation Element EIR in Sacramento County, and the Paradise Treatment Plant Biological

Assessment in Butte County. Issues included potential impacts on vernal pools, wildlife movement corridors, wetlands, sensitive plants, and numerous sensitive animal species including bald eagle, red-legged frog, Valley elderberry longhorn beetle, Swainson's hawk, western spadefoot toad, and California tiger salamander.

- Managed and conducted field surveys, impact analysis, and documentation of an Environmental Assessment of a proposed 15-mile water and gas pipeline corridor in the Mojave Desert of southern California. Focused surveys and habitat analysis for the federally listed endangered desert tortoise and Mojave ground squirrel were also conducted within the corridor alignment. Consultations were conducted with the USFWS and CDFG in preparation of the need for a potential Federal Section 10(a) permit and a State Section 2090 permit.

- Directed and conducted the environmental documentation of biological resources for an EIR on the Water Forum Agreement, an agreement between over 20 water purveyors and water districts on the future use and management of water along the lower American River. The project involved the documentation of existing biological resources along the river and an analysis of potential impacts on these resources as a result of projected changes in water flow levels.

- Directed field investigations and managed documentation of the biological resources inventory and impact assessment component of the Big Bear Dam Bridge Route 18 EIR/EIS in San Bernardino County, California. Completed Natural Environmental Study (NES) as required by Caltrans. Directed and participated in focused surveys for several sensitive species, including the federally listed bald eagle, the state listed southern rubber boa, and the southern spotted owl.

- Managed field studies and documentation of the biological resources component of the 1,500-acre East Orange Specific Plan area in east Orange County, California. Coordinated surveys, evaluated impacts, and developed mitigations for a variety of biological resources, including sensitive species such as California gnatcatcher, western spadefoot toad, many-stemmed dudleya, San Diego cactus wren, and several raptor species.

- Managed field investigations, impact analysis, mitigation planning, and overall biological assessment documentation for several proposed projects within Significant Ecological Areas (SEAs) in Los Angeles County, California. Significant issues included several sensitive plant and wildlife species, sensitive habitat areas, and potential impacts on wildlife movement corridors.

- Managed field surveys, impact analysis, documentation, and project coordination efforts for the biological component of the Stetson Ranch EIR and the Bear Mountain Ski Resort expansion project EIR/EIS in the San Bernardino National Forest. Significant issues included potential impacts on the bald eagle, California spotted owl, mule deer, mountain lion, black bear, and San Bernardino flying squirrel.

- Managed the preparation of the biological resources assessment for the East Coyote Hills EIR in Orange County, California. Coordinated field surveys and analyses of the onsite population of California gnatcatchers. The assessment resulted in the development of a pre-listing Habitat Conservation Plan (HCP) for the California gnatcatcher that resulted in the issuance of a Section 10(a) permit pursuant to the Federal Endangered Species Act.

- Managed and conducted field surveys, impact analysis, and documentation of an Environmental Assessment of a proposed 20-mile transmission line for SDG&E in Orange County. The project entailed focused surveys for a number of sensitive plant and animal species, an analysis of several alignment alternatives, and an extensive mitigation development, implementation, and monitoring program.

Focused Studies

- Designed and managed a Swainson's hawk radio-telemetry study over an 8,000-acre study area in West Sacramento, California, to determine home range and habitat use of eight pairs of nesting Swainson's hawks. Responsible for overall study design, capture and attachment of radio transmitters on five Swainson's hawks, radio tracking methodology, staffing, and overall data analysis and interpretation. All data was incorporated into a Geographic Information System (GIS) for analysis and presentation. The information obtained was used to evaluate potential impacts on nesting Swainson's hawks and to develop suitable mitigation measures. The project involved coordination between CDFG, the City of West Sacramento, and the applicants during all phases of the study. The information was eventually used as part of a Section 2081 consultation pursuant to CESA.

- Directed focused surveys for special-status mammal and reptiles species over a 20,000-acre area on Newhall Ranch in Los Angeles County. Methods employed for the detection of mammals included trap and release with Sherman live traps, scent stations, nighttime spotlighting, remote motion-triggered camera systems, and AnaBat detection systems. Methods for reptiles included walking identified transects, the use of pit-fall traps, and substrate raking. Locations of data collection sites was noted on a GPS and downloaded into a GIS. Information on species observations, distribution, and habitat was compiled, analyzed, and documented in a technical report.

- Directing wildlife movement corridor study on Tejon Ranch in the Tehachapi Mountains spanning Kern and Los Angeles Counties. Study utilized remote motion-triggered cameras installed at over 20 underpass and culvert locations along Interstate 5 for a total of approximately 25 miles. Information on species, number, location, and date is being compiled, analyzed, and documented. The information is being used to support planning process of proposed development in the region.

- Designed and managed wildlife movement corridor studies for four proposed projects in Ventura County and three proposed projects in Orange County, including a 16-mile transportation corridor project. The studies, which involved the use of remote motion-triggered camera, track plates, and others wildlife movement data collection techniques, were designed to identify and quantify target wildlife species using the project sites, identify areas that are used by these species as travel routes, and to evaluate the relative importance of these areas as potential movement corridors. Recommendations on corridor design were also developed to mitigate potential adverse impacts on movement corridors.

- Conducted survey and habitat analysis for burrowing owls on a 30-acre project site in the City of Milpitas. Based on the presence of breeding pair of owls, identified and evaluated that portion of the site most likely to be included within the foraging range of the owls. Developed a mitigation plan for proposed impacts to the owls and occupied habitat, which included the passive relocation of the owls from the site. Directed and participated in the implementation of the owl mitigation measures, including coordination with CDFG.

- Managed a comprehensive wildlife movement corridor study on the 45,000-acre Rancho Mission Viejo ranch in south Orange County, California. Directed and participated in field investigations and assimilation of data from previous studies. Produced a wildlife movement corridor map and documentation of all field work and analysis.

- Designed, managed, and implemented a mitigation and construction monitoring program for a large-scale project potentially impacting breeding burrowing owls in Fresno County, California. Designed and presented educational materials at a pre-construction meeting attended by 40 individuals. Trapped and banded burrowing owls. Coordinated and consulted with the California Department of Fish and Game on all aspects of the program.

Professional History

Impact Sciences, Inc. - Managing Principal/Director of Biological Services
Michael Brandman Associates - Senior Project Manager, Wildlife Biologist
U.S. Fish and Wildlife Service (USFWS), Patuxent Wildlife Research Center - Biological Technician

Education

M.S., Business Management, Colorado State University
B.S., Wildlife Biology, Colorado State University

Professional Affiliations

Association of Environmental Professionals (AEP)
Raptor Research Foundation
Society for Conservation Biology
California Swainson's Hawk Technical Advisory Committee

Permits/Certifications

Scientific Collecting Permit, State of California, CDFG
Federal Bird Banding Permit, USFWS
Section 10(a) Permit to Survey for California Gnatcatcher, USFWS
Habitat Evaluation Procedures, USFWS
Certified Scuba

Publications

Babcock, K.W. 1995. Home range and habitat use of breeding Swainson's hawks in the Sacramento Valley of California. *J. Raptor Research* 29(3):193-197.

Greg Ainsworth
Project Biologist

Mr. Ainsworth is a Project Biologist with Impact Sciences, with over six years of experience in biology and project management. He holds a Bachelor Degree in Environmental Horticulture with emphasis in restoration and a Masters of City and Regional Planning with a concentration in environmental planning, both obtained from California Polytechnic State University, San Luis Obispo. His skills include species-specific focused surveys for mammals, reptiles and birds, habitat assessments, and designing, managing and performing biological surveys for large-scale development projects.

He has designed numerous biology-related research studies and surveys for an abundant of flora and fauna species throughout California. His biological expertise includes knowledge of coastal and desert plants, terrestrial animals, including reptiles, birds, and mammals and thorough knowledge on identifying special-status species and their associated habitats. His daily tasks include overseeing and performing biological constraints analyses and impact assessment, vegetation mapping, biological resource inventories, special-status species surveys, and developing habitat restoration and mitigation plans for both private and public sector clients.

Mr. Ainsworth is also a certified wetland delineator (ACOE, #2128). He is an approved biologist with the County of Ventura and has assisted in identifying locally important plant and animal species and has participated in establishing an inventory of wetlands and streams occurring within the County. He has performed wetland delineations and has prepared Section 404 applications (ACOE), Section 401 applications (Regional Water Quality Control Board), and Section 1600 Streambed Alteration Agreements (CDFG).

In addition, Mr. Ainsworth has written numerous biological reports, managed and prepared sections for CEQA and NEPA documents, and has prepared environmental analysis reports for both private land developers and government agencies.

Representative Professional Experience

- Managing and performing annual biological surveys for Newhall Land and Farming's 12,000-acre Specific Plan area near Magic Mountain Entertainment Center in Valencia, California. Surveys involve taking an inventory of oak tree resources, small mammal trapping, spotlight surveys and scent/tracking stations for large terrestrial mammal species, pitfall trapping for reptile species, and Anabat surveys for bat species. Preparing a detailed oak tree report for each proposed development site with the Specific Plan area. Identifying mitigation areas for oak trees for each proposed development project within the Specific Plan area. Preparing a technical report for all mammal and reptile data collected during focused surveys for the entire Specific Plan area in support of future necessary permits and environmental documents.

- Managing and performing biological constraints analyses and impact assessments throughout Riverside and Los Angeles Counties for identification of land development constraints per on-going contract services for DR Horton, Inc.

- Managing and performing biological constraints analyses and impact assessments throughout Southern California for identification of land development constraints for private land developers (ongoing).

- Managing and performing focused surveys for identifying breeding birds occurring within a 700-acre project site owned by Shea Homes. Breeding bird surveys were performed in accordance with the mitigation terms outlined in the environmental impact report for the 700-acre project. All active nests were mapped using global positioning technology, and buffer fencing installations were monitored to ensure all protective fencing is installed properly. Communicate areas where vegetation removal could occur to the construction manager based on walking transects for nesting birds in all habitats on the site.

- Performing focused surveys for burrowing owls in accordance to CDFG Guidelines for all DR Horton, Inc. projects occurring in Southern California (ongoing).

- Managing the implementation of the Arroyo Simi Revegetation Plan for the Ventura County Water Protection District for the creation of wetland and riparian habitats to satisfy permit requirements associated with the Parker Ranch development in Simi Valley, Ventura County, California. Monitoring weed abatement and restoration activities for the creation of a floodplain terrace and new riparian habitat along the banks of the Arroyo Simi. Established weed abatement and planting guidelines for the restoration efforts.

- Managing and performing a habitat assessment of a 40-acre property for the City of Lancaster. Performing focused presence/absence surveys during the appropriate species-specific breeding /activity period in the spring western burrowing owl, Mojave ground squirrel, white-tailed ground squirrel, LeCont's thrasher, desert cymopierus, white-bracted spineflower, short-joint beavertail and pigmy poppy. Surveying and mapping California juniper and Joshua trees on the site and establishing mitigation measures for impact to these resources. Assessing the potential of the project site to support winter foraging habitat for special-status bird species and recommending mitigation measures for loss of wintering habitat. Identifying and characterizing onsite vegetation and preparing a vegetation map of all on-site plant communities. Assessing the biological value and connectivity of an adjacent Prime Desert Woodland Preserve to similar onsite habitats to determine if proposed development would have adverse impacts on the Preserve. Assessing regional and local importance of biota covering the project site.

- Managed the habitat data collection and monitoring efforts associated with a biological assessment of the potential effects on the dewatering of the Foothill Feeder pipeline, owned by the Metropolitan Water District, into the Santa Clara River in Los Angeles County. Significant issues include potential impacts on a number of both special-status and common wildlife species including unarmored threespine stickleback, Santa Ana sucker, least Bell's vireo, southwestern willow flycatcher, coastal sage scrub and riparian habitats.

- Performed habitat assessment for burrowing owl, coast horned lizard and Mohave ground squirrel for Trimark Homes, in Palmdale, California. Activities included performing a biological constraints analysis and preparing a vegetation map for the 40-acre project site. Prepared a biological assessment report based on the findings of the field studies to support a grading permit application to the County of Los Angeles.

- County of Ventura, CA (ENSR International, Camarillo) – Approved County biologist for contract services. Conducted habitat assessments and special-status species surveys for biological resource sections for CEQA Initial Studies. Also, prepared biological resource sections of CEQA Initial Studies based on findings. Mr. Ainsworth is also a member of the County's committee for establishing criteria for identifying wetlands and vernal pools within the County as well as identifying locally important plant and animal species.

- Ventura County Regional Sanitation District (ENSR International, Camarillo, 2003-2004) – Identified ecological sensitive areas, performed habitat assessments and reconnaissance-level biota surveys and established a mitigation and monitoring plan for future expansions of their landfill site in Santa Paula, California.

- Exxon Mobil Pipeline Company, Santa Ana (ENSR International, Camarillo, 2003-2004) – Conducted special-status species surveys and habitat assessments for on-going operational and maintenance activities on underground pipelines occurring throughout Southern and Central California.

- Exxon Mobil Pipeline Company, San Joaquin Valley (ENSR International, Camarillo, 2003-2004) – Performed small mammal trapping using Sherman live traps on 1,200-acre site in San Joaquin Valley. Surveys occurred over four month period between April and July 2002 for identification of special-status and common small mammal species occurring within operational and maintained easements of existing gas pipelines.

- Unocal Corporation, Avila Beach (ENSR International, Camarillo, 2003-2004) – Constraints and land use inventory for the future development of the 270-acre tank farm site in Avila Beach, California.

- Santa Maria Water Protection District (Rincon Consultants, Inc., San Luis Obispo, 2001-2003) – Performed weekly focused surveys for coast horned lizard within the Santa Maria Riverbed prior and during excavation activities.

- Southern California Gas Company, a Sempra Energy Company (Rincon Consultants, Inc., San Luis Obispo, 2001-2003) – Performed focused surveys for blunt-nose leopard lizard prior to road grading routine operation al and maintenance purposes. Performed construction monitoring for road grading activities.

- Private land developer (Rincon Consultants, Inc., San Luis Obispo, 2001-2003) – Performed numerous focused surveys for California red-legged frog within riparian areas on 50-acre site located in San Luis Obispo, California

- Rabbit Ridge Winery (Rincon Consultants, Inc., San Luis Obispo, 2001-2003) – Performed construction monitoring and communication with US Fish and Wildlife Service and California Department of Fish and Game for development of a winery per requirements of a certified Mitigation and Monitoring Plan in Paso Robles, California.

Education

Bachelor of Science, Environmental Horticulture Science, Plant Protection, California Polytechnic State University, San Luis Obispo, 1999
Master of City and Regional Planning (MCRP), Environmental Planning, California Polytechnic State University, San Luis Obispo, 2003

Training and Workshops

California Rapid Habitat Assessment (CRAM) (California Department of Fish and Game and California Native Plant Society, 2003)
California Environmental Quality Act Workshop Series (Association of Environmental Professionals, 2001–2005)
Due Diligence, Phase I Environmental Site Assessment (ENSR International, 2003)
Mitigating Environmental Impacts Workshop (UCLA Cooperative Extension, March 2005)
Mohave Ground Squirrel Workshop (The Wildlife Society, April 2005)
Ventura County Locally Important Species Workshops and Policy Development (Ventura County, 2003-2005)
Ventura County Streams and Wetlands Inventory Workshops and Seminars (Ventura County, 2003-2005)
Wetland Delineation & Management (Richard Chinn Environmental, 2003)

Affiliations

Association of Environmental Professionals (AEP), Channel Counties Chapter Board Member, Ventura County Representative and Newsletter Editor
American Planning Association (CalEPA), member
Surfrider Foundation, volunteer

Josh Phillips
Senior Biologist

Mr. Phillips serves as a biologist on environmental planning projects at Impact Sciences. He has a thorough understanding of the California Environmental Quality Act (CEQA), both State and Federal Endangered Species Acts, and state and federal regulations and permits involving biological resources. Mr. Phillips has extensive experience analyzing the potential effects of proposed development projects on biological resources and has prepared numerous biological resource chapters of EIRs. He also has experience conducting special-status species surveys, habitat evaluations, wetland delineations, vegetation mapping, and mitigation design and implementation.

In addition, Mr. Phillips has extensive knowledge of data analysis and the use and applications of GIS (ArcGIS) and GPS (Trimble) equipment. Mr. Phillips has used these tools in conducting numerous spatial analyses. Specifically, Mr. Phillips has used GIS/GPS technology in analyzing and mapping wildlife movement corridors, delineating wetlands, and identifying suitable restoration areas.

Representative Professional Biological Experience

- Prepared the biological resources EIR chapters for the Ranch View Terrace and McHenry Library projects on the UC-Santa Cruz campus. Issues evaluated include indirect impacts to two seeps adjacent to the project site and associated special-status plant species, the impact of altered surface runoff on special-status cave dwelling invertebrates potentially occurring within sinkholes, and potential impacts to the federally listed Ohlone tiger beetle and California red-legged frog.

- Prepared the biological resources chapter of the Monarch Village Apartments EIR. The project site is located in Santa Cruz and is within the coastal zone. The project involved the development of a 206-unit residential development on a 9-acre site. The project site borders a willow riparian woodland that provides high value habitat for common and special-status wildlife and serves as a regionally important wildlife movement corridor. Key issues evaluated included impacts to wetlands, riparian habitats, and special-status species.

- Prepared the Draft Mitigated Negative Declaration for the Bean Creek Estates project, located in Scotts Valley. The proposed project involved evaluating potential impacts to three federally listed species, including Mount Hermon June beetle, Santa Cruz wallflower, and Ben Lomond spineflower, and developing mitigation measures to protect these species within the proposed open space area.

- Prepared the biological resources chapter of the Watsonville Home Depot EIR. The project site is bordered by a slough and the vegetation on the site consists of non-native grassland and willow riparian woodland. A wetland delineation was conducted to identify the extent of ACOE and CDFG jurisdiction on the project site. Key issues evaluated included potential impacts to special-status plants, and potential impacts due to increased noise and light/glare on wildlife inhabiting the willow riparian woodland.

- Prepared the Draft Natural Environmental Study (NES) Report for the Caltrans Sonoma 116 Pavement Overlay Project. The proposed project involves widening and other improvements to the eight-mile stretch of State Route 116 between Cotati and Sebastopol. Participated in focused special-status plant surveys consistent with the USFWS protocol for the four federally endangered plant species on the Santa Rosa Plains, California tiger salamander (CTS) larval surveys, a jurisdictional wetland delineation, and a native tree survey. Mapped all suitable CTS habitat within and bordering the project boundaries, prepared Biological Assessments (consistent with the Federal Endangered Species Act) for CTS, steelhead trout, and California freshwater shrimp, and maintained a GIS database of the data collected on the project site. Coordinated with the USFWS regarding potential impacts to federally listed species.

- Prepared portions of the Draft Biota Report for the 12,000-acre Centennial Specific Plan project site, pursuant to the requirements of the Los Angeles County Significant Ecological Area Technical Advisory Committee (SEATAC). The report incorporated the results of four years of focused

biological studies, including numerous special-status plant and wildlife surveys, a wetland delineation, an oak tree survey, and a wildlife movement analysis. The report included an analysis of anticipated impacts to special-status plant and wildlife species, common and sensitive plant communities, resources under the jurisdiction of the Army Corps of Engineers (ACOE) and the California Department of Fish and Game (CDFG), wildlife movement corridors, and to two Significant Ecological Areas identified by the Los Angeles Planning Department.

- Assisting the City of Hercules in addressing anticipated impacts to biological resources resulting from the proposed Hercules Hospitality Corridor project. The proposed project would result in the loss of occupied California red-legged frog habitat and in the fill of jurisdictional wetlands. Consulting services include the preparation of a Biological Assessment (pursuant to Section 7 of the Federal Endangered Species Act), conducting a jurisdictional wetland delineation, and mapping and evaluating the habitat value of potential mitigation sites.

- Preparing the biological resources section of the mitigated Negative Declaration for the Hercules Train Station project. USFWS protocol-level surveys were conducted to determine the presence/absence of federally listed branchiopods (i.e., fairy shrimp). Other issues of concern include potential indirect impacts to special-status wildlife species potentially occurring within an adjacent tidal marsh.

- Prepared the biological resources chapter of the Hidden Hills EIR. The 42-acre project site is located in Los Angeles County. Key issues evaluated included the loss of freshwater marsh habitat, and potential impacts to arroyo toad, silvery legless lizard, and to roosting special-status bats.

- Prepared the Biological Assessment for the Section 7 Consultation with USFWS for the Palm Avenue Realignment project, in Hercules, California. The Biological Assessment evaluated the proposed project's direct, indirect, and cumulative impacts on the federally threatened California red-legged frog. The report was prepared in accordance with the legal requirements set forth under Section 7 of the Federal Endangered Species Act.

- Prepared the biological resources chapter of the Duncan Canyon Subdivision EIR. The project site is located in Pinole, California, in an undeveloped canyon that is bordered by residential development. The project involves the development of 41 single-family homes on a 41-acre site. Focused surveys were conducted for special-status plant species. Key issues evaluated included potential impacts to special-status wildlife species and the loss of bay-oak woodland.

- Prepared the biological resources chapter of the Breuner Marsh Mitigation Bank EIR. The proposed wetland mitigation bank is located in Richmond, California, and borders the San Pablo Bay. The project site contains extensive tidal marsh areas and contains a population of the federally and state endangered salt marsh harvest mouse. Key issues evaluated included potential impacts to special-status wildlife species, and temporary impacts to wetlands under the jurisdiction of the Army Corps of Engineers (ACOE).

- Prepared the biological evaluation report for a proposed Class I bike path in Calistoga. A field survey was conducted to evaluate on-site habitats relative to their potential to support special-status plant and wildlife species known to occur in the project region. In addition, a focused special-status plant survey was conducted. Potential direct and indirect impacts to northwestern pond turtle, California red-legged frog, Cooper's hawk, and sharp-shinned hawk were evaluated and mitigation measures were recommended as appropriate.

- Prepared portions of the Tejon Ranch Valley Floor Habitat Conservation Plan (HCP). The HCP is being designed to preserve habitat occupied by special-status plant, insect, amphibian, reptile, mammal, and bird species that occur within the San Joaquin Valley. Identified the special-status species that occur, or potentially occur, within the HCP boundaries, described their natural history, and analyzed direct and indirect impacts to these species resulting from development in the project area.

- Provided biological monitoring services for two projects at Lake Merced for the San Francisco Department of Public Works (SFDPW). Conducted construction personnel education with an emphasis on the California red-legged frog, preconstruction nesting bird surveys, preconstruction red-legged frog surveys, and construction monitoring. Attended meetings with SFDPW to discuss compliance with all issued biological permits.

- Prepared biological evaluation reports for proposed cell tower sites in Concord, Livermore, and Fresno. The vegetation communities on the site were identified and characterized, all wildlife species observed on the site were documented, and the suitability of the site's habitat to support special-status plant and wildlife species known to occur in the project region was evaluated.

- Managed the delineation of the wetlands on a 12,000-acre portion of the Tejon Ranch, and headed the GIS/GPS mapping process for the project. The project involved the evaluation of vegetation, hydrology, and soils, and the recording the location of all jurisdictional resources using a Trimble GPS unit. The collected data was analyzed and mapped using ArcView (8.1) and provided to the project engineer for planning purposes.

Education

Master of Environmental Science and Management, Ecology Emphasis, University of California, Santa Barbara. June 1999.
Bachelor of Science in Environmental Biology and Management, University of California, Davis. June 1995.

Permits

Federal Endangered Species Permit (TE-086595-0 Nov. 2004–Nov. 2008) for listed vernal pool branchiopods.

Professional Affiliations/Certifications/Additional Coursework

The Wildlife Society
Ecology and Management of Vernal Pool Grasslands, U.C. Davis Extension, March 2004.
USFWS Approved California Fairy Shrimp Identification Course, December 2003.
California Tiger Salamander: Ecology and Survey Techniques, Wildlife Society, October 2003.
California Burrowing Owl Symposium, Wildlife Society, November 2003.
Sensitive Amphibians and Reptiles of the Southern Sierra Nevada, Wildlife Society, June 2001.
Ecology and Use of Wetlands, U.C. Berkeley Extension, June 2001.
Wetland Delineation and Management Training, Richard Chin Environmental Training, June 2001.
California Native Plant Habitat, Merritt College, June 2001.

Andrew McGinn Forde

Project Wildlife Biologist

Mr. Forde holds a research degree in wildlife biology from the University of St Andrews, Scotland and has more than 5 years of professional experience as a wildlife biologist working in California. His skills include breeding bird surveys, general wildlife surveys, species-specific surveys, population modeling, wildlife capture, radio telemetry techniques, habitat assessment, and vegetation mapping in support of environmental documentation under the California Environmental Quality Act (CEQA), the California Fish and Game Code, the National Environmental Policy Act (NEPA), and the Endangered Species Acts.

Mr. Forde holds a 10(a)(1)(A) Permit, which allows him to conduct focused surveys for quino checkerspot butterfly and southwestern willow flycatcher. He also operates under a Memorandum of Understanding, which allows him to conduct surveys for desert tortoise.

Mr. Forde is also a certified wetland delineator (U.S. Army Corps of Engineers, #2128). He has attended advanced wetland courses and workshops related to federal and state wetland permitting. Since becoming a certified wetland delineator, Mr. Forde has completed a number of wetland delineations and has prepared Section 404 applications (U.S. Army Corp of Engineers), Section 401 applications (Regional Water Quality Control Board), and Section 1600 Streambed Alteration Agreements (California Department of Fish and Game).

In addition, Mr. Forde has written numerous biological reports, prepared and reviewed sections for CEQA and NEPA documents, has edited scientific papers for the United States Geological Survey, and written short communications for press release.

Representative Professional Experience

- Regents of the University of California, Orange County, CA – Conducted general wildlife and focused surveys for burrowing owl, white-tailed kite, loggerhead shrike, California horned lark, and black-tailed jack rabbit, conducted breeding bird surveys, and assisted permitted biologists with focused surveys for coastal California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher on the University of California's Irvine campus. A pair of gnatcatchers fledged three young at the site. Mr. Forde also provided technical advice during client meetings, managed on-call requests for construction monitoring, and prepared internal memoranda and supporting documentation.

- SWCA Environmental Consultants, Flagstaff, AZ – Conducted focused surveys, nest searching and nest monitoring activities for southwestern willow flycatcher (WIFL) at more than 10 sites located along the Lower Colorado River, Bill Williams River, Gila River, and the All American Canal. The objectives of the project were to locate, via broadcast and observation, territorial WIFLs, re-sight color banded birds, find and monitor WIFL nests, and band non-banded adults and their nestlings. Primary duties included conducting surveys, re-sighting color banded birds, nest searching, and nest monitoring. More than 100 WIFLs were detected during the surveys including more than 25 territorial males, 12 pairs, and 7 nests.

- Glorious Land Company, Riverside County, CA – Reviewed more than 150 publications on the ecology of the desert tortoise and prepared a paper for presentation to the USFWS during Section 7 Consultation. The paper provided the rationale for an alternative survey methodology specifically developed for the 10 square mile project site. The USFWS accepted the methodology and approved the use of hand-held GPS units for navigating transects, which is a departure from the traditional method of using PVC pipe. The survey consisted of more than 2,200 1-mile transects on the project site and more than 80 linear miles in the zone of influence around the project site. Responsibilities included logistics, the selection and management of the ten-man team, conducting the surveys, and preparation of the report.

- State of California, Department of Parks and Recreation, San Diego County, CA – Mr. Forde conducted general wildlife surveys and provided an assessment for the potential occurrence of threatened, endangered, and sensitive species within Chino Hills State Park.

- Playa Capital, Los Angeles County, CA. – Conducted general wildlife and breeding bird surveys, provided technical assistance during client meetings, managed on-call requests for construction monitoring and clearance surveys, and prepared internal memoranda and supporting documentation. Mr. Forde also conducted surveys and prepared reports to support applications for coastal development permits. The project site is adjacent to the Ballona Wetlands, is controversial, and has strong opposition. Mr. Forde responded to opposition concerns on behalf of the client and prepared reports in support of potential litigation.

- Unocal Corporation, Ventura County, CA – Unocal is proposing a 3000-acre development in the Simi Valley. The property is located on the north side of the 118 Freeway and is one of only a few areas with remaining open space on the north side of the freeway. The freeway cuts between the Santa Susana Mountain Range and the Simi Hills. A major issue associated with the project was the idea of a wildlife corridor between the Santa Susana Mountains and the Simi Hills. Mr. Forde conducted field investigations into the connectivity of the Unocal property with the Simi Hills and to the Santa Susana Mountains. Mr. Forde reviewed more than 100 publications on the use of wildlife corridors by mountain lions and other large mammals and a number of recent studies conducted along the 101 Freeway, the 118 Freeway, and Highway 23. Mr. Forde also wrote a paper discussing the current function of the property as a wildlife corridor.

- Metropolitan Water District, Los Angeles County, CA – Conducted preliminary field surveys, habitat assessment, and analyzed potential environmental and biological issues associated with a proposed 8-mile subsurface groundwater barrier and prepared the Initial Study/Mitigated Negative Declaration.

- The Glorious Land Company, Riverside County, CA – Conducted general wildlife surveys at four one-mile square properties east of Indio in the Sonoran Desert and provided an assessment for the potential occurrence of desert tortoise. Eight tortoises were located during the surveys and evidence suggested that bighorn sheep also frequent the properties.

- Big Canyon Country Club, Orange County, CA – Conducted breeding bird surveys and provided technical assistance during the modification of a golf course pond.

- Florida Light and Power, San Bernardino County, CA – Collected data on the use of evaporation ponds by birds at a solar power plant in the Mojave Desert, collected invertebrates for selenium analysis, and prepared a report with the findings.

- The Planning Center, Orange County, CA – Conducted field surveys, habitat assessment, vegetation mapping, and analyzed potential biological issues associated with the proposed expansion of water utilities in the City of Walnut, City of Diamond Bar, Rowland Heights, and City of Industry and prepared the Initial Study/Mitigated Negative Declaration.

- City of Malibu, Ventura County, CA – Conducted preliminary field surveys, habitat assessment, and analyzed potential environmental and biological issues associated with a proposed pedestrian footbridge and trail system at Las Flores Canyon Park and prepared the Initial Study/Mitigated Negative Declaration.

- Los Angeles Department of Public-Works, Los Angeles County, CA – Conducted general wildlife surveys, breeding bird surveys, provided technical assistance, and provided an assessment discussing the potential for the occurrence of endangered, threatened, or sensitive species.

- Level 3 Communications, San Diego and Imperial counties, CA, and Yuma County, AZ – Participated in field surveys for special status species including desert tortoise, burrowing owl, flat-tailed horned lizard, and arroyo toad during the installation of a fiber optic network between San Diego, CA and Yuma, AZ.

Education

Animal Biology/University of St Andrews, St Andrews, Scotland
Higher National Certificate/1993/Biology/Stow College, Glasgow, Scotland

Wildlife Workshops

Sensitive Reptiles & Amphibians of Southern California (The Wildlife Society, 2003)
Blunt-Nosed Leopard Lizard Identification (The Wildlife Society, 2003)
Fairy Shrimp of California (Mary Belk, 2003)
Sensitive Butterflies of San Diego County (Faulkner and Klein, 2003)
Desert Tortoise Survey & Handling Techniques (The Desert Tortoise Council, 2002)
Southwestern Willow Flycatcher (Southern Sierra Research Group, 2002)
Owl Survey Techniques (Kern River Preserve, 2002)
Desert Mammals (The Desert Institute, 2002)
Desert Birds (The Desert Institute, 2002)
Desert Reptiles & Amphibians (The Desert Institute, 2002)
Springtime Desert Butterflies (San Diego Natural History Museum, 2002)
Flat-tailed Horned Lizard (United States Fish and Wildlife Service, 2001)
Burrowing Owl (United States Fish and Wildlife Service, 2001)
Arroyo Toad Handling Techniques (United States Fish and Wildlife Service, 2001)
Raptor Capture & Handling Techniques (University of California Davis, 1999)
Bird Banding & Species Identification (Ventana Wilderness Sanctuary, 1998)

Wetland and Regulatory Workshops

Advanced Wetland Delineation & Management (Richard Chinn Environmental, 2003)
Wetland Delineation & Management (Richard Chinn Environmental, 2002)
Navigating Federal & State Permits for Developments in California's Waters (University of California Los Angeles, 2002)
The Basics of the California Environmental Quality Act (Association of Environmental Professionals, 2002)
A Systematic Approach to the California Environmental Quality Act (Ultrasystems Environmental, 2001)
A Systematic Approach to the National Environmental Policy Act (Ultrasystems Environmental, 2001)

Jeff Johnson
Senior Biologist

Mr. Johnson is a senior biologist with Impact Sciences and has 13 years experience working in the environmental field. Previously, he worked for the Department of Defense as a natural resources program manager at a Naval Weapons Station where he was responsible for managing numerous wildlife research and compliance projects. In the course of his management for the Navy, he prepared and reviewed Biological Assessments and lead formal and informal consultations, as per Section 7 of the Endangered Species Act, in conjunction with a National Wildlife Refuge on Navy owned land. For several years, he acted as NEPA program manager and has considerable experience with the project review process and written documents, as required by this process.

While employed with Impact Sciences, Mr. Johnson has been involved in the preparation of several Environmental Impact Reports and conducted several biological constraints analysis for the use in preliminary project planning.

Mr. Johnson jointly managed a National Wildlife Refuge with the U.S. Fish & Wildlife Service. He developed and implemented the natural resources management plan that prescribes projects and studies involving a variety of scientific techniques and data collection. Mr. Johnson has successfully negotiated and authored, on behalf of the Navy, a Memorandum of Understanding (MOU) with the U.S. Fish & Wildlife Service for management of the Seal Beach National Wildlife Refuge located on Naval Weapons Station Seal Beach. This MOU diffused a long-standing conflict between the Navy and the Service regarding stewardship responsibilities.

Representative Project Experience

- D.R. Horton, residential development, Biological Constraints Analysis – Acted as senior biologist in the preparation of a biological constraints report for the development of 400 housing units on a parcel of native land. Client contact is Senior Vice-President of Planning, Dan Boyd.

- Del Webb California Corp., Sun City Shadow Hills Development, Biological Resources Section of Environmental Impact Report, City of Indio – Acted as senior biologist in charge of analyzing field data and writing the biological resources section of the EIR including impact analysis of a 806-acre development project.

- Naval Weapons Station Seal Beach – While working at Naval Weapons Station Seal Beach, Mr. Johnson actively managed breeding populations of two endangered bird species. He monitored the breeding success and development management strategies to ensure success into the future. His management duties were to assess project impacts, develop mitigation measures, determine appropriate predator control actions and enhance the surrounding habitat. Contact is U.S. Fish & Wildlife Service Refuge Manager, John Bradley.

Education

Bachelor and Master of Science, General Biology with an emphasis in Ornithology

FLx

ANUJA K. PARIKH
Principal Ecologist, FL*x*

EDUCATION AND CERTIFICATIONS

Ph.D., Plant Geography, University of California, Santa Barbara, 1989.
M.S., Geography, University of Bombay, India, 1981.
B.S., Zoology and Geology, University of Bombay, India, 1979.
PWS, Certified Professional Wetland Scientist #841, Society of Wetland Scientists, 1995.

SUMMARY OF QUALIFICATIONS

Dr. Parikh has 20 years of field and research experience in the areas of botany, plant ecology, wetlands, biogeography, and earth resources. Her work has included environmental baseline inventories and impact assessments, rare and endangered plant species surveys, revegetation and mitigation plans, restoration and monitoring of native upland and wetland habitats, and coast live oak revegetation studies. She has expertise in field vegetation sampling, plant species identification, wetland delineation, and the collection of physical environmental data. Using aerial photography and field surveys, she has prepared vegetation maps based on classification and quantification of plant communities in a variety of habitats; she also has mapped environmental constraints, incorporating data on sensitive species, natural habitats, and physiographic and man-made features. Dr. Parikh is experienced with experimental design as well as processing and analyzing ecological data using statistical and graphics software.

EXPERIENCE

Rare Plant and Vegetation Surveys and Mapping, Newhall Ranch/Valencia Company Project Sites, Los Angeles and Ventura Counties, CA. Newhall Land and Farming Company, URS Corporation, Impact Sciences, Inc., and Dudek and Associates, Inc. General rare plant surveys and concentrated surveys for *Chorizanthe parryi* var. *fernandina* (San Fernando Valley spineflower), *Dodecahema leptoceras* (slender-horned spineflower), and *Helianthus* sp. (sunflower), vegetation surveys and mapping of plant communities, and report preparation for various sites, including the Santa Clara River and Castaic Creek. Surveys were carried out annually during five field seasons in the years 2000 through 2004. Participation in the development of a spineflower management plan, preserve design, and associated research activities.

Rare Plant and Vegetation Surveys and Mapping, Los Angeles and Riverside Counties, CA. Natural Resource Consultants. General rare plant surveys and concentrated surveys for *Chorizanthe parryi* var. *fernandina* (San Fernando Valley spineflower), *Dodecahema leptoceras* (slender-horned spineflower), *Orcuttia californica* (California Orcutt grass), and *Navarretia fossalis* (spreading navarretia), vegetation surveys, and report preparation for three sites in the year 2003 and two sites in 2004.

Restoration Planning and Implementation, Former Guadalupe Oil Field, San Luis Obispo County, CA. Unocal Corporation and Jordan Environmental Services. Preparation and implementation of site-specific restoration plans, including the development of revegetation specifications, monitoring methods, performance criteria, and performance evaluation. Development of general mitigation and restoration success criteria, including sampling design, data collection, statistical data analysis, and reporting for selected reference wetlands for future comparison with wetland mitigation and restoration sites. Participation in activities related to uplands and wetlands habitat restoration with the Restoration Working Group, comprising regulatory agency representatives and Unocal consultants, for the long-term Guadalupe Restoration Project.
Vegetation and Rare Plant Surveys and Wetlands Delineations, Ventura and Los Angeles Counties, CA. Impact Sciences, Inc. Vegetation surveys and mapping of plant communities, rare

plant surveys, field wetland surveys, delineation of jurisdictional wetlands, and report preparation for more than 30 sites in various locations in Ventura and Los Angeles counties.

Peacekeeper Rail Garrison Mitigation Program, San Antonio Terrace, Vandenberg AFB, CA. U.S. Air Force and The Earth Technology Corporation. Project biologist responsible for directing, planning, and implementing biological field activities related to wetlands creation, upland habitat restoration, coast live oak revegetation, and vegetation monitoring for all mitigation and restoration sites.

Recovery Plan for Two Federally Endangered Plant Species. U.S. Fish and Wildlife Service. Ecologist and principal author responsible for background research and all botanical elements of the recovery plan for marsh sandwort (*Arenaria paludicola*) and Gambel's watercress (*Rorippa gambelii*).

Implementation of Recovery Activities for Two Federally Endangered Plant Species. California Department of Fish and Game and University of California. Research on species biology and ecology, plant propagation, experimental establishment of new populations, and monitoring of existing and new populations of marsh sandwort (*Arenaria paludicola*) and Gambel's watercress (*Rorippa gambelii*). Reporting of species and habitat status and progress of recovery activities.

Rare Plant Census. All American Pipeline, L.P. Rare plant monitoring census for Gaviota tarplant (*Hemizonia increscens* ssp. *villosa*) in permanent plots established at Gaviota, CA.

Ventura River Estuary Enhancement Project, Ventura County, CA. California Department of Parks and Recreation. Design and implementation of a five-year vegetation monitoring program for restoration efforts at Emma Wood State Beach. The project involved monitoring four vegetation types: willow-cottonwood forest, saltbush scrub, dune scrub, and foredune vegetation. Activities included botanical surveys, survival and growth surveys, photodocumentation, data collection and comparative analysis of natural and revegetated areas, evaluation of exotics eradication, and recommendations for ongoing restoration.

Santa Barbara County Oak Restoration Program. University of California, Santa Barbara. Plant identification and vegetation monitoring in savanna and woodland habitats of blue oak, valley oak, and coast live oak, for the long-term assessment of cattle grazing impacts on oak seedling recruitment at Sedgwick Ranch, Santa Barbara County, CA.

Vernal Pool Restoration Monitoring, Isla Vista, CA. Isla Vista Recreation and Park District. Vegetation monitoring, data analysis, and publication preparation for a 10-year assessment of restored and created vernal pools at the Del Sol Open Space and Vernal Pool Reserve.

Plant Surveys and Wetland Delineations for Five Land Parcels, Isla Vista, CA. County of Santa Barbara Planning and Development. Field surveys and report preparation for botanical and wetland resources, including jurisdictional wetland delineations and mapping, in coastal mesa vernal pool habitat along Del Playa Drive, Isla Vista.

Vegetation Mapping and Plant Species Surveys. Santa Barbara County, CA. Vegetation mapping using aerial photographs of riparian communities along the Santa Ynez River, Santa Barbara County; field vegetation and topographical data collection from transects, species identification, rare and endangered plant species surveys, and report preparation for the County Flood Control District.

Rare and Endangered Plant Species Surveys. Metropolitan Water District and ERC Environmental and Energy Services Co. Plant species identification and sensitive plant species surveys at proposed reservoir and mitigation sites (Potrero Creek, Harford Springs, Crown/Rawson

Valleys, Motte Rimrock Reserve, Domenigoni Valley, Santa Rosa Plateau Preserve, Lake Skinner, and Vail Lake) for the Metropolitan Water District's Eastside Reservoir Project, Riverside County, CA.

Rare and Endangered Plant Species Surveys. California Department of Water Resources. Rare and endangered plant species identification and mapping along a proposed aqueduct route in the Lompoc and Lake Cachuma areas in Santa Barbara County, and near Santa Margarita, San Luis Obispo County; field verification, ground truthing and mapping of vegetation communities along the Santa Ynez River, CA.

Floristic and Vegetation Surveys. U.S. Department of Agriculture, Forest Service. Preparation of floras and vegetation surveys in the Los Padres National Forest at Mt. Pinos, a lower subalpine community in Ventura and Kern counties, and at Alder Creek Botanical Area, Monterey County, CA. Identification of plant species and collection of vegetation and site data in permanent plots established in blue oak woodland in San Luis Obispo County, CA, as part of a Forest Service project on vegetation and habitat inventory and classification.

Wetland Vegetation Surveys, Mapping, and Monitoring. Dames & Moore. Vegetation mapping using aerial photographs, calculations of riparian habitat acreages, and field botanical surveys for a land development project along the Santa Clara River, Los Angeles County, CA. Biological construction monitoring for an archaeological site investigation in the Los Carneros wetlands, Goleta, CA. Field surveys and mapping of wetlands and vernal pools at Beale AFB, CA.

Rare and Endangered Plant Species Surveys and Vegetation Mapping. Jones and Stokes Associates, Inc. Field surveys for rare and endangered plant species at the proposed Los Vaqueros Reservoir site near Livermore, Contra Costa and Alameda counties, CA, and along ephemeral drainages near Taft in the Central Valley, Kern County, CA, for a project involving clean-up of oil and brea deposits. Habitat mapping and field surveys of riparian vegetation and plant species on transects along the Lower Ventura River, for an aquatic biology survey.

Ecological Survey Reports for Candidate Research Natural Areas. U.S. Department of Agriculture, Forest Service. Field work, literature reviews, and document preparation for the San Emigdio Mesa and Sawmill Mountain Candidate Research Natural Areas, Los Padres National Forest, Ventura County, CA.

Restoration Plan, Naval Base Ventura County, Port Hueneme Site, CA. Naval Base Ventura County and The Environmental Company. Field visits and preparation of a habitat protection and restoration plan for four special interest natural areas.

Biological Surveys and Wetlands Delineation for the National Reconnaissance Office (NRO) Campus, Vandenberg AFB. U.S. Air Force and Titan Corporation. Field biological surveys, jurisdictional wetlands delineation, and preparation of an addendum to the environmental assessment for The General Plan for the Cantonment Area of the base.

Controlled Burn Monitoring, Vandenberg AFB. U.S. Air Force and Museum of Systematics and Ecology, University of California, Santa Barbara. Pre-burn monitoring of vegetation and plant species in coastal sage scrub and chaparral at two prescribed burn sites, South Vandenberg AFB.

Restoration Plans for Installation of VTS Fiber-Optic Cable System, Honda Ridge Road Repair, and El Rancho Road Bridge Project, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Preparation of restoration plans including sections on ecological background, revegetation

measures, monitoring and maintenance methods, performance criteria for assessing success, and restoration schedule for sites at North and South Vandenberg AFB.

Implementation of Restoration Plans, South Base and VTS Fiber-Optic Cable Systems, Vandenberg AFB. U.S. Air Force and Foster Wheeler Environmental Corp. Native plant species restoration, long-term monitoring, and restoration evaluation at four sites at Vandenberg AFB, CA.

Integrated Natural Resources Management Plan, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Principal ecologist responsible for preparing sections on existing conditions, issues of concern, and management objectives for vegetation, wildlife, and wetland resources for a basewide five-year plan.

Natural Resources Surveys and Environmental Assessments, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Principal environmental scientist responsible for conducting field surveys and preparing report sections for vegetation, wildlife, and wetland resources for 17 environmental assessments of facility and infrastructure development projects, and for an EIS on San Antonio Creek.

Natural Resources Management Plans. U.S. Air Force and Higginbotham/Briggs & Associates. Participation in data collection, field visits, agency coordination, document preparation and review for Natural Resources Management Plans prepared for Kaena Point Satellite Tracking Station, HI, and Onizuka AFB, CA.

Biological Monitoring, Environmental Quality Assurance Program (EQAP), Santa Barbara County, CA. Storrer Environmental Services. Biological monitoring for the Level (3) fiber-optic cable installation project, the All-American Pipeline relocation at Gaviota Creek, and the stabilization of oil wells for the Venoco State Lease 421 piers.

Goleta Revitalization EIR/EIS. County of Santa Barbara Planning and Development. Wetland delineations at sixteen creek crossings and plant surveys for street extensions, bikepaths and a multipurpose trail.

UCSB Campus Lagoon Wetland Restoration. The Herbarium, Museum of Systematics and Ecology, University of California, Santa Barbara. Design of a five-year vegetation monitoring program for wetland plant communities restored at the UCSB Campus Lagoon, Santa Barbara County, CA, as required by the Streambed Alteration Agreement of the California Department of Fish and Game. The monitoring project included plant species identification, vegetation sampling, data analysis, photodocumentation, and report preparation.

Vegetation Surveys and Analysis. The Herbarium, Department of Biological Sciences, University of California, Santa Barbara. Plant species identification and vegetation sampling in upland and wetland areas for baseline data inventory of botanical resources and rare plants at Fish Slough, Inyo and Mono counties, CA. Project design and field surveys of topography, riparian vegetation, and plant species in the Ventura River estuary, Ventura County, CA; computer graphics, analysis, and document preparation of environmental relationships and distribution of species and vegetation communities. Computer analysis for a project on the botanical wetland resources of the Carpinteria salt marsh, Santa Barbara County, CA.

Wetlands Management Plan. Department of Geography and Campus Wetlands Committee, University of California, Santa Barbara. Field and literature surveys of hydrology and sedimentation of the campus-owned wetland resources in Devereux Slough and the Storke Campus wetlands.

Watershed Surveys. U.S. Department of Agriculture, Forest Service. Geomorphological, botanical, and hydrological field work in preliminary watershed surveys in Santa Barbara and Ventura counties, CA.

Research Activities. Department of Geography, University of California, Santa Barbara. Sampling and monitoring regeneration of tree and herbaceous species in the riparian zone of a chaparral watershed recovering from wildfire (N. Fork Matilija Creek, Ventura County); topographic channel surveys, computer plotting, ecological and botanical field, laboratory and greenhouse experiments, literature review, and data analysis. Vegetation sampling, inventory and analysis, and topographical surveys in chaparral ecosystems and oak woodlands in Burton Mesa chaparral, Santa Barbara County. Field sampling in coniferous forests of the Mendocino National Forest Reserve, CA.

MEMBERSHIPS

California Native Plant Society; Society of Wetland Scientists; Society of Ecological Restoration; California Botanical Society.

SELECTED PUBLICATIONS AND REPORTS

"Coast Live Oak Revegetation on the Central Coast of California," (with N. Gale), *Madroño*, 45(4), 1998, 301-309.

"Vegetation Monitoring of Created Dune Swale Wetlands, Vandenberg Air Force Base, California," (with N. Gale), *Restoration Ecology*, 6(1), 1998, 83-93.

"Review of Ten Years of Vernal Pool Restoration and Creation in Santa Barbara, California," (with W.R. Ferren Jr., D.M. Hubbard, S. Wiseman, and N. Gale), in C.W. Witham, E.T. Bauder, D. Belk, W.R. Ferren Jr., and R. Ornduff (Eds.) Ecology, Conservation, and Management of Vernal Pool Ecosystems, Proceedings from a 1996 Conference, California Native Plant Society, Sacramento, CA, 1998, 206-216.

"Peacekeeper Rail Garrison and Small ICBM Mitigation Program, San Antonio Terrace, Vandenberg AFB, CaliforniaCAnnual Wetlands Monitoring Report, Annual Upland Monitoring Report, Year 5," Prepared for the U.S. Department of the Air Force, Detachment 10, Space and Missile Systems Center, San Bernardino, CA, February 1996.

"Vegetation Monitoring of Created Wetland Sites on the San Antonio Terrace, Vandenberg Air Force Base, California," (with N. Gale), in M.C. Landin (Ed.) Proceedings of the National Interagency Workshop on Wetlands: Technology Advances for Wetlands Science, Technical Report, Wetlands Research and Technology Center, U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS, 1995, 153-55.

"Recovery Plan for Marsh Sandwort (*Arenaria paludicola*) and Gambel's Watercress (*Rorippa gambelii*)," (with N. Gale), U.S. Fish and Wildlife Service, Ventura, CA, August 1994.

"Wetland Creation and Vegetation Monitoring in a Stabilized Sand Dune Ecosystem, San Antonio Terrace, Vandenberg Air Force Base, California," (with N. Gale and T. Waddell), in M.C. Landin (Ed.) Proceedings of the 13th Annual Meeting of the Society of Wetland Scientists (SWS), New Orleans, LA, 1993, 368-76.

"First-Year Vegetation Monitoring of Created Wetlands on the San Antonio Terrace, Vandenberg Air Force Base, California," (with N. Gale and T. Waddell), in A.E. Leviton and M.L. Aldrich (Eds.) Proceedings of the Pacific Division, American Association for the Advancement of Science, University of California, Santa Barbara, June 1992, p. 46.

"Biotic Inventory and Ecosystem Characterization for Fish Slough, Inyo and Mono Counties, California," (with the Fish Slough Research Team), Report to State of California, The Resources Agency, Department of Fish and Game, by the Departments of Biological Sciences, Geography, and Geological Sciences, University of California, Santa Barbara, June 1991.

"Ecology of a Mediterranean-Climate Estuarine Wetland at Carpinteria, California: Plant Distributions and Soil Salinity in the Upper Marsh," (with R. Callaway, S. Jones, W. Ferren), *Canadian Journal of Botany*, 68, 1990, 1139-1146.

"Botanical Resources at Emma Wood State Beach and the Ventura River Estuary, California: Inventory and Management," (with W. Ferren, M. Capelli, D. Magney, K. Clark, and J. Haller), Report to the State of California Department of Parks and Recreation, Environmental Report No. 15, The Herbarium, Department of Biological Sciences, University of California, Santa Barbara, August 1990.

"UCSB Campus Wetlands Management Plan, Part IICTechnical ReportCHydrology, Water Quality, and Sedimentation of West and Storke Campus Wetlands," (with F. Davis, D. Theobald, and R. Harrington), Report to the California Coastal Conservancy and Campus Wetlands Committee, University of California, Santa Barbara, CA, 1990.

"Recovery of the Chaparral Riparian Zone After Wildfire," (with F. Davis, E. Keller, and J. Florsheim), Proceedings of the California Riparian Systems Conference, September 22-24, 1988, Davis, CA, Protection, Management, and Restoration for the 1990s, Gen. Tech. Rep. PSW-110, U.S. Department of Agriculture, Forest Service, Pacific Southwest Forest and Range Experiment Station, 1989, 194-203.

"Plant Communities and Flora of the Proposed Botanical Reserve on Mt. Pinos, Ventura and Kern counties, CA," (with D. Capralis), Survey Report, U.S. Department of Agriculture, Forest Service, Los Padres National Forest Headquarters, Goleta, CA, August 1988.

"Terrestrial Vegetation of Rattlesnake Canyon," (with F. Davis), Proceedings of the Chaparral Ecosystems Research Conference, Santa Barbara, CA, Report No. 62, California Water Resources Center, University of California, Davis, CA, 1986, 13-17.

NATHAN GALE
Principal Scientist, FL*x*

EDUCATION AND CERTIFICATIONS

Ph.D., Geography, University of California, Santa Barbara, 1985.
M.A., Geography, University of California, Santa Barbara, 1980.
PWS, Certified Professional Wetland Scientist #1216, Society of Wetland Scientists, 1999.

SUMMARY OF QUALIFICATIONS

Dr. Gale has 24 years of experience managing and conducting multidisciplinary projects ranging from methodology development to applied environmental impact assessments, planning studies, and restoration programs. His management experience includes proposal preparation; contract negotiation and client relations; cost control and schedule monitoring; document production supervision; and quality assurance review. His specific technical work has involved experimental and sampling design; photographic documentation; and mapping of natural vegetation, sensitive species, environmental constraints, and land use. He also has field experience in quantitative vegetation sampling, environmental data collection, and wetland delineation. Dr. Gale is skilled in qualitative and quantitative data analysis for numerous applications including ecological and environmental impact assessment as well as mitigation and monitoring planning. He has been responsible for the preparation of NEPA/CEQA environmental documents, planning studies, and technical reports for the Department of Defense (DOD), the Department of Energy (DOE), the Department of Interior (DOI), and for state and local agencies. In addition, he has published extensively in the fields of geography, ecology, planning, and environmental studies.

EXPERIENCE

Rare Plant and Vegetation Surveys and Mapping, Newhall Ranch/Valencia Company Project Sites, Los Angeles and Ventura Counties, CA. Newhall Land and Farming Company, URS Corporation, Impact Sciences, Inc., and Dudek and Associates, Inc. General rare plant surveys and concentrated surveys for *Chorizanthe parryi* var. *fernandina* (San Fernando Valley spineflower), *Dodecahema leptoceras* (slender-horned spineflower), and *Helianthus* sp. (sunflower), vegetation surveys and mapping of plant communities, and report preparation for various sites, including the Santa Clara River and Castaic Creek. Surveys were carried out annually during five field seasons in the years 2000 through 2004. Participation in the development of a spineflower management plan, preserve design, and associated research activities.

Rare Plant and Vegetation Surveys and Mapping, Los Angeles and Riverside Counties, CA. Natural Resource Consultants. General rare plant surveys and concentrated surveys for *Chorizanthe parryi* var. *fernandina* (San Fernando Valley spineflower), *Dodecahema leptoceras* (slender-horned spineflower), *Orcuttia californica* (California Orcutt grass), and *Navarretia fossalis* (spreading navarretia), vegetation surveys, and report preparation for three sites in the year 2003 and two sites in 2004.

Restoration Planning and Implementation, Former Guadalupe Oil Field, San Luis Obispo County, CA. Unocal Corporation and Jordan Environmental Services. Preparation and implementation of site-specific restoration plans, including the development of revegetation specifications, monitoring methods, performance criteria, and performance evaluation. Development of general mitigation and restoration success criteria, including sampling design, data collection, statistical data analysis, and reporting for selected reference wetlands for future comparison with wetland mitigation and restoration sites. Participation in activities related to uplands and wetlands habitat

restoration with the Restoration Working Group, comprising regulatory agency representatives and Unocal consultants, for the long-term Guadalupe Restoration Project.

Vegetation and Rare Plant Surveys and Wetlands Delineations, Ventura and Los Angeles Counties, CA. Impact Sciences, Inc. Vegetation surveys and mapping of plant communities, rare plant surveys, field wetland surveys, delineation of jurisdictional wetlands, and report preparation for more than 30 sites in various locations in Ventura and Los Angeles counties.

Ventura River Estuary Enhancement Project, Ventura County, CA. California Department of Parks and Recreation. Design and implementation of a five-year vegetation monitoring program for restoration efforts at Emma Wood State Beach. The project involved monitoring four vegetation types: willow-cottonwood forest, saltbush scrub, dune scrub, and foredune vegetation. Activities included botanical surveys, survival and growth surveys, photodocumentation, data collection and comparative analysis of natural and revegetated areas, evaluation of exotics eradication, and recommendations for ongoing restoration.

Peacekeeper Rail Garrison Mitigation Program, San Antonio Terrace, Vandenberg AFB. U.S. Air Force and The Earth Technology Corporation. Technical advisor and senior data analyst for wetland creation, upland dune scrub habitat restoration, coast live oak revegetation, and vegetation monitoring for a five-year biological mitigation and monitoring program. Activities included initial planning, budgeting, methodology development, sampling design, vegetation sampling, data analysis, preparation and review of annual monitoring reports.

Guadalupe Oil Field Restoration. California Department of Fish and Game and Hagler Bailly Consulting, Inc. Initial restoration planning, including background research, historical air photo assessment, and analysis of restoration alternatives at the Guadalupe Oil Field. Results from these tasks were used in the evaluation of potential restoration options, and to anticipate biological, hydrological, ecological, logistical, economic, and other issues associated with each restoration option.

Restoration of Coastal Dunes and Associated Wetlands in California. California Department of Fish and Game and Hagler Bailly Consulting, Inc. Principal scientist responsible for compiling and annotating a comprehensive bibliography of restoration and revegetation projects in coastal California, with an emphasis on coastal dune habitats and coastal wetlands.

Recovery Plan for Two Federally Endangered Plant Species. U.S. Fish and Wildlife Service. Technical advisor responsible for developing strategy and task recommendations for the recovery plan for marsh sandwort (*Arenaria paludicola*) and Gambel's watercress (*Rorippa gambelii*). Key aspects of the plan included an outline of steps for habitat protection, species and habitat monitoring, biological and ecological research, and the establishment of new populations.

Implementation of Recovery Activities for Two Federally Endangered Plant Species. California Department of Fish and Game and University of California. Research on species biology and ecology, plant propagation, experimental establishment of new populations, and monitoring of existing and new populations of marsh sandwort (*Arenaria paludicola*) and Gambel's watercress (*Rorippa gambelii*). Reporting of species and habitat status and progress of recovery activities.

Rare Plant Census. All American Pipeline, L.P. Rare plant monitoring census for Gaviota tarplant (*Hemizonia increscens* ssp. *villosa*) in permanent plots established at Gaviota, CA.

UCSB Campus Lagoon Wetland Restoration. The Herbarium, Museum of Systematics and Ecology, University of California, Santa Barbara. Design and implementation of a five-year

vegetation monitoring program for wetland plant communities restored at the UCSB Campus Lagoon, Santa Barbara County, CA, as required by the Streambed Alteration Agreement of the California Department of Fish and Game. The project included plant species identification, vegetation sampling, data analysis, photodocumentation, and report preparation.

Vernal Pool Restoration Monitoring, Isla Vista, CA. Isla Vista Recreation and Park District. Vegetation monitoring, data analysis, and publication preparation for a 10-year assessment of restored and created vernal pools at the Del Sol Open Space and Vernal Pool Reserve.

Plant Surveys and Wetland Delineations for Five Land Parcels, Isla Vista, CA. County of Santa Barbara Planning and Development. Field surveys and report preparation for botanical and wetland resources, including jurisdictional wetland delineations and mapping, in coastal mesa vernal pool habitat along Del Playa Drive, Isla Vista.

Santa Barbara County Oak Restoration Program. University of California, Santa Barbara. Vegetation monitoring in savanna and woodland habitats of blue oak, valley oak, and coast live oak, for the long-term assessment of cattle grazing impacts on oak seedling recruitment at Sedgwick Ranch, Santa Barbara County, CA.

Restoration Plan, Naval Base Ventura County, Port Hueneme Site, CA. Naval Base Ventura County and The Environmental Company. Field visits and preparation of a habitat protection and restoration plan for four special interest natural areas.

Biological Surveys and Wetlands Delineation for the National Reconnaissance Office (NRO) Campus, Vandenberg AFB. U.S. Air Force and Titan Corporation. Field biological surveys, jurisdictional wetlands delineation, and preparation of an addendum to the environmental assessment for The General Plan for the Cantonment Area of the base.

Controlled Burn Monitoring, Vandenberg AFB. U.S. Air Force and Museum of Systematics and Ecology, University of California, Santa Barbara. Pre-burn monitoring of vegetation and plant species in coastal sage scrub and chaparral at two prescribed burn sites, South Vandenberg AFB.

Restoration Plans for Installation of VTS Fiber-Optic Cable System, Honda Ridge Road Repair, and El Rancho Road Bridge Project, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Preparation of restoration plans including sections on ecological background, revegetation measures, monitoring and maintenance methods, performance criteria for assessing success, and restoration schedule for sites at North and South Vandenberg AFB.

Implementation of Restoration Plans, South Base and VTS Fiber-Optic Cable Systems, Vandenberg AFB. U.S. Air Force and Foster Wheeler Environmental Corp. Native plant species restoration, long-term monitoring, and restoration evaluation at four sites at Vandenberg AFB, CA.

Integrated Natural Resources Management Plan, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Principal scientist responsible for preparing sections on existing conditions, issues of concern, and management objectives for vegetation, wildlife, and wetland resources for a basewide five-year plan.

Natural Resources Surveys and Environmental Assessments, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Principal environmental scientist responsible for conducting field surveys and preparing report sections for vegetation, wildlife, and wetland resources for 17 environmental assessments of facility and infrastructure development projects, and for an EIS on San Antonio Creek.

EIS and Environmental Assessments. U.S. Air Force. Program manager and contract administrator, under a contract with the Strategic Air Command (SAC), for eight environmental assessments and one EIS for proposed USAF real estate, facility construction, and training actions. Impact analyses were conducted for the full range of environmental and socioeconomic issues; major areas of focus involved endangered species' habitats, cultural and historical resources, and hazardous waste sites.

Goleta Revitalization EIR/EIS. County of Santa Barbara Planning and Development. Wetland delineations at sixteen creek crossings and plant surveys for street extensions, bikepaths and a multipurpose trail.

Oil and Gas Exploration and Facilities Development EIRs/EISs. Santa Barbara County and California State Lands Commission. Environmental analyst for EIRs/EISs of oil and gas development projects located offshore California.

Supplemental Environmental Impact Report for the 1990 Long Range Development Plan. University of California, Santa Barbara. Program manager for a supplemental EIR focussed on growth-related impacts to local school districts, and potential secondary environmental impacts to sensitive wetland habitats that could be caused by needed school facility expansion.

Biological Monitoring for Installation of CITS, VTS, South Base, and Tranquillon Mountain Fiber-Optic Cable Systems, Vandenberg AFB. U.S. Air Force, Tetra Tech, Inc., and Foster Wheeler Environmental Corporation. Onsite biological monitoring for cable installation activities to ensure avoidance of adverse impacts to sensitive biological and wetland resources.

Biological Surveys and Monitoring for Installation of Building 3000 Fiber-Optic Cable System, Vandenberg AFB. U.S. Air Force and System Technology Associates. Field surveys and onsite biological monitoring for cable installation activities to ensure avoidance of adverse impacts to sensitive biological and wetland resources.

Biological Monitoring for Honda Ridge Road Repair and Point Sal Road Repair, Vandenberg AFB. U.S. Air Force, Tetra Tech, Inc., and Ace Engineering, Inc. Onsite biological monitoring for road repair activities to ensure avoidance of adverse impacts to sensitive biological and wetland resources.

Biological Monitoring, Environmental Quality Assurance Program (EQAP), Santa Barbara County, CA. Storrer Environmental Services. Biological monitoring for the Level (3) fiber-optic cable installation project, the stabilization of oil wells for the Venoco State Lease 421 piers, and the AERA/Molino flowlines abandonment project.

MEMBERSHIPS

California Botanical Society; California Exotic Pest Plant Council; Society of Wetland Scientists; Society of Ecological Restoration; The International Mountain Society.

SELECTED PUBLICATIONS

Dr. Gale has been an author and collaborator on numerous academic publications, government research grant reports, and presentations at national and international professional conferences. In addition, he has contributed to environmental and planning documents. A summarized count of his work includes: Refereed Journal Articles - 28; Book Chapters - 5; Papers in Conference Proceedings - 3; Government

Research Reports - 13; Contributions to Planning Studies - 44; Contributions to Environmental Documents - 55.

Journal Articles

"Coast Live Oak Revegetation on the Central Coast of California," (with A. Parikh), *Madroño*, 45(4), 1998, 301-309.

"Vegetation Monitoring of Created Dune Swale Wetlands, Vandenberg Air Force Base, California," (with A. Parikh), *Restoration Ecology*, 6(1), 1998, 83-93.

"The Analysis of Class Dispersion Patterns Using Matrix Comparisons," (with L.E. Harvey and F.W. Davis), *Ecology*, 69(2), 1988, 537-542.

"Tests of Randomness: Unidimensional and Multidimensional," (with L.J. Hubert, R.G. Golledge, and C.M. Costanzo), *Environment and Planning A*, 17, 1985, 373-385.

"Measuring Association Between Spatially Defined Variables: An Alternative Procedure," (with L.J. Hubert, R.G. Golledge, and C.M. Costanzo), *Geographical Analysis*, 17, 1985, 36-46.

"Unclassed Matrix Shading and Optimal Ordering in Hierarchical Cluster Analysis," (with W.C. Halperin and C.M. Costanzo), *Journal of Classification*, 1, 1984, 775-92.

Conference Proceedings

"Review of Ten Years of Vernal Pool Restoration and Creation in Santa Barbara, California," (with W.R. Ferren Jr., D.M. Hubbard, S. Wiseman, and A. Parikh), in C.W. Witham, E.T. Bauder, D. Belk, W.R. Ferren Jr., and R. Ornduff (Eds.) Ecology, Conservation, and Management of Vernal Pool Ecosystems, Proceedings from a 1996 Conference, California Native Plant Society, Sacramento, CA, 1998, 206-216.

"Vegetation Monitoring of Created Wetland Sites on the San Antonio Terrace, Vandenberg Air Force Base, California," (with A. Parikh), in M.C. Landin (Ed.) Proceedings of the National Interagency Workshop on Wetlands: Technology Advances for Wetlands Science, Technical Report, Wetlands Research and Technology Center, U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS, 1995, 153-55.

"Wetland Creation and Vegetation Monitoring in a Stabilized Sand Dune Ecosystem, San Antonio Terrace, Vandenberg Air Force Base, California," (with A. Parikh and T. Waddell), in M.C. Landin (Ed.) Proceedings of the 13th Annual Meeting of the Society of Wetland Scientists (SWS), New Orleans, LA, 1993, 368-76.

"First-Year Vegetation Monitoring of Created Wetlands on the San Antonio Terrace, Vandenberg Air Force Base, California," (with A. Parikh and T. Waddell), in A.E. Leviton and M.L. Aldrich (Eds.) Proceedings of the Pacific Division, American Association for the Advancement of Science, University of California, Santa Barbara, June 1992, p. 46.

MICHELLE L. BALK
Environmental Specialist

EDUCATION

M.S., Biology with emphasis Ecology and Evolution, University of Akron (1999)
B.S., Zoology, Iowa State University (1997)

PROFESSIONAL AFFILIATIONS

California Native Plant Society
Southern California Botanists
California Botanical Society

PROFESSIONAL CERTIFICATIONS

Quino Checkerspot Butterfly 10a Survey Permit
(USFWS Federal Permit)
CDFG Rare, Threatened, and Endangered Plant Voucher Collection Permit

EXPERIENCE

Ms. Balk has over three years of experience in environmental document preparation and resource conservation planning. Project experience includes biological resource surveys, data collection and analysis, environmental assessments, wetlands delineations, permitting, mitigation design and monitoring, and sensitive species surveys. Ms. Balk has engaged in interagency coordination and public outreach efforts due to the complexities of each project. Ms. Balk has also participated in the development of habitat conservation plans pursuant to Section 10 of the Federal Endangered Species Act.

PROFESSIONAL ASSIGNMENTS

Miramar Trunk Sewer Replacement and Permanent Access Project, City of San Diego Metropolitan Waste Water Department, City of San Diego, California. Performed delineation of "waters of the United States" and wetlands under the jurisdiction of the U.S. Army Corps of Engineers and California Department of Fish and Game. Completed vegetation mapping and sensitive plant surveys on this 13-acre project site. Conducted focused plant surveys for the state- and federally-listed willowy monardella and Encinitas baccharis. Coordinated with others on specific project design and prepared biological resources report.

North Agua Hedionda Sewer Rehabilitation Project, City of Carlsbad, California. Performed wetlands delineation, rare plant surveys, and exotic species mapping for half-mile sewer rehabilitation and shoreline protection project adjacent to coastal lagoon.

60th Street Canyon Sewer Replacement and Permanent Access Project, City of San Diego Metropolitan Waste Water Department, City of San Diego, California. Completed vegetation mapping, floristic surveys, and sensitive plant surveys on this 7-acre project site. Coordinated with others on specific project design and prepared biological resources report.

Lexington/Manzanita Canyon Sewer Replacement and Permanent Access Project, City of San Diego Metropolitan Waste Water Department, City of San Diego, California. Completed vegetation mapping, floristic surveys, sensitive plant surveys, and potential revegetation site surveys on this project site. Coordinated with others on specific project design and prepared biological resources report.

State Route125 South, California Department of Transportation, City of San Diego, California. Conducted rare plant surveys and Quino checkerspot butterfly surveys for mitigation site alternatives.

Sorrento-Miramar Curve Realignment and Second Main Track Project, North County Transit District, City of San Diego, California. Conducted a focused plant survey for the CNPS List 1B Palmer's grapplinghook along the approximately 180-acre linear rail corridor.

Newhall Ranch Development Project, Newhall Land and Farming Company, Valencia, California. Served as team leader for botanical surveys on Newhall Land and Farming Company parcels. Directed field team in performing general sensitive plant surveys and focused surveys for the state-listed endangered San Fernando Valley spineflower on project sites totalling 14,500 acres in Los Angeles and Ventura Counties in 2003.

Planning Area 1 Project, The Irvine Company, County of Orange, California. Conducted potential native grassland mitigation site surveys and rare plant surveys for CNPS List 1B sensitive plant species including intermediate mariposa lily as a member of a team of botanists within a portion of the 4,200-acre project site.

Village 3 Project, Otay Ranch Company, City of Chula Vista, California. Conducted rare plant surveys, including focused surveys for the federally-listed threatened and state-listed endangered Otay tarplant, on 263 acres in 2003.

Fanita Ranch, Santee, California. Conducted rare plant surveys on 2,000 acres in 2003.

Nickel Creek Project, Ramona, California. Performed rare plant mapping for the CNPS List 1B smooth tarplant for 14-acre multi-family residential development on the Santa Maria River.

Quantum Estates II Project, Quantum Estates II, LLC, County of San Diego, California. Conducted wetlands delineation and floristic survey for 39-acre residential development.

Camelot Project, Western Pacific Housing, City of San Diego, California. Conducted a delineation of "waters of the United States" and wetlands under the jurisdiction of the U.S. Army Corps of Engineers, California Department Fish Game, and California Regional Water Quality Control Board for the approximately 39-acre site. Performed floristic and rare plant surveys for site.

Levatino Property Project, Marker Development, Inc., Carlsbad, California. Provided wetlands delineation and floristic surveys for 20-acre property.

Barracuda Property Project, Private Individual Land Owner, Laguna Beach, California. Performed focused survey for the CNPS List 4 western dichondra within conservation easement on the property.
Oxnard Shores Project, City of Oxnard, California (2.8 acres); Concho Circle Project, Oceanside, California (2.4 acres); Harbor Project, City of Oxnard, California (1.2 acres). Performed vegetation mapping, general floristic surveys, and focused sensitive plant surveys for residential subdivision properties throughout southern California. Prepared biological reports summarizing results and implications of site surveys.

Single Family Residence Projects for Individual Land Owners, Cities of Laguna Beach (Third Avenue Project, Stan Oak Drive Project, Crestview Drive Project, Zell Project) and City of San Diego (Paul Girdner Residence). Conducted vegetation mapping, general floristic surveys, and focused sensitive plant surveys for single family residence projects throughout southern California. Prepared biological reports summarizing results and implications of site surveys.

Pole Maintenance Project/Bark Beetle Project, Southern California Edison, San Bernardino and San Jacinto Mountains, California. Conducted botanical surveys and habitat assessments for sensitive plants at pole replacement locations and along electric lines at numerous locations in the San Bernardino and San Jacinto Mountains.

"Spring Flora across Kern County" presented by the Jepson Herbarium. May 6-9, 2004.

"Basic Wetland Delineation"presented by the Wetland Training Institute, Inc. August 2-6, 2004.

"Morphology and Identification of Flowering Plants" workshop at Jepson Herbarium, Berkeley, California. March, 2003.

"Summer Annuals and Fall-Blooming Shrubs of the Eastern Mojave Desert" class through the Jepson Herbarium, Berkeley, California. September 2003.

Volunteer, Project Wildlife, San Diego, California. Cared for injured wildlife and reared baby birds at wildlife rescue organization.

A Sunday Birds@ field ornithology course with San Dieguito Adult School, Encinitas, California.

PUBLICATIONS

"Phenotypic effects of leptin in an ectotherm: a new tool to study the evolution of life histories and endothermy?" with P.H. Niewiarowski and R.L. Londraville. The Journal of Experimental Biology 203:295-300, 2000.

SCOTT BOCZKIEWICZ
Biologist/ Habitat Restoration Specialist

EDUCATION

University of Wisconsin, Madison
B.S. Biological Conservation, 1994
B.A. Painting and Drawing, 1994

PROFESSIONAL AFFILIATIONS

Member of the Society for Wetland Scientists (SWS)
Member of the Society for Conservation Biology (SCB)
Member of the Society for Ecological Restoration, California Chapter (SERCal)

EXPERIENCE

Mr. Boczkiewicz has a diverse range of work experience in the biological sciences, with emphasis in conservation biology, wetland science, and restoration ecology. He has eleven years of progressive experience as a biologist, and has been evaluating impacts to sensitive, rare, threatened and endangered plant and wildlife species throughout Southern California for approximately three years. He has conducted sensitive species assessments, biological resource inventories, vegetation mapping, and wetland delineations for large public and private land holdings, and also has experience conducting focused surveys for botanical and wildlife species throughout San Diego, Riverside, Orange, Los Angeles, and San Bernardino Counties. Scott has performed biological monitoring of construction and infrastructure maintenance projects occurring in environmentally sensitive and/or protected areas, produced assessments of wetlands and uplands to support management plans and planning studies, designed mitigation plans and habitat restoration and monitoring plans for riparian, wetland, and upland habitats, identified regulatory issues for development and infrastructure projects to guide project designs, and completed permit applications supporting project compliance with federal, state, and local environmental regulations.

As-Needed Biological Consultant - City of San Diego. Providing pre-construction biological resource surveys, nesting bird surveys, vegetation mapping, biological monitoring, revegetation designs, and ESL compliance documents for multiple projects requiring service of existing sewer mains within urban-canyons throughout the city of San Diego. Mr. Boczkiewicz is responsible for all phases of approximately 25 MWWD canyon projects.

Biological Resource Surveys – Escondido, California. Conducted sensitive biological resources surveys for a 75-acre preserve property along Escondido Creek in unincorporated San Diego County, to provide baseline biological site information supporting development of a long-term management plan for the Escondido Creek Conservancy.

Rare Plant and Biological Resource Surveys – Escondido, California. Assisted with a botanical inventory and rare plant surveys for a 65-acre property in Escondido.

Rare Plant and Sensitive Biological Resources Surveys – Temecula, California. Assisted with a botanical survey, rare plant surveys and habitat assessments for federally- and state-listed plant and wildlife species, for the Pipeline 6 project on the Pechanga Reservation in southern Riverside County.

Sensitive Biological Resources Surveys – San Bernardino, California. Conducting botanical surveys, wildlife surveys, and habitat assessments throughout the San Bernardino and San Gorgonio Mountains along Southern Con Edison power line routes. The surveys are supporting implementation of a Bark Beetle tree removal project along existing power lines within San Bernardino County.

Rare Plant Surveys and Biological Resource Surveys – Newhall, California. Assisted with botanical surveys, general sensitive plant surveys, and focused rare plant surveys for the state-listed endangered San Fernando Valley spineflower on Newhall Land and Farming Company parcels totaling 16,500 acres in Los Angeles and Ventura Counties.

Sensitive Biological Resource Surveys –San Diego, California. Conducted general botanical and wildlife surveys and rare plant surveys for the Murphy Canyon drainage in San Diego. Completed a biological resources impact analysis and a mitigation search for the City of San Diego Murphy Canyon Culvert Project.

Sensitive Amphibian Surveys –Rancho Santa Fe, California. Assisted with nocturnal relocation surveys for sensitive toad species on the 40-acre El Apajo development property located along the San Dieguito River in Rancho Santa Fe.

Wildlife Surveys and Herptile Trapping– Riverside, California. Completed raptor nest surveys, general wildlife surveys, and assisted with installation and implementation of 20 reptile trap arrays within the 2,600 acre LaBorde Canyon study area in Riverside County. The surveys and trapping supported a study to develop or site an off-highway vehicle park.

Sensitive Amphibian Surveys – San Bernardino, California. Assisted with nocturnal and diurnal surveys for sensitive amphibian species in selected drainages within the San Bernardino Mountains. The surveys supported placement and development of a hiking trail on lands owned and maintained by the U.S. Forest Service.

Riparian Wetland Delineation – Escondido, California. Conducted a jurisdictional wetland delineation to provide baseline biological site information supporting development of a long-term management plan for a 75-acre preserve property located along Escondido Creek in unincorporated San Diego County. The preserve is owned and operated by the Escondido Creek Conservancy.

Penasquitos Lagoon Wetland Delineation – San Diego, California. Conducted a jurisdictional wetland delineation of a riparian and salt marsh restoration site located in Penasquitos Lagoon for agency sign-off.

Collier Marsh Wetland Delineation – Lake Elsinore, California. Conducted a jurisdictional wetland delineation of an approximately 50-acre portion of Collier Marsh, located immediately north of Lake Elsinore in Riverside, California. The wetland delineation contributed to completion of a constraints report for the Eastern Municipal Water District.

SR-56 Wetlands Mitigation and Environmental Permitting - City of San Diego
Secured an ACOE 404 Individual Permit, USFWS Take Authorization for least Bell's Vireo, RWQCB 401 Water Quality Certification, and CDFG 1601 Streambed Alteration Agreement for Phase 2 of State Route 56 (SR-56) construction.

RELEVANT EXPERIENCE

- Received ArcView and ArcInfo training at the University of New Mexico, Albuquerque and GPS training from United States Army at the White Sands Missile Range, Las Cruces, New Mexico.
- Completed Wetland Hydrogeomorphic (HGM) classification training at the Division of State Lands, Salem, Oregon.
- Attended UC Jepson Exchange "*Carex*" class in July, 2003. The three-day course specialized in identification of over 120 *Carex* species from throughout California.
- Attended San Diego Natural History Museum class *"Sensitive Butterflies of San Diego County"* in December, 2003. The class specialized in identification of the nine most sensitive butterfly species in San Diego County.
- Attended Association of Environmental Professionals "CEQA" seminar in November, 2003.

PREVIOUS EXPERIENCE

With Adolfson Associates, Inc.

Sauvie Island/Newell Creek Canyon Biological Inventories. Metro Regional Open Spaces Division, Portland. Designed and conducted two biological resource inventories on County land acquisitions to provide baseline information for development of long-term management plans. Conducted comprehensive surveys for all plant, amphibian, reptile, avian, and mammal species on the Sauvie Island Complex, a 288-acre wetland site along the Multnomah Channel. Developed a map classifying all vegetative formations on the site to the level of alliance and association utilizing by the National Vegetation Classification (NVC). Also conducted electrofishing surveys of three miles of Newell Creek to determine presence/absence and population dynamics of threatened and

endangered salmonid species. Developed management and restoration plans for this tributary of the Willamette River.

Johnson Creek Predesign Wetland Study. City of Portland Environmental Services. Conducted extensive wetland delineations, wildlife habitat assessments, and functional value assessments of publicly owned properties within the 100-year floodplain of Johnson Creek. The study supported development of flood mitigation projects and programs for rehabilitating Johnson Creek watershed's natural functions. Also evaluated flood storage capacity, identified habitat values, and assessed potential for restoration and enhancement of habitat, hydrologic, and flood storage functions for each property.

Willamette Greenway Wildlife and Habitat Inventory. Portland Planning Bureau. Conducted a comprehensive natural, scenic, and recreational resource inventory of the Willamette River Greenway. The planning area, which covers the entire length of the river passing through Portland, is approximately 17 miles long and up to 2 miles wide. Conducted natural resource inventories, including assessment of fish and wildlife habitats, special status species, significant natural areas, vegetative cover, and other natural features.

Western Painted Turtle Study. Port of Portland. Designed and conducted study to assess painted turtle population structure, nesting behavior and nest sites, habitat use (active-season), and over-wintering sites. Performed trapping and marking surveys, telemetry surveys, and data gathering and analysis for the Western Painted Turtle. Performed extensive winter resident avifauna surveys within the Painted Turtle study areas to assess wildlife habitat potential for mitigation areas.

Westside Stream Diversion, City of Portland Environmental Services, Oregon. Conducted Natural Resources Assessments of four large watersheds in Southwest Portland to support a cost/benefit analysis for separating stormwater and sanitary sewer flows within those watersheds. Identified sensitive natural areas and evaluated all watersheds for multiple objective amenity areas that may support stream restoration, wetland or upland habitat creation, or other projects that provide benefit to the community while reducing flow to the CSO system. Identified all regulatory issues associated with natural resource impacts from construction activities within environmentally sensitive or protected areas.

Wetland Mitigation and Floodplain Restoration Monitoring. HMG, Washington County, Oregon. Developed revegetation plans for a 3.52 acre wetland mitigation site in the Tualatin River 100-year floodplain in Washington County, Oregon. Conducted compensatory wetland mitigation monitoring of floodplain restoration activities, and produced an assessment of planted vegetation survival and functions of mitigation site hydrology.

DARREN SMITH

EDUCATION

San Diego State University, M.A. geography with an emphasis in biogeography 1996
Humboldt State University, B.A. geography 1989

EXPERIENCE

Darren Smith has twelve years experience in biological resource management. He has participated in a large number of biological research and production projects at San Diego State University (SDSU), working with Dr. John O'Leary and Dr. Janet Franklin. Mr. Smith worked for Dudek and Associates from 1997 to 2001 as an associate biologist working on a variety of conservation and development projects. He has also worked for the City of San Diego and the California Coastal Commission. Mr. Smith is currently working at California State Parks as an associate resource ecologist. His work experience in research, private consulting and government has encompassed a wide variety of projects involving intensive vegetation sampling, biological inventories and monitoring, and applying GIS and remote sensing technology to biological resource conservation and development problems. Mr. Smith has produced or played a significant role in five southern California regional vegetation mapping efforts, and participated in numerous post-burn, post-impact and revegetation monitoring projects. Mr. Smith has conducted field-based research in Mediterranean-type and tropical ecosystems, focusing on patterns of plant species composition and diversity and their relationship to physical environment and disturbance. The outcome of these skills and work experience has led to the production of timely, well-received research, technical reports, and data products.

PROFESSIONAL ASSIGNMENTS

Supervised field and GIS production of TJ River Watershed vegetation and landcover database in San Diego County, California and Baja California.

Produced vegetation maps for Fallbrook Naval Weapons Station, and Marine Corps Air Station.

Produced vegetation, and sensitive lands data layers for the City of San Diego Environmental Tier/Future Urbanizing Area project.

Conducted rare plant surveys and mapped vegetation for a variety of projects in San Diego, Orange, Riverside, San Bernardino, Los Angeles, Kern, Santa Barbara, and San Luis Obispo Counties (1997-current). A selection of projects include: Moreno-Lakeside Pipeline, Wilson Creek Mitigation Bank, SCE Power Pole maintenance and replacement, White Water golf Course, Canyon Vista Estates, MSCP Black Mountain Sensitive Plant Inventory, Santa Fe Pipeline project, NCTB Miramar Curve, Oceanside/Melrose, Lone Tree Estates, Santa Fe Valley Properties, Chula Vista SPA1 and Wolf Canyon, Chino

Hills State Park Inventory, Monitoring, and Assessment Program, La Purisima Visitor Center, Chino Hills Visitor Center, Red Rock-Last Chance Canyon Riparian Bypass, Piute Butte Bouldering Constraints, and Lower Topanga Canyon Rare Plant Inventory.

Monitored saltmarsh, and riparian revegetation efforts at Rancho Santa Fe Road Bridge, Sorrento Valley Utilities Improvements, Tijuana River Emergency Channel Mitigation Projects.

Conducted pre-burn vegetation surveys of Burton-Mesa chaparral, Santa Barbara County.

Monitored riparian vegetation for recovery following the removal of vehicular impacts in Coyote Canyon Anza-Borrego Desert State Park.

Conducted long-term regional monitoring of post-burn coastal sage scrub in San Diego, Riverside and Orange Counties.

Participated in a long-term California gnatcatcher habitat assessment including multi-year breeding and non-breeding season vegetation surveys in breeding pair home ranges and nesting sites, at MCAS Miramar, San Diego County.

Participated in long-term study of vegetation recovery on San Clemente Island in Los Angeles County.

MEGAN S. ENRIGHT
Biologist

EDUCATION

B.S., Biology-Ecology, Behavior and Evolution, University of California, San Diego (1997)

PROFESSIONAL AFFILIATIONS

Member, California Native Plant Society
Member, Women's Environmental Council
Member, Southern California Botanists

PERMITS

Federal Permit to conduct Fairy Shrimp Survey (permit number-TE022524-0)
CDFG Rare, Threatened, and Endangered Plant Voucher Collection Permit (05006)

EXPERIENCE

Ms. Enright is a biologist with seven years experience in habitat restoration and biological assessments. She participated in coastal sage scrub restoration at the City of San Diego Miramar Landfill. The project included restoration design, native plant nursery management, and revegetation monitoring. Her current role at Dudek & Associates includes biological resources assessments and impact analyses, wetland delineations and permitting, vegetation mapping, rare plant surveys, and vernal pool studies.

Pipeline 6 Project, Metropolitan Water District of Southern California, County of Riverside, California. Conducted wetlands delineation and assisted in permit coordination for the Section 401 and Section 404 permits and 1601 Streambed Alteration Agreement. Conducted initial site reconnaissance, rare plant survey, and fairy shrimp survey for the proposed alignment. In addition, assisted in siting geotechnical activities.

Yucaipa Non-Potable Water Distribution System, Yucaipa Valley Water District, Counties of San Bernardino and Riverside, California. Conducted biological surveys including vegetation mapping, wetlands delineation and rare plant surveys within a project study area, which included the construction of five reservoirs, four pump stations and 39,120 linear feet of pipelines. Focused surveys were conducted for the state- and federally-listed Santa Ana River woolly-star and slender-horned spineflower.

Oceanside to Escondido Rail Project, North County Transportation District, Cities of Oceanside, Vista, San Marcos, Escondido and County of San Diego, California. Delineated wetlands and prepared vegetation map within the Loma Alta Creek, Buena Vista Creek, Buena Creek, Agua Hedionda Creek, San Marcos Creek, and Escondido Creek Watersheds. Prepared Section 401 and Section 404 permit applications

and 1601 Streambed Alteration Agreement for impacts to non-tidal, adjacent wetlands; impacts were associated with the rail system. Prepared alternatives analysis, functional values assessment, and Conceptual Wetlands Mitigation Plan. Assisted in the preparation of an Exotics Removal Plan, Uplands Mitigation Plan, Brown-Headed Cowbird Trapping Plan, and a California gnatcatcher and least Bell's vireo Habitat Management and Monitoring Plan in accordance with the Biological Opinion issued by the United States Fish and Wildlife Service. Assisted in the preparation of the biological resources report and California Environmental Quality Act and National Environmental Policy Act documentation.

Camino Ruiz Road Alignment, Western Pacific Housing, City of San Diego - Future Urbanizing Area Subarea IV, California. Delineated wetlands, prepared vegetation map, and conducted rare plant surveys. Prepared Section 401 and Section 404 permit applications and 1603 Streambed Alteration Agreement for impacts to non-tidal, adjacent wetlands; impacts were associated with the roadway corridor. Prepared functional values assessment.

San Marcos Creek Roadway Improvements Project, City of San Marcos, City of San Marcos, California. Delineated wetlands, prepared vegetation map, and conducted rare plant surveys along San Marcos Creek from State Route 78 to Lake San Marcos.

Buena Vista Creek Channel Maintenance Project, City of Carlsbad-Engineering Division, Cities of Carlsbad and Oceanside. Project Manager for preparation of technical reports for California Environmental Quality Act documentation and wetlands permitting. Delineated wetlands, prepared vegetation map, and conducted rare plant surveys. Prepared biological resources report for California Environmental Quality Act documentation. Facilitated pre-application agency meetings with the U.S. Army Corps of Engineers, California Department of Fish and Game, and the California Regional Water Quality Control Board. Prepared a 1601 Memorandum of Understanding in accordance with Section1600 of the California Fish and Game Code and assisted in the preparation of an Exotics Removal Plan.

Salt Creek Channel Stage 6 Channel Widening Project, Riverside County Flood Control and Water Conservation District, County of Riverside, California. Delineated wetlands, prepared vegetation map, and conducted rare plant surveys, which included a focused survey for smooth tarplant (Centromadia [Hemizonia] pungens). Prepared biological resources report for California Environmental Quality Act documentation.

Canada Gobernadora, Santa Margarita Water District, Orange County, California. Project Manager for preparation of technical reports for California Environmental Quality Act documentation and wetlands permitting. Delineated wetlands, prepared vegetation map, and conducted rare plant surveys, which included a focused survey for San Diego tarplant (Deinandra [Hemizonia] paniculata), southern tarplant (Centromadia parryi spp. Australis), and many-stemmed dudleya (Dudleya

multicaulis). Project also included focused surveys for least Bell's vireo, southwestern willow flycatcher and southwestern arroyo toad. Biological constraints on the site during the due diligence phase of the project.

Rancho Santalina Project, City of San Marcos, City of San Marcos, California. Conducted a delineation of "waters of the United States" under the jurisdiction of the U.S. Army Corps of Engineers, California Department Fish Game, and California Regional Water Quality Control Board, prepared vegetation map, and conducted focused rare plant survey, which included the federally-listed threatened and state-listed endangered thread-leaved brodiae (Brodiae filifolia). Prepared biological resources report for California Environmental Quality Act documentation.

Planning Areas 18 and 39, The Irvine Company, City of Irvine, California. Conducted a delineation of "waters of the United States" and wetlands under the jurisdiction of the U.S. Army Corps of Engineers, California Department Fish Game, and California Regional Water Quality Control Board and prepared vegetation map within the 1,200-acre project site. Developed wetlands permitting strategies with client. In addition, Dudek conducted focused surveys for least Bell's vireo, southwestern willow flycatcher, and California gnatcatcher.

Planning Area 1, The Irvine Company, County of Orange, California. Project Manager for preparation of biological technical reports for California Environmental Quality Act documentation for the Planning Area 1 Project, which encompasses over 4,200 acres, within which the northern half (approximate) would be permanent open space as part of a larger natural resources preserve, and the southern half (approximate) would be developed as a new community that includes residential, commercial, institutional (i.e., schools), agricultural, and open space uses. Prepared vegetation map and conducted rare plant surveys within the 4,200-acre project site. Prepared biological resources report for California Environmental Quality Act documentation and assisted in the preparation of wetlands permitting data.

Surfer's Point, Surfer's Point, LLC, City of Encinitas, California. Conducted vegetation mapping and floristic surveys and prepared biological resources report for California Environmental Quality Act documentation for the 34-unit timeshare resort project. Project dealt with coastal issues because it was located directly adjacent to Batiquitos Lagoon just east of Coast Highway 101.

Newhall Ranch Project, Newhall Land and Farming Company, Los Angeles and Ventura County, California. Served as field task manager for botanical surveys on Newhall Land and Farming Company parcels. Directed field team in performing general sensitive plant surveys and focused surveys for the state-listed endangered San Fernando Valley spineflower (Chorizanthe parryi var. fernandina) and other sensitive plants on approximately 6,000 acres in 2002 and 14,500 acres in 2003. In addition, collected San Fernando Valley spineflower seed from nine occurrences on Newhall Ranch in 2003. Prepared vegetation mapping for San Fernando Valley spineflower occurrence areas and

assisted in the preparation of the draft conservation and management plan for this species.

Quantum Estates II Projects, Quantum Estates II, LLC, County of San Diego, California. Conducted focused surveys for the state-listed endangered and federally-listed threatened Encinitas bacchairs (Baccharis vanessae) on approximately 40 acres in 2003.

Perris Valley Channel Lateral "B" State 2 Project, Riverside County Flood Control and Water Conservation District, County of Riverside, California. Conducted rare plant surveys along 9,600 linear feet of the Perris Valley Channel in 2003.

Village 3 Project, Otay Ranch Company, City of Chula Vista, California. Conducted rare plant surveys, including focused surveys for the federally-listed threatened and state-listed endangered Otay tarplant, on 263 acres in 2003.

Fanita Ranch, Santee, California. Conducted rare plant surveys on 2,000 acres in 2003.

DAVID FLIETNER
Biologist

EDUCATION

M.S., Botany, University of Florida (1987)
B.S., Plant Science, University of California, Davis (1983)
GIS Certificate, University of California, Riverside extension (1996)

REGISTRATION/CERTIFICATIONS

County of San Diego Certified Biologist
Quino checkerspot butterfly, USFWS Permit #TE-008031
Riverside fairy shrimp, conservancy fairy shrimp, longhorn fairy shrimp, vernal pool fairy shrimp, San Diego fairy shrimp, vernal pool tadpole shrimp, USFWS Permit #TE-797665
Licensed Agricultural Pest Control Advisor #4577 (weed control)
Qualified Applicator License #31356 (landscape, agriculture, and aquatic)
Certified for flat-tailed horned lizard surveys, BLM (2001)
Certificate of Educational Achievement in Revegetation/ Restoration Planning, California Society for Ecological Restoration (2001)
Certificate of Completion, Desert Tortoise Council Surveying, Monitoring and Handling Techniques Workshop (2002)

AFFILIATIONS

California Invasive Plant Council
California Native Plant Society
Southern California Botanists

EXPERIENCE

Mr. Flietner is a biologist with eight years experience conducting biological resource surveys, endangered species presence/absence surveys, wetland delineations, and construction and restoration monitoring. Biological resource survey experience includes vegetation mapping, floristic inventories, and focused surveys for sensitive plant species, arroyo toad, and flat-tailed horned lizard. He conducts surveys for Quino checkerspot butterfly and has conducted surveys San Diego fairy shrimp, and Riverside fairy shrimp. His experience includes wetlands delineations in accordance with U.S. Army Corps of Engineers guidelines and applications for Clean Water Act Section 401 and 404 permits and California Department of Fish and Game Streambed Alteration agreements. In addition, he performs qualitative and quantitative assessments of revegetation projects; writes biological technical reports, wetland delineation reports, habitat restoration plans and annual progress reports. He has conducted annual pesticide training for field applicators and nursery workers in Spanish and has written pest control recommendations for habitat restoration projects.

Los Angeles to San Diego Fiber-Optic Line, Southern Portion, San Diego County. San Diego Gas and Electric. Conducted floristic inventory, vegetation mapping, and focused surveys for quino checkerspot butterfly in vicinity of seven "pull sites" for line stringing operation. Prepared biological letter report summarizing results of surveys.

Potential Reservoir Sites, San Diego County, California. Otay Water District. Conducted focused presence/absence surveys for quino checkerspot butterfly at three potential reservoir sites for Otay Water District. Prepared report according to U.S. Fish and Wildlife Service requirements.

Oceanside Country Club Site, Oceanside California. City of Oceanside. Conducted vegetation mapping, floristic inventory, and post-impact assessment for sewer repair operations. Prepared biological technical report assessing impacts to wetland habitats, and conceptual wetlands mitigation and monitoring plan. Prepared Section 1601 Streambed Alteration Agreement, Section 404 Nationwide Permit application, and Section 401 Regional Water Quality Board permit application.

Rose and Tecolote Creek Clean Beaches Initiative Project, San Diego, California. City of San Diego Strom Water and Pollution Prevention Program. Conducted vegetation mapping, floristic inventory, and wetlands delineation for two pipeline projects to recirculate water in Mission Bay Regional Park. Prepared biological technical resources report, pre-construction notification under Nationwide Permit 12, Coastal Development Permit application to California Coastal Commission, and Section 401 application to Regional Water Quality Control Board.

Gavilan Hills/Smith Road Channel and Sediment Basin, Riverside County, California. Riverside County Flood Control and Water Conservation District. Mapped vegetation communities, conducted floristic inventory, and delineated wetlands in 71-acre project site. Prepared biological technical report including potential onsite mitigation for project impacts for Riverside County Flood Control and Water Conservation District.

County Line Channel Project, San Bernardino and Riverside Counties, California. Riverside County Flood Control and Water Conservation District. Mapped vegetation communities, conducted floristic inventory, identified potential Delhi sands flower-loving fly habitat, and identified occupied burrow owl habitat in approximately 2.5 linear mile project area. Prepared biological technical report including results of focused surveys for Delhi sands flower-loving fly surveys for Riverside

Santa Ana River Maintenance Project, Riverside, California. Riverside County Flood Control and Water Conservation District. Mapped vegetation communities in approximately 500-acre flood control channel project area. Identified potential habitat of Santa Ana woolly-star and slender-horned spineflower. Prepared biological technical report describing resources and avoidance, minimization, and mitigation measures to be implemented in long-term flood control channel maintenance program.

Wildrose Business Park Regional Drainage Facility, Riverside County, California. Ridge Properties, LLC. Mapped vegetation communities, conducted floristic inventory, and performed wetlands delineation for approximately 1700 linear feet storm drain project. Prepared biological technical report and 1601 Streambed Alteration Agreement for project.

Cloverdale Leasehold, Escondido, California. County of San Diego Water Department. Performed wetland delineation on 90-acre parcel adjacent to Escondido Creek for renewal of leased property. Wrote biological letter report describing results of wetlands delineation, property use plan, and conceptual wetlands mitigation plan, including recommendation for control of Lepidium latifolium.

Wilson Creek Crossing, San Diego County, California. County of San Diego Department of Public Works. Mapped vegetation communities, conducted floristic inventory, performed wetlands delineation, and conducted presence/absence surveys for arroyo toad. Prepared biological technical report, conceptual wetlands mitigation and monitoring plan, Nationwide Permit 39 notification, and Section 1601 Agreement for San Diego County Water Department.

Gird Road Crossing, San Diego County, California. County of San Diego Department of Public Works. Mapped vegetation communities, conducted arroyo toad habitat assessment, floristic inventory, and wetlands delineation for San Diego Public Works Department. Prepared biological technical report including conceptual mitigation plan for impacts to CDFG-jurisdictional riparian vegetation.

San Diego Jewish Academy, San Diego, California. San Diego Jewish Academy. Monitored habitat coastal sage scrub and riparian, and restoration and wart-stemmed ceanothus revegetation projects for first two years of five-year implementation plan. Conducted quantitative and qualitative analysis and prepared two annual progress reports comparing site conditions with performance criteria. Recommended and monitoring additional maintenance measures, seeding, and plantings.

Riverside County Agricultural Preserve, Riverside County, California. Conducted habitat mapping, and biological resource inventory, including potential Delhi sands flower-loving fly habitat for proposed mixed-use development of 8,000 acre area. Prepared constraints analysis report including recommendations to avoid impacts to least Bell's vireo and southern willow flycatcher critical habitat.

DOUGLAS GETTINGER
Habitat Restoration Specialist

EDUCATION

B.S. Landscape Architecture, California State Polytechnic University at Pomona (1979)
B.S. Ornamental Horticulture, California State Polytechnic University at Pomona (1980)

REGISTRATION/CERTIFICATIONS

California Agricultural Pest Control Adviser License No. 01369 (expires 12/31/04)

PROFESSIONAL AFFILIATIONS

Member, Society for Ecological Restoration
Member, California Invasive Plant Council
Member, California Agricultural Production Consultants Association

EXPERIENCE

Mr. Gettinger has more than a decade of experience in habitat restoration work, including biological construction monitoring, and the design, implementation, and monitoring of habitat restoration projects. His training in landscape architecture and ornamental horticulture, coupled with his experience working on large construction projects help bring habitat restoration and endangered species habitat creation projects to a successful conclusion. He holds a California Pest Control Adviser License, which allows him to legally act as an expert and make recommendations for the control of invasive plant species. His project experience includes restoration of chaparral, coastal sage scrub, coastal salt marsh, freshwater marsh, limestone forest, riparian woodland, southern willow scrub, and oak woodland habitats implemented under agreements with various federal, state, and local agencies. He has experience working safely around the large earth-moving equipment found at various construction projects and has worked at hazardous materials sites requiring OSHA 40-hour hazardous worker training.

Metropolitan Wastewater Department As-needed Biological Services Contract 2000-2005, San Diego Metropolitan Wastewater Department, City of San Diego, California. Served as a biological construction monitor on numerous emergency sewer repair and maintenance projects in sensitive habitat areas located in canyons for the City of San Diego Metropolitan Wastewater Department on the as-needed biological services contract 2000-2005. Many tasks included emergency sewer repair projects where sewage was flowing into live stream conditions, which required immediate response from DUDEK staff. Other tasks included monitoring emergency sewer cleaning activities where temporary equipment access was needed in sensitive habitat canyon areas. Scheduled and coordinated the work of other biological monitors, as needed. Initial

assessment reports, biological resources reports, and/or impact assessment reports were then prepared for each task, depending on project requirements.

San Diego County Water Authority Emergency Storage Reservoir Program, San Diego County Water Authority, County of San Diego, California. Assisted in focused biological surveys and helped prepare alternatives analysis for the environmental impact report for the San Diego County Water Authority Emergency Storage Reservoir Program. Performed extensive tree inventory surveys and mapping of coast live oak (*Quercus agrifolia*) and mesa oak (*Q. engelmannii*) in proposed project alternative areas.

Metropolitan Water District Pipeline Project, Metropolitan Water District of Southern California, Hemet, California. Collected seed from several sensitive species, including San Jacinto Valley crownscale (*Atriplex coronata var. nutatior*), little mousetail (*Myosurus minimus ssp. apus*), dwarf peppergrass (*Lapidium latipes*), and woolly marbles (*Psilocarpus brevissumus*) on a Metropolitan Water District pipeline right-of-way prior to construction in Riverside County, California. Seed was sent to Rancho Santa Ana Botanic Garden for counting, cleaning, and storage. Later sewed seed in appropriate locations along right-of-way after pipeline construction was completed. Also counted population and collected seed for Parish's brittlescale (*Atriplex parishii*), a species formerly presumed extinct.

Cannon Road Extension Project, City of Carlsbad Engineering Department, City of Carlsbad, California. Biological construction monitor for Phase 2 of the Cannon Road Extension Project in Carlsbad, California through sensitive habitat containing wetlands habitat for the federally endangered least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and western clapper rail (*Rallus longirostris*), as well as coastal sage scrub habitat for the federally-listed threatened coastal California gnatcatcher (*Polioptila californica*). Prepared monthly project progress reports and reported permit violations to the agencies. Project included oversight of subcontractors performing paleontological monitoring and recovery, and construction noise monitoring. Also monitored the installation and 120-day maintenance period for the temporary impacts wetland mitigation area.

Scripps Poway Parkway Extension Project, City of Poway Engineering Department, City of Poway, California. Biological monitor during two years of road construction through four miles of sensitive habitat for the Scripps Poway Parkway Extension Project in Poway, California. Located appropriate preserve habitat in the City and transplanted Coast Barrel Cactus (*Ferrocactus viridescens*) growing in the project right-of-way prior to impacts. Worked with City inspectors, surveyors, and the contractor to insure that impacts stayed within permitted limits. Monitored erosion and sediment control implementation and maintenance, and revegetation planting and seeding.

Puente Hills Landfill Wetland Mitigation Project, Sanitation Districts of Los Angeles County, City of Whittier, California. Provided horticultural and botanical monitoring for the wetland habitat restoration project associated with the Puente Hills

Landfill in Whittier, California. Work was performed for the Sanitation Districts of Los Angeles County. The wetland restoration area is adjacent to the Puente Hills Landfill and also provides visual screening of the landfill for adjacent residents. Also directed staff performing the required wildlife monitoring and provided consultation for coast live oak (*Quercus agrifolia*) mitigation being implemented on weedy mustard covered slopes adjacent to the landfill, coastal sage scrub restoration being attempted on the landfill's canyon fill slopes, and ornamental buffer landscape to provide visual screening.

Rocketdyne Ecological Risk Assessment Project, Boeing Integrated Defense Systems, County of Ventura, California. Assisted with focused biological surveys to map vegetation communities and search for sensitive plant and wildlife species at a contaminated site. Surveys were the first stage in conducting an ecological risk assessment for the Santa Susana Field Laboratory, Ventura County, California.

Rancho Pacfifica Cottages Habitat Enhancement Plan, Taylor-Woodrow Homes, Inc., City of Encinitas, California. Prepared a plan to control invasive exotic plant species such as giant reed (*Arundo donax*) that infests the creek channel within a biological open space being preserved on the property. The plan provides for the removal and control of invasive plant species and the planting of native wetland and upland species in their place.

Village 11 Project, Brookfield Homes, Chula Vista, California. Biological construction monitor for grading of the Village 11) project in Otay Ranch in Chula Vista, California. Grading of the approximately 500-acre site in the eastern portion of the Otay Valley was adjacent to the Salt Creek Open Space Preserve containing wetlands and habitat for the federally-listed threatened coastal California gnatcatcher. Dudek directed and monitored soil and biomass salvaging from suitable habitat areas within the project footprint and is currently monitoring installation of the wetland mitigation area.

Rolling Hills Ranch Wetland Mitigation Monitoring Project, McMillin Land Development, City of Chula Vista, California. Biological construction monitor for the installation and long-term monitoring of Phases I and II of the wetland mitigation for the Rolling Hills Ranch development in Chula Vista, California. Rolling Hills Ranch is an approximately 300-acre mixed use project. The wetland mitigation program, involves expanding wetland habitat along Salt Creek and controlling invasive, exotic salt cedar on the project site. The wetland mitigation was installed in two phases, approximately two years apart. Oversaw the collection of botanical data and preparation of the annual reports for the two phases.

Henry Ranch Biological Construction Monitoring and Wetland Mitigation Project, William Lyon Homes, City of San Ramon, California. Directed staff performing pre-construction surveys for federally-listed threatened California red-legged frog (*Rana aurora draytonii*) and nesting birds, and biological construction monitoring for permitted wetland impacts and initial land clearing at the Henry Ranch Project in San

Ramon, California. Also oversaw and directed implementation of conceptual wetland mitigation pond plan, as well as other required enhancement measures.

Fieldstone Brush Management and Summer Holly Preservation Project, The Fieldstone Company, City of San Diego, California. Supervised a brush management and summer holly (*Comarostaphylos diversifolia*) preservation program at a housing project on the rim of Los Peñasquitos Canyon Preserve, San Diego, California.

Baldwin *Brodiaea* Preserve, The Baldwin Company, City of San Marcos, California. Supervised the planting of native purple needlegrass (*Nasella pluchra*) plants in a preserve for the federal and State-listed endangered thread-leaf brodiaea (*Brodiaea filifolia*) in San Marcos, California.

Newhall Ranch, Newhall Land and Farming Company, County of Los Angeles, California. Assisted with focused surveys for the state-listed endangered San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina)* on the approximately 6,000 acres in 2002 and 14,500 acres in 2003 on Newhall Ranch in Los Angeles County, California.

Talone Lake Wetland Mitigation Project, Gatlin Development Company, City of Oceanside, California. Designed a wetland mitigation plan, oversaw construction impacts and mitigation installation for the loss of wetland habitat associated with a mixed use project development for the Rancho del Oro project around Talone Lake, in Oceanside, California. Project site includes habitat for the federally-listed endangered least Bell's vireo (*Vireo bellii pusillus*). Assisted in preparation of a draft habitat management plan for the project and processed the 404 application with the U.S. Army Corps of Engineers and 1603 Streambed Alteration Agreement with the California Department of Fish and Game. Project included coastal sage scrub buffer zone around a wetland.

Ocean Trails Habitat Restoration Project, Ocean Trails L.P., City of Rancho Palos Verdes, California. Biological and horticultural monitor at the 92 acres Ocean Trails Restoration Project in Rancho Palos Verdes, California. The Ocean Trails project is restoring coastal sage scrub, southern cactus scrub, and coastal bluff scrub in ruderal and degraded native habitat. The restoration program is creating additional habitat for the federally-listed threatened coastal California gnatcatcher (*Polioptila californica*), which is already expanding into the still developing habitat.

Potrero Canyon Wetland Mitigation Plan, City of Los Angeles Department of Recreation and Parks, City of Los Angeles, California. Developed a riparian mitigation plan for impacts in a coastal canyon being filled to stabilize landslides and prevent further property losses at Potrero Canyon in the Pacific Palisades neighborhood in Los Angeles, California. Made an extensive search for offsite mitigation alternatives in the area. Attended community workshops to explain mitigation and learn neighborhood concerns about the project. Plan was prepared for presentation to the California Coastal Commission.

VIPUL JOSHI
Biologist

EDUCATION

B.S., Evolution, Behavior, Ecology, University of California, San Diego (1997)

EXPERIENCE

Mr. Joshi has five years professional experience as a biological consultant specializing in botanical surveying, permit acquisition, permit compliance, and project management. Mr. Joshi is well experienced with southern California flora and environmental regulations. Mr. Joshi also has had experience managing constraints analysis, entitlement processing, permit acquisition, and biological construction monitoring for a variety of public and private projects.

Mr. Joshi has specific experience with CEQA processing with a variety of local jurisdictions, state and federal Endangered Species Act permit processing, wetlands permitting including Nationwide and Individual Permits from the U.S. Army Corps of Engineers, and management of permit compliance. Specific biological survey skills include full rare plant surveys, focused presence/absence surveys for the state- and federally-listed quino checkerspot butterfly and vernal pool fairy shrimp, project-level vegetation mapping, wetlands delineation, vernal pool identification, vernal pool watershed mapping, and general biological assessment of functions and values.

Cielo del Norte - San Diego County, California. Provided baseline vegetation and rare plant surveys for project in Harmony Grove area. Drafted biological technical report and endangered species permitting strategy for 500-acre development in a critical preserve planning area. Participated in multiple screencheck EIR processing with the County. Provide project management for ongoing entitlement process.

Nickel Creek – Ramona, California. Provided baseline vegetation, wetlands delineation, and rare plant mapping for 14-acre multi-family residential development on the Santa Maria River. Coordinated with architect on least impactive development design and coordinated with County of San Diego to design a multi-use trail connection along the river while avoiding impacts to jurisdictional waters. Provided Biological Resources Technical Report evaluating project impacts pursuant to CEQA.

Manchester Avenue Residential Development – Encinitas, California. Provided project management for entitlement processing of medium-scale residential subdivision on coastal property supporting numbers rare vegetation communities and plant species. Project capabilities included vegetation mapping, rare plant surveys, wetlands delineation, impact assessment pursuant to CEQA, and permitting strategy for impacts to jurisdictional wetlands, state- and federal endangered species.

Levatino Property – Carlsbad, California. Provided biological resource mapping, rare plant surveys, and wetlands delineation for 20-acre property. Evaluated development constraints in consideration of regional planning efforts, state and federal regulations.

Maldanado Property – Carlsbad, California. Provided biological resource mapping, rare plant surveys, and wetlands delineation for 50-acre property. Evaluated development constraints in consideration of regional planning efforts, state and federal regulations.

Santa Fe Meadows – Santa Fe Valley, California. Provided vegetation mapping, rare plant survey, and wetlands delineation for 40-acre residential development area.

Shaw Property – San Diego, California. Provided vegetation mapping, rare plant, and wetlands delineation for 40-acre property.

Via de la Valle – San Diego, California. Provided biological resources mapping, wetlands delineation, rare plants survey, and development constraints analysis for 20-acre property on

Our Lady of Mt. Carmel Catholic Church – San Diego, California. Conducted baseline vegetation surveys, wetlands delineation, rare plants survey, vernal pool identification, and vernal pool watershed mapping. Drafted Biological Resources Technical Report for Mitigated Negative Declaration and participated in community meetings and response to comments. Drafted Resource Management Plan for onsite open space management and avoidance of long-term impacts to adjacent USFWS National Wildlife Refuge property.

Lux Art Institute – Encinitas, California. Provided biological resource mapping, including vegetation mapping, wetlands delineation, and rare plant survey for 20-acre property. Provided constraints analysis, evaluation of project impacts pursuant to a Habitat Loss Permit under Section 4(d) of the federal Endangered Species Act, and management of permit compliance.

Fry's Electronics - San Marcos, California. Provided initial vernal pool identification and mapping, utilizing portable GPS system, wetlands delineation, and rare plant mapping. Rare plant mapping included pool by pool floral inventory and mapping of state- and federally-listed endemic vernal pool plant species.

San Jacinto Valley – Riverside County, California. Provided biological resource mapping, wetland delineation, and rare plant survey for endemic alkali species within San Jacinto River floodplain.

San Marcos Creek Roadway Improvements Project, City of San Marcos, City of San Marcos, California. Delineated wetlands, prepared vegetation map, and conducted rare plant surveys along San Marcos Creek from State Route 78 to Lake San Marcos.

Otay Ranch - Chula Vista, California. Provided biological resource surveys and documentation for various developments covering over 4,000 acres of vacant land. Tasks have included vegetation mapping, rare plants surveys, wetlands delineations, fairy shrimp surveys, and quino checkerspot surveys. Provided Biological Resource Technical Report pursuant to CEQA documentation, assisted in preparation of Second Tier EIR, development wetlands and endangered species permitting strategies, preparing and processing Section 404 Nationwide Permits 14 and 39, Section 401 Water Quality Certification, Section 1601 Streambed Alternation Agreement, and Section 7 Biological Opinion, and managing compliance with various permit conditions.

Irvine Company - Irvine, California. Provided vegetation mapping, wetlands delineation, and rare plant mapping for over 5,000 acres of vacant land.

Fanita Ranch – Santee, California. Provided vegetation mapping, rare plant, and wetlands delineation for 2,000 acre property.

Salt Creek Gravity Sewer - City of Chula Vista, California. Developed project alternatives permitting strategy with City and project engineers for 11-mile gravity sewer along north edge of Otay River Valley. Provided baseline vegetation mapping, wetlands delineation, and rare plant surveys. Prepared biological technical report and EIR biological evaluation for CEQA compliance. Submitted and coordinated acquisition of Section 404 Nationwide Permit 12, Section 401 Water Quality Certification, Section 1603 Streambed Alternation Agreement, and Section 7 Biological Opinion, including identification of mitigation alternatives. Coordinated construction monitoring and permit compliance.

North Agua Hedionda Sewer Rehabilitation - City of Carlsbad, California. Provided project management for half-mile sewer rehabilitation and shoreline protection project adjacent to coastal lagoon. Assignments included vegetation mapping, tidal wetlands delineation, rare plant surveys, development of engineering alternatives, permitting strategies, public scoping meetings, analysis of alternative impacts, EIR biological resources documentation, tidal wetlands mitigation identification, permit preparation for Section 404 Nationwide Permit 14, Section 401 Water Quality Certification, Section 1603 Streambed Alternation Agreement, Coastal Development Permit, Section 7 Biological Opinion, and project planning in terms of scheduling and budget.

Yucapia Non-Potable Water Distribution System, Yucapia Valley Water District, Counties of San Bernardino and Riverside, California. Provided baseline vegetation mapping, wetlands delineation, and rare plant surveys for 500-acre riparian study area.

Pipe 6, Metropolitan Water District – Riverside County, California. Conducted rare plant surveys and quino checkerspot butterfly surveys over approximately 20 mile long alignment.

Perris Valley Storm Drain, Lateral B – Riverside County Flood Control District, California. Provided wetlands delineation and focused rare plant surveys for the two mile long open flood control channel for deepening and widening project. Analyzed CEQA and wetlands permitting strategies and provided Biological Resources Technical Report and wetlands permit applications for Section 404 Nationwide Permits 3, 12, and 14, Section 1603 Streambed Alteration Agreement, and Section 401 Water Quality Certification. Met with ACOE staff to confirm wetlands delineation.

Canada Gobernadora, Santa Margarita Water District, Orange County, California. Conducted rare plant surveys, which included a focused survey for San Diego tarplant (Deinandra [Hemizonia] paniculata), southern tarplant (Centromadia parryi spp. australis), and many-stemmed dudleya (Dudleya multicaulis).

SR-125 South - Caltrans/CTV. Provided support in preparation of Section 7 Biological Assessment and permit compliance negotiations. Conducted vegetation mapping, rare plant, and quino checkerspot surveys for various mitigation site alternatives. Drafted conceptual revegetation and management plans for various mitigation sites including sites on south edge of Otay River Valley, Otay Mesa, and Otay Mountain..

LaBorde Canyon off-Highway Vehicle Park Study, County of Riverside, California. Provided baseline vegetation mapping and plant species inventory.

KIM L. MARSDEN
Botanist/Biologist

As a biologist with more than ten years of experience, Ms. Marsden has successfully conducted a diverse range of botanical and zoological surveys, including focused searches for rare and endangered species in coastal, mountain and desert plant communities. She has developed excellent botanical skills from not only a broad range of field identification experiences throughout the southwestern United States and northwestern Mexico, but training in botanical laboratory techniques used for plant identification, as well. Ms. Marsden has extensive experience in the analyses of potential impacts to species and habitats from proposed development projects. She prepares and reviews technical reports, which provide alternatives recommendations to mitigate these impacts. She has a thorough working knowledge of regulatory issues and applicable laws including the California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), Federal Endangered Species Act (FESA), California Endangered Species Act (CESA), and the Clean Water Act as part of her resource agency experience working as a Botanist/Biologist for the California Department of Fish and Game, U.S. Fish and Wildlife Service, and through her project manager experience in the regulatory branch of the U. S. Army Corps of Engineers. Ms. Marsden has reviewed and commented on numerous proposed mitigation and monitoring plans for sensitive species. She is knowledgeable of, and skilled in, vegetation mapping, mitigation monitoring, and the design of habitat restoration plans. She also has extensive experience in conducting rare, threatened, and endangered animal surveys.

EDUCATION

Completed all required coursework for the Master's Program in Systematic Botany, San Diego State University, 1992-1994. Master's Research Topic: Systematics, ecology and natural history of Northwest American Eryngium species (Apiaceae).

Bachelor of Science, Biology, San Diego State University, 1992.
Associate of Science, Medical Laboratory Technology, San Diego Mesa College, 1988.

PUBLICATIONS

Marsden, Kim L. and Michael G. Simpson. 1999. Eryngium pendletonensis (Apiaceae), A New Species from Southern California. Madroňo, 46:1, 61-64.

EXPERIENCE

1/01-present: Associate Resource Ecologist, California Department of Parks and Recreation, Southern Service Center, San Diego. Design long-term monitoring studies to assess the status and condition of vegetation communities, exotic species infestations, and rare plant populations. Conduct vegetation and rare plant inventories within State Parks in southern California. Assess the impacts of maintenance and

development projects on biological resources within state park units. Provide technical botanical expertise to Service Center staff when requested. Assist in project environmental clearance under CEQA, ESA, and CESA. Assist other resources section staff in biological survey work and data analysis when necessary.

1/00 –1/01: Associate Biologist in Botany, California Department of Fish and Game, Region 5, San Diego Office. Provided technical assistance in developing Habitat Conservation Plans to applicants/jurisdictions seeking take authorization under Section 2835 of the Fish and Game Code (Natural Community Conservation Program). Coordinated with the U.S. Fish and Wildlife Service Habitat Conservation Program staff to ensure HCP conformity with the Federal Endangered Species Act and the California Fish and Game code and other state and federal laws.

9/97-1/00: Fish and Wildlife Biologist/Botanist-U.S. Fish and Wildlife Service, Branch of Habitat Conservation Planning, Ecological Services, Carlsbad Field Office. Provided technical assistance in developing Habitat Conservation Plans to applicants/jurisdictions seeking take authorization under section 10 of the Endangered Species Act. Coordinated with California Department of Fish and Game Natural Community Conservation Program (NCCP) staff to ensure HCP conformity with the Endangered Species Act and the Fish and Game code.

Evaluated and commented on projects impacting U.S. Army Corps of Engineers' jurisdictional Waters of the United States pursuant to the Fish and Wildlife Coordination Act. Consulted and conferred with other federal agencies under section 7 of the Endangered Species Act (Act) to analyze effects of federal actions on species proposed for listing or listed as endangered, threatened under the Act.

Provided technical expertise to Field Office staff in evaluation of revegetation, restoration and enhancement projects of upland, riparian, and wetland habitats. Provided general botanical expertise to Field Office staff biologists when needed.

7/96-9/97: Botanist-U.S. Fish and Wildlife Service-Branch of Federal Projects, Ecological Services, Carlsbad Field Office. Conducted complete biological surveys for plants and wildlife for impact assessments of proposed land and water development projects. Prepared biological technical reports, including analyses of project alternatives developed from the results of directed sensitive species and community surveys. Developed sampling protocols for vegetation communities; provided botanical expertise to staff biologists and made recommendations for resource protection and enhancement. Surveyed for, and monitored the status of, federal candidate, proposed, and listed plant and animal taxa. Assisted in amphibian and reptile pit-fall trapping survey efforts. Provided technical expertise to Field Office staff biologists for evaluation of revegetation, restoration and enhancement efforts of upland, riparian, and wetland habitats.

11/95-7/96: Biologist/Project Manager, U.S. Army Corps of Engineers, Regulatory Branch, San Diego Field Office. Project management, including evaluation of impacts to jurisdictional Waters of the United States, including wetlands, associated with permit requests pursuant to section 404 of the Clean Water Act, section 10 of the Rivers and Harbors Act, and section 103 of the Marine Sanctuaries Act. Processed permit applications, composed letters to applicants, evaluated compliance with permit conditions and coordinated with other agencies regarding proposed permit activities affecting biological, historical and water resources.

3/95-10/97: Botanist (Seasonal), Lake Cuyamaca Recreation and Park District, Julian, California. Project Manager of the Lake Cuyamaca downingia, Lake Cuyamaca larkspur, and Parish's meadowfoam monitoring program. Developed sampling and monitoring protocols for sensitive plant species. Coordinated rare plant monitoring activities in accordance with interagency Memorandum of Understanding guidelines, including mapping of rare plant populations using Geographic Information System (GIS) technology to assess annual boundary changes of plant subpopulations; prepared annual biological technical reports. Supervised and trained field personnel in established survey methodology; ensured thorough documentation of survey and monitoring activities through complete field notes.

KAMARUL MURI
Biologist/Environmental Specialist

EDUCATION

B.S., Ecology Behavior and Evolution, University of California, San Diego (2001)

REGISTRATION/CERTIFICATIONS

US Fish and Wildlife Service Quino checkerspot 10(a) Permit # TE051250-0; issued 3/04/2002, expires 03/03/2006
California Department of Fish and Game Rare, Threatened and Endangered Plant Voucher Collecting Permit # 05077; issued 3/10/2003, expires 3/10/2006.

EXPERIENCE

Mr. Muri has more than two years experience as a consultant and field biologist through involvement in a wide array of projects in San Diego, Riverside, Orange, Los Angeles and San Bernardino counties. Project experience includes biological resource surveys; data collection and analysis; California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) documentation; environmental assessments; wetlands permitting, mitigation design and monitoring; and endangered species surveys. Projects include issues relative to the California Coastal Act, the California Fish and Game Code, the federal Clean Water Act (Sections 401 and 404), the Rivers and Harbors Act, the Coastal Zone Management Act, the Migratory Bird Treaty Act, federal Endangered Species Act (fESA) and state Endangered Species Act (sESA). Mr. Muri currently holds a federal permit to conduct surveys for the federally-listed endangered adult Quino checkerspot butterfly and is working towards obtaining a permit to conduct surveys for the federally-listed threatened coastal California gnatcatcher.

Rancho Santa Fe Road Realignment and Bridge Construction Project, City of Carlsbad, California. Conducting biological monitoring of construction and ensuring compliance with resource permits during construction of the project. Resource permits issued for the project involve the federally-listed threatened coastal California gnatcatcher and wetlands regulated by the California Department of Fish and Game, the U.S. Army Corps of Engineers and the California Regional Water Quality Control Board. Also assisted with breeding season surveys to monitor nesting activity of gnatcatcher pairs located adjacent to the project.

Oceanside to Escondido Bikeway Project, North County Transit District. Cities of Vista and San Marcos, California. Monitored the removal of wetlands vegetation associated with construction activities for the project.

Salt Creek Channel Widening Project, Riverside County Flood Control and Water Conservation District, Riverside County, California. Conducted surveys of an existing smooth tarplant population to identify areas most suitable for translocation in support of a channel widening project. Helped to prepare specifications for the translocation effort and coordinated seed collection.

Perris Valley Lateral 'B' Stage 2 Project, Riverside County Flood Control and Water Conservation District, Riverside County, California. Conducted biological resource mapping, a delineation of jurisdictional wetlands and prepared a biological resources technical report in support of the channel widening project. Project impacts to jurisdictional areas were processed with a joint permit application for compliance with Section 1600 of the California Fish and Game Code, Sections 401and 404 of the federal Clean Water Act (CWA). Compliance with Section 404 of the federal CWA was achieved through the use of several Nationwide Permits for project-related improvements to roads and utilities.

Non-potable Water Distribution System Project, Yucaipa Valley Water District, Riverside and San Bernardino Counties, California. Conducted vegetation mapping and a jurisdictional wetlands delineation within a six-mile study area along San Timoteo Creek and evaluated impacts to undeveloped areas over approximately 200,000 linear feet of proposed non-potable water pipeline. Documents prepared in support of the project include a biological resources technical report and wetlands permit applications. Provided assistance in preparing the Draft Environmental Impact Report/ Environmental Impact Statement in accordance with the California Environmental Policy Act and the National Environmental Protection Act. Used aerial photographs to estimate historical vegetation density within San Timoteo Creek over a 42-year period to support the design of a Habitat Monitoring Program based on adaptive management principles.

San Diego Pipeline No. 6, Metropolitan Water District of Southern California, Riverside County, California. The project consists of a 30-mile nine-foot diameter water conveyance pipeline. Mr. Muri provided assistance in conducting habitat assessments for sensitive and federally-listed wildlife species.

Bark Beetle Tree Removal Project, Southern California Edison, San Bernardino, San Gabriel, and Santa Rosa Mountains, California. Conducting wildlife surveys, botanical surveys, habitat assessments and surveys for sensitive and U.S. Forest Service Threatened, Endangered, and Sensitive species throughout the San Bernardino, San Gabriel and Santa Rosa Mountains along Southern California Edison power line routes. The surveys are supporting implementation of a Bark Beetle tree removal project along existing power lines within Riverside and San Bernardino County.

Southern California Edison Utility Pole Maintenance Project. San Bernardino and San Gabriel Mountains, California. Monitored pole maintenance activities in biologically sensitive areas to ensure avoidance of impacts to potentially-occurring sensitive and U.S. Forest Service Threatened, Endangered and Sensitive species.

Cathedral High School Project, Catholic Diocese of San Diego, City of San Diego, California. Processed wetlands permitting package for the high school project to obtain authorization for impacts to jurisdictional waters under Section 401/404 of the federal Clean Water Act and Section 1603 of the California Fish and Game Code. Also responsible for monitoring construction and ensuring compliance with resource permits during construction of the project.

Beach Street Project, Taylor Woodrow Homes, City of Encinitas, California. Project manager for an 8.3-acre single- and multi-family residential development project on Requeza Street in the City of Encinitas. Conducted biological surveys and prepared a biological resources technical report to support environmental processing of the project pursuant to CEQA. Other tasks managed as part of the project included gaining approval from the City and the California Department of Fish and Game for encroachment into the 50-foot wetlands buffer required according to City guidelines, preparing an application for a Section 1603 Streambed Alteration Agreement to authorize habitat enhancement activities within wetlands onsite, and coordinating the completion of pre-construction nesting bird surveys.

El Apajo Estates Development Project Sensitive Amphibian Surveys. Rancho Santa Fe, California. Assisted with nocturnal relocation surveys for sensitive toad species on the 40-acre El Apajo development property located along the San Dieguito River in Rancho Santa Fe.

Mediterranean Village Residential Development, City of San Diego, California. Provided biological resource mapping, wetlands delineation, and impact analysis pursuant to CEQA.

Trabuco Canyon Private Residence Project, County of Orange, California. Conducted general biological reconnaissance surveys and focused surveys for California gnatcatcher within an undeveloped property near Trabuco Canyon in southern Orange County. Preparing a biological resources technical report to support development permit application.

Costa Del Sol Project, Barratt American, City of San Diego, California. Monitoring construction activities adjacent to sensitive native habitats to be preserved within the Multiple Habitat Planning Area of the City of San Diego's Multiple Species Conservation Program.

White Horse Estates Project, Barratt American, City of San Diego, California. Monitoring construction activities adjacent to sensitive native habitats to be preserved within the Multiple Habitat Planning Area of the City of San Diego's Multiple Species Conservation Program.

Newhall Ranch Rare Plant Surveys, Newhall Ranch and Farming Company, Los Angeles and Ventura Counties, California. Conducted focused surveys for the state-listed endangered San Fernando Valley spineflower and other sensitive plants on approximately 6,000 acres in 2002 and 14,500 acres in 2003. In addition, collected San Fernando Valley spineflower seed from nine occurrences on Newhall Ranch.

Western Riverside County Multiple Species and Habitat Conservation Plan, County of Riverside, Calfornia. Assisted in the document research and preparation of species accounts for endangered, threatened, sensitive and other key species in the County of Riverside.

RELEVANT EXPERIENCE

Attended San Diego Natural History Museum class "Sensitive Butterflies of San Diego County" in December, 2003. The class specialized in the biology and identification of the nine most sensitive butterfly species in San Diego County.

Attended Association of Environmental Professionals "CEQA Basics" seminar in November, 2003.

Attended Building Industry Association seminar on Storm Water Sampling and Analysis Strategy in March, 2003.

CHRISTOPHER E. OESCH
Habitat Restoration Specialist

EDUCATION

M.S., Environmental Systems; International Development Technology Humboldt State University Arcata, California (2003)
B.A., International Agriculture, Eastern Mennonite University (1998)

THESIS WORK

Mr. Oesch's thesis work focused on Hardscape Stream Channel Naturalization. The thesis examines modification of cement channelized stream sections, commonly found in urban settings, for mitigating their negative impacts to native plant and animal populations. This is achieved by incorporating aspects of natural stream hydrology and morphology into an existing hardscape channel. This approach is intended for improving habitat in existing hardscape channels when total removal of the hardscape structure is not an option. The thesis was modeled for the hardscape channel west of I-5 on Rose Creek, San Diego, California.

EXPERIENCE

Upon completing his Bachelors degree in International Agriculture, Mr. Oesch worked on sustainable agriculture restoration and development projects in Guatemala and Honduras. He has recently completed graduate research in hardscape urban wetland restoration modeled for Rose Creek in San Diego, California. He is currently working on a variety of habitat restoration projects at DUDEK involving freshwater marsh, salt marsh, riparian, urbanized/disturbed, chaparral, stream channel, and coastal sage scrub habitats.

Lake Val Sereno/ La Jolla Crossroads Off-Site Mitigation, Encinitas, California.
Mr. Oesch is the project monitor for the La Jolla Crossroads off-site mitigation located at Lake Val Sereno. This project involves the enhancement of 5.37 acres of freshwater wetland to fulfill the requirements of agency permits ACOE NWP-12, CDFG 1601 agreement and RWQCB 401 certification. His duties include advising on the removal of exotic and invasive plant species, documenting progress of planted native plants, collecting quantitative transect data, and recommending courses of action to improve site success in meeting performance standards.

Famosa Slough Saltmarsh/ Sorrento Creek Dredging Mitigation, San Diego, California. Mr. Oesch is the conceptual plan author for a .5 acre enhancement area of saltmarsh. This enhancement is to fulfill mitigation requirements from the Sorrento Creek Maintenance Dredging performed by City of San Diego, Engineering and Capital Projects Department. This project is designed to fulfill the criteria of permits CDFG 1601 and ACOE 404. The enhancement area will include middle and lower saltmarsh plant species, bordered by a coastal sage scrub habitat buffer strip.

Poggi Creek Streambed Modification, Chula Vista, California. Mr. Oesch is the conceptual plan designer for a streambed erosion control project. This grade control structure design uses a low-profile, biodegradable approach to avoid being classified as "channel fill". The intended purpose is to prevent streambed scour, encourage sediment deposition, and promote native freshwater plant species establishment.

Torrey Hills Basin Wetland Mitigation, San Diego, California. Mr. Oesch is project monitor for site involving the creation of approximately 3 acres of wetland habitat to mitigate for impacts of the adjacent Torrey Hills housing development. His duties include advising on the removal of exotic and invasive plant species, documenting progress of planted native plants, collecting quantitative transect data, and recommending courses of action to troubleshoot hydrologic adversities in the performance of the basin's morphology.

Meadowbrook Villages Development Wetland Mitigation Project, Escondido, California. Mr. Oesch assisted in design of the stormwater detention/ wetland creation basin for a retirement development. The basin created opportunity for onsite wetland mitigation as well as provided increased stormflow storage capacity along Reidy Creek to prevent flooding. He also assisted in preliminary soil sampling and biotic surveying.

Las Virginas Creek Hardscape Naturalization Proposal, Los Angeles, California. Mr. Oesch assisted in a proposal for the naturalization of a section of concrete hardscape channel along Los Virginas Creek (see thesis work). Goals of the naturalization would be to create sediment deposition sufficient to grow wetland plant species, add topography to the channel bottom and sides which would encourage a more natural hydrologic regime, and to achieve these goals while passing floodwater efficiently as to not promote flooding.

Vista Sorrento Parkway Alkali Marsh Mitigation Project, San Diego, California. Mr. Oesch is the biological monitor for the project. This includes collecting transect data, recommendations on weed removal and native plant mortality. The project entails creation/enhancement of 1 acre of coastal sage scrub, mulefat scrub, and salt marsh habitats as mitigation for impacts from the Caltrans ROW project.

Los Penasquitos Lagoon Saltmarsh Mitigation Project, San Diego, California.
Mr. Oesch assisted in the monitoring of native saltmarsh and coastal sage scrub habitat including transect data collection, advisement on remedial plantings, and non-native plant removal.

Rolling Hills Ranch Wetland Mitigation Project, Chula Vista, California. Mr. Oesch assisted in annual monitoring efforts and transect data collection for 2 acres of created wetland habitat. This creation area was in mitigation for the surrounding Rolling Hills Ranch housing development.

Green Valley Mobile Home Park Slope Stabilization Project, Vista, California. Mr. Oesch is project monitor for stream-side mitigation project which includes freshwater marsh, riparian and disturbed habitats. This project is designed to fulfill requirements of CDFG 1603 and ACOE 404 permits. Mitigation was triggered when the mobile home park owners placed riprap along the stream banks covering freshwater marsh habitat and disturbing hydrology. His monitor duties include recommendations on weed removal, native plantings and general maintenance.

Summit Ridge Business Park Mitigation Project, San Diego, California. Mr. Oesch is the biological monitor for 10 acres of coastal sage scrub, with a 1 acre freshwater marsh component. This project is mitigation for the development of the Summit Ridge Business Park. His monitoring duties include biotic surveys, transect data collection, weed removal recommendations, and native planted species survival.

Newhall Ranch *Chorizanthe* seed collection, Santa Clarita, California. Mr. Oesch participated with a team of biologists collecting seed of the rare and endangered *Chorizanthe perryi fernadina* (spineflower). Polygons of spineflower locations were GPSed and mapped. Teams then returned to collect seed.

Rose Creek/ Nature School Habitat Enhancement Plan, San Diego, California. Mr. Oesch mapped 13 acres of the Rose Creek riparian corridor directly east I-5. Plants, and habitat locations were GPSed and a biotic survey was taken.

Agricultural Support/ Development Project, El Peten, Guatemala. Mr. Oesch coordinated an agricultural support and development project for several Mayan Indigenous communities in the Peten region of Guatemala. This involved working with government officials for importation of agricultural supplies from Belize, traveling between site locations and exploring possibilities for reestablishing crops. The project was necessitated by crops lost to fire and drought.

Carroll Canyon Emergency Maintenance Sewer Project, San Diego, California.
Mr. Oesch assisted in designating access routes around sensitive habitat for Metropolitan Wastewater vehicles to gain access to sewer clean-out locations.

Sorrento Valley Utilities Revegetation, San Diego County, California. Mr. Oesch monitored work crews in the removal of non-native plant species in biologically sensitive saltmarsh, freshwater marsh, and coastal sage scrub habitats.

Sorrento Creek Maintenance Dredging Project, San Diego, California. Mr. Oesch monitored City of San Diego work crews in removal of sediment from the channel bottoms of Carroll Canyon, Los Penasquitos, and Sorrento creeks. Monitoring was to insure the least possible impacts to surrounding vegetation, aquatic and terrestrial animal habitats. The project site contained potential Clapper rail (*Rallus longirostris*) habitat, which required flushing prior to beginning work in the channel areas. His duties also

included, water samples taken daily and tested for total suspended solids (TSS) to ensure that discharge downstream of the project met TSS level requirements.

Tecolote Canyon Tree-of-Heaven Removal Project, San Diego, California. Mr. Oesch monitored work crews in removal of tree-of-heaven (*Ailanthus altissima*) and other exotics from a section of Tecolote Canyon. His monitoring duties included advisement of routes of least impact to surrounding native habitats, felling trees, and cut biomass dispersal.

KATHERINE RINDLAUB
Biologist

EDUCATION

B.A. Biology, Environmental Biology, Ecology and Evolution, University of California, Santa Barbara (1980)
M.A. Botany (In progress), Ecology and Evolution, University of California, Santa Barbara.

PROFESSIONAL AFFILIATIONS

Member, California Botanical Society
Member, California Invasive Plant Council
Member, Society for Ecological Restoration
Member, California Native Plant Society
Member, Sigma Xi
Member, Southern California Botanists

EXPERIENCE

Ms. Rindlaub is a biologist with more than 15 years experience in preparation of biological assessments, project supervision, compliance monitoring and evaluation, rare plant surveys, vegetation mapping, and habitat restoration. As a revegetation specialist, she oversaw and evaluated the status and effectiveness of habitat restoration programs for the County of Santa Barbara for more than ten years, emphasizing oak woodland restoration. She designed and conducted a 5-year monitoring program for a listed rare plant, followed by preparation of a management plan for a preserve deeded to the California Department of Fish and Game to conserve the same species. She has performed wetland delineations, designed, implemented, and monitored riparian restoration plans. Preparation of biological resource assessments has included development of mitigation measures.

Biological Resources Assessment, 16 Key Sites in Orcutt, Santa Barbara County, California.

Wetlands Delineation, Orcutt Key Site 22, Santa Barbara County, California.

Biological Resources Assessment, Las Positas Storm Drain, City of Santa Barbara, California.

Biological Resources Assessment, Texaco Pipeline Abandonment, Santa Barbara County, California.

Biological Resources Assessment, Harvest Gas Plant Abandonment, Santa Barbara County, California.

Rare Plant Surveys, Newhall Ranch, 2000, Los Angeles County, California.

Las Virgenes Municipal Water District, Los Angeles County, California. Conducted rare plant surveys, mapped vegetation, and evaluated downstream effects on several sites under consideration for reservoirs.

Tajiguas Landfill Expansion Alternatives, County of Santa Barbara. Botanical Resources Constraints Assessment.

Santa Barbara Shores County Park. Cleanup of contaminated soils dating from 1930s oil and gas development. .

Orcutt Community Plan, County of Santa Barbara Planning and Development Department. Prepared biological resources assessment for 16 'Key Sites'.

Las Positas Valley/Northside Pre-Annexation Study, City of Santa Barbara Community Development Department. Prepared biological resources assessment for lands west of city limits.

Pt. Sal Biological Resources Evaluation. Santa Barbara Land Trust, Santa Barbara County. Mapped vegetation and rare plant populations.

Rice Ranch, Orcutt Key Site 12, County of Santa Barbara. Evaluated weaknesses in development plan for effective mitigation measure proposals that included seed mixtures, setbacks, and restoration areas. Located additional wetland areas, assisted in red-legged frog habitat evaluation.

San Marcos Golf Course Habitat Restoration Program. Monitor and evaluate progress of riparian and oak woodland habitat restoration program.

Devereux Creek Restoration, Santa Barbara Shores County Park. Monitor effectiveness and progress toward achievement of restoration goals.

Atascadero Creek Habitat Creation and Restoration Mitigation Plan for County of Santa Barbara Flood Control District. Prepared planting plan, Monitored implementation of restoration plantings, maintenance contractor.

Exxon Santa Ynez Unit, Las Flores Canyon Habitat Restoration Program Evaluation for County of Santa Barbara. Monitor and evaluate effectiveness and progress toward achievement of restoration goals. Oak woodland, riparian, coastal sage scrub, and native grassland restoration.

Pt. Pedernales Pipeline Habitat Restoration Program Evaluation for County of Santa Barbara. Monitor and evaluate effectiveness and progress toward achievement of restoration goals by sampling habitats. Evaluation of oak replacement mitigation plan revision. Oak woodland, Bishop pine forest, and coastal sage scrub.

Pt. Arguello Pipeline Habitat Restoration Program Evaluation for County of Santa Barbara. Monitor progress toward achievement of restoration goals by sampling habitats. Oak woodland, riparian, and coastal sage scrub.

Las Positas Sewer Relocation, City of Santa Barbara, California. Provided and joined construction monitoring team to document implementation of mitigation measures for protection of Endangered Tidewater Goby and riparian habitats.

Level (3) Fiber Optics Cable Directional Drilling, for County of Santa Barbara, California. Supervised monitoring team on directional drilling sites for protection of Tidewater Goby, Red-legged Frog, Southwestern Pond Turtle, Gaviota tarplant, and wetlands.

Las Positas Park Storm Drain, City of Santa Barbara, California. Provided monitoring services during construction to document implementation of mitigation measures for special status species protection and wetland habitat loss.

Cachuma Lake Gabion Wall Construction for Department of Parks and Recreation, County of Santa Barbara. Evaluated impacts, planned and monitored implementation of habitat protection and restoration measures.

All American Pipeline Coastal Segment, Santa Barbara County, California. Monitored implementation of mitigation measures during construction in oak woodland and sensitive plant habitats.

All American Pipeline Company, Santa Barbara County, California. Gaviota Tarplant Mitigation Plan.

Molino Gas Project, Santa Barbara County, California. Gaviota Tarplant Mitigation Plan.

Texaco Pipeline Abandonment, Santa Barbara County, California. Red-legged frog, Tidewater goby, and others.

Pillar Point Air Force Station Management Plan, for Vandenberg AFB. Vegetation and habitat characterization and rare plant surveys on coastal Monterey County site.

Santa Rosa Island, Channel Islands National Park. Focused surveys to determine status, location, and population size of several species of rare plants prior to evaluation for listing.

Newhall Ranch, Los Angeles County, 2000. Focused surveys for San Fernando Valley Spineflower, Newhall Ranch, 2000. Organized, hired, and supervised survey team, and participated in surveys of all areas proposed for development.

Cajon Pipeline Project, Adelanto to Riverside, California. Surveys for rare plants and vegetation mapping.

California Jewelflower, Los Padres National Forest. Focused surveys of historic and potential sites.

Coastal Aqueduct, Devils Den to Avila Beach, California State Water Resources. Rare plant surveys in San Luis Obispo County. Included focused surveys for Hoover's eriastrum and other species located during pipeline route alternative walkovers.

Molino Gas Project, Santa Barbara County, California. Focused surveys for endangered Gaviota Tarplant.

Channel Islands State College Campus, Los Angeles County, California. Focused surveys for *Dudleya verityi, D. blochmaniae*, *Eriogonum crocatum*, and others.

Smith Quarry Expansion, Los Angeles County, California. Surveys for *Dudleya* species, *Eriogonum crocatum*, and others.

PAUL WALSH
Habitat Restoration Specialist/Landscape Architect

EDUCATION

B.S. Landscape Architecture, Cal Poly, San Luis Obispo, CA (1992)
A.A. Horticulture, Orange Coast College, Costa Mesa, CA (1988)

REGISTRATION/CERTIFICATIONS

Registered Landscape Architect #4446 (expires 7/31/05)

PROFESSIONAL AFFILIATIONS

Member, Society for Ecological Restoration
Member, California Native Plant Society
Member, California Invasive Plant Council

EXPERIENCE

Mr. Walsh is a registered landscape architect with specialized expertise in preparing construction documents, performing installation monitoring, and habitat restoration. He has specialized skills using portable global positioning system (GPS) equipment to map existing conditions and create as-built plans. He is experienced in performing site and biological inventories and preparing corresponding maps and reports for use in project design and planning. Mr. Walsh prepares project installation summary reports, wetland delineation reports and conceptual wetland mitigation plans on a regular basis. He has a strong horticultural background including familiarity with ornamental plants as well as California native plants. He is also adept at identifying weed species and control/eradication methods.

Oceanside to Escondido Sprinter Rail Project, North San Diego County Transit District, San Diego, California. Mr. Walsh prepared revegetation plans and specifications in CSI format for onsite and offsite wetlands mitigation. Revegetation plans were prepared for two offsite locations and onsite revegetation. The revegetation plans included wetland creation, enhancement, and restoration of over 30 acres of wetlands in northern San Diego County. The plans were prepared in accordance with the resource agency permits and the conceptual wetland mitigation and monitoring plan. Plans were posted on the project website as work progressed for review by NCTD and project engineers.

Lowe's Santee, Lowe's Home Improvement Warehouse, Santee, California.
Mr. Walsh located suitable mitigation acreage along the San Diego River and helped prepare the conceptual wetlands mitigation and monitoring plan for this project. Following preparation and approval of the conceptual plan by the resource agencies Mr.

Walsh prepared revegetation construction plans that included schematic grading plans, habitat enhancement, planting, seeding, and recycled water irrigation plans. Specifications wee prepared in CSI format for this project.

Lower Rosan-Arroyo Trabuco Revegetation Project, City of San Juan Capistrano Redevelopment Agency, City of Capistrano, California. As Mitigation for an offsite wetlands impact incurred by the City of San Juan Capistrano, Mr. Walsh prepared revegetation plans for a section of Arroyo Trabuco Creek located in the City of San Juan Capistrano. The mitigation area encompassed 9.72 acres and included the removal of several highly invasive plant species and restoring the area to native wetland habitat. Mr. Walsh prepared weed eradication/invasive removal plans, native planting and seeding plans and designed a temporary above-grade irrigation system. The site was recently documented by the California Department of Fish and Game to have Steelhead present which is the first time in recent history that this species has been documented in this area. Mr. Walsh currently oversees long-term biological monitoring and maintenance of the site.

Los Penasquitos Lagoon Salt Marsh Remedial Revegetation Plans, City of San Diego Metropolitan Wastewater Department, San Diego, California. Mr. Walsh and Mr. Sweesy were contacted by MWWD to review a 2.4 acre salt marsh mitigation site that was not meeting the agency required success criteria. The site had been designed and installed by others three years prior. Upon review and analysis of the site Mr. Walsh prepared a summary report detailing the reasons why the project was not performing adequately. Mr. Walsh subsequently prepared remedial revegetation construction plans which included a site grading plan, soil amending, site preparation plan and planting plan. Mr. Walsh monitored the remedial grading and installation work in 2003 and currently performs long-term biological monitoring.

El Apajo Estates Mitigation Plans, A.T. L.L.C., County of San Diego, California. Mr. Walsh worked closely with Dudek biologists to develop wetland mitigation plans for this project which included designing spawning ponds for spadefoot toads and locating protective exclusionary walls to keep the toads from entering into developed areas and streets. Mr. Walsh prepared schematic grading plans for the wetland creation area. The project engineers performed hydrological analyses and finalized the grading plans. Once the grading plans were completed and approved Mr. Walsh prepared the wetland enhancement and creation area construction plans and specifications. Mr. Walsh monitored exotics removal and habitat enhancement work in spring 2004.

Soledad Business Park Bank Protection Project, Newhall Land and Farming Company, Santa Clarita, California. Mr. Walsh mapped the site using GPS technology and the California Native Plant Society's (CNPS) Rapid Vegetation Assessment protocol. Following mapping, inventory and assessment Mr. Walsh prepared a conceptual habitat restoration plan for the project. The project is located within the Santa Clara River floodplain and includes restoring mule fat scrub, cottonwood woodland, and big sagebrush scrub habitats following bank stabilization work. The conceptual plan detailed

restoration methods including plant salvaging, topsoil salvaging, seed and cutting collection, weed abatement, soil imprinting, maintenance, monitoring and several other aspects of habitat restoration.

Parkside Development Project, County of Riverside, California. Mr. Walsh prepared wetland mitigation-revegetation construction plans and specifications for this residential development project located in Riverside County, CA. Revegetation plans included creation and enhancement of 2.75 acres of southern willow scrub and oak riparian forest habitat. The wetlands mitigation was located within the overall project footprint and incorporated into the residential development as an aesthetic feature thereby increasing the value of the property and retaining habitat for local flora and fauna.

Torrey Ranch Project, Torrey Ranch II/Garden Communities, L.L.C., City of San Diego, California. Mr. Walsh prepared revegetation construction plans to restore 2.4 acres of coastal sage scrub located within the City of San Diego's Multiple Habitat Planning Area (MHPA). Part of the MHPA restoration area lies within the development's fuel modification zone which required designing a specialized native plant palette. Mr. Walsh also prepared wetland mitigation plans for this project which are located onsite and outside the MHPA area. The wetlands mitigation plans created 0.7 acres of southern willow scrub and includes a coastal sage scrub buffer zone.

Torrey Del Mar Project, D.R. Horton, City of San Diego, California. Mr. Walsh developed habitat restoration construction plans and specifications for this project in accordance with the resource agency permits, the conceptual wetlands mitigation and monitoring plan, and the City of San Diego's MMRP. Habitat restoration plans included the creation and enhancement of southern willow scrub and mule fat scrub habitat along an existing creek that is tributary to McGonigle Canyon Creek. The wetlands design included a coastal sage scrub buffer zone immediately adjacent to the wetlands mitigation area. The upland buffer was seed imprinted and non-irrigated. The overall mitigation area encompasses approximately 5.0 acres. Mr. Walsh currently oversees long-term monitoring and maintenance of the site. The project is progressing very well at this time including the non-irrigated coastal sage scrub buffer zone.

Student Housing Project, California State University at San Marcos, City of San Marcos, California. Mr. Walsh located an area on CSUSM property to mitigate for impacts associated with the development of CSUSM's Student Housing Project. Once the mitigation site was approved by the resource agencies Mr. Walsh worked closely with the project engineers to develop a wetlands creation area grading plan that would create the appropriate wetland hydrology. Calculations of the local watershed area indicated that proposed site could sustain approximately 2.4 acres of wetlands if properly graded. Geotechnical studies and soil analysis were performed in the proposed creation area as significant excavation would be necessary. Once the research and grading plans were complete Mr. Walsh prepared revegetation construction plans and monitored the

installation which was completed in 2004. Mr. Walsh currently performs long-term biological and maintenance monitoring and prepares corresponding reports.

LJC Val Sereno Offsite Wetlands Mitigation Project, La Jolla Crossroads L.L.C./Garden Communities, City of Encinitas, California. Mr. Walsh prepared the conceptual wetlands mitigation and monitoring plan for this project that enhanced 5.2 acres of wetlands located within the Escondido Creek watershed. Once the conceptual plan was approved and resource agency permits obtained, Mr. Walsh prepared revegetation construction plans and specifications for the project. Mr. Walsh also coordinated with the City of Encinitas and performed public outreach tasks informing neighbors and home owner's associations of the creek enhancement project and anticipated scheduling.

Brookview Interfaith Housing Corporation, Brookview Senior Housing Wetlands Mitigation Project, City of Poway, California. Mr. Walsh prepared habitat restoration plans for this project in order to offset impacts associated with the development of the residential housing complex. Wetlands mitigation was performed onsite by incorporating the creek into the project design. The creek was realigned and included meanders and variable slopes to retain a natural feel. The creek is concrete lined immediately upstream which required lining the restoration site with articulated concrete block (Armorflex) due to the relatively high volume and velocity of the water entering the site. Mr. Walsh worked with the project civil engineers to design habitat restoration plans that would develop and sustain the required wetland habitat while safely conducting water during peak storm flows. The project has been a success and is heavily vegetated with native riparian species. It is anticipated that this project will meet the success criteria early.

Oceanside to Escondido Sprinter Rail Project, North County Transit District (NCTD), San Diego, California. Mr. Walsh performed vegetation mapping and a protocol wetland delineation for this 22 mile long railway project. Once the habitat impacts from the railroad / light-rail transit line were calculated, Mr. Walsh assisted NCTD in the selection of on-site and off-site wetland mitigation areas.

Mr. Walsh reviewed the civil engineer's plans and specifications for compliance with the wetland resource agencies conditions, restrictions, and CEQA biological documentation. Currently, Mr. Walsh is coordinating the design of on-site and offsite wetland mitigation areas with the project civil engineers.

Mr. Walsh performed vegetation mapping, sensitive plant surveys, and quino checkerspot butterfly (Euphydryas editha quino) focused habitat assessment surveys for the following projects:

- Quail Hills, San Marcos, California
- Otay Ranch, Otay, California
- University Commons, Carlsbad, California
- SPA 1, Chula Vista, California

Mr. Walsh also assisted senior DUDEK botanists in conducting endangered and narrow endemic plant surveys.

Moreno Lakeside Pipeline Project, County Water Authority (CWA), San Diego, California. Mr. Walsh performed a wetland delineation and waters of the U.S. analysis along the proposed pipeline alignment. All wetlands and waters of the U.S. under the jurisdiction of the Army Corps of Engineers and California Department of Fish and Game were identified and mapped using a portable GPS unit and topographic maps. Once the field work portion of the delineation was complete, the data were downloaded to a GIS work station and a wetland delineation coverage created. The proposed pipeline alignment, topography, vegetation, and wetland delineation coverages were combined and impacts to wetlands/waters analyzed and quantified by Dudek GIS personnel. Following the data analysis, Mr. Walsh prepared a wetland delineation summary report with delineation maps, graphics, and impact tables for submittal to the CWA and resource agencies. Mr. Walsh is currently performing environmental monitoring during the installation of this project.

Sun Vista Park, City of Encinitas, City of Encinitas, California. Mr. Walsh mapped the existing habitats on-site utilizing a portable GPS unit. Following vegetation mapping and species inventory, Mr. Walsh performed a wetland delineation following the Army Corps of Engineer's 1987 Wetland Delineation Manual protocol. Upon completion of the field work, Mr. Walsh prepared a habitat assessment and wetland delineation summary report that quantified wetland and vegetation resources present on the site. The report was submitted to the City to help them determine the feasibility of the site for development, and for use during the design phase to avoid impacts to natural resources.

CATHLEEN M. WEIGAND
Botanist / Biologist

EDUCATION

Humboldt State University
B.S., Botany and Biology, 2000

PROFESSIONAL CERTIFICATIONS/ REGISTRATION

Certified Wetland Delineator (#2133) - Army Corps of Engineers Wetland Delineation & Management Training Program - 2002
U.S.F.S. Wildland Firefighter Red Card Certified - 1999
California Department of Fish and Game Rare, Threatened and Endangered Plant Voucher Collecting Permit (#05005)
New Dawn Center (Finca Alba Nueva), San Isidro, Costa Rica
Senior Thesis Study, 1997

PROFESSIONAL AFFILIATIONS

California Native Plant Society
Southern California Botanists

EXPERIENCE

Cathleen Weigand is a botanist/biologist with over four years experience in field studies, environmental document preparation, habitat restoration and conservation, vegetation resource mapping, and biological assessments. Project experience includes biological resource surveys, data collection and analysis, environmental assessments, wetlands delineations, permitting, mitigation design, implementation and monitoring, and endangered and sensitive plant species surveys. Projects include issues relative to the California Coastal Act, the California Department of Fish and Game Code (Sections 1601 and 1603), and the federal Clean Water Act (Sections 401 and 404). Ms. Weigand has engaged in interagency coordination and public outreach efforts due to the complexities of each project.

Ms. Weigand's current role at Dudek & Associates includes biological resources assessment and impact analysis, preparation of biological reports, vegetation mapping, endangered and sensitive plant species surveys, wetlands delineations and permitting, permit preparation for projects located within the coastal zone in southern California, preparation of Conceptual Mitigation and Monitoring Plans, tree inventory studies, and habitat restoration and monitoring.

Focused Botanical Surveys. Newhall Ranch, Los Angeles County, California. Conducted rare plant surveys for the state-listed endangered San Fernando spineflower (*Chorizanthe parryi* var. *fernandina*) and other sensitive plants on approximately 6,000 acres in 2002 and 14,500 acres in 2003.

El Fuerte project, Carlsbad, California. Conducted rare plant surveys for Carlsbad Habitat Management Plan (HMP) listed, federal- and state-listed species on approximately 4 acres in 2003.

Ramblas de las Flores project, Rancho Santa Fe, California. Conducted rare plant surveys for federal- and state-listed species on approximately 47 acres in 2003.

Fanita Ranch project, Santee, California. Conducted rare plant surveys for federal- and state-listed species on approximately 2,592 acres in 2003.

Schindler and Johansen projects, Temecula, California. Conducted rare plant surveys for federal- and state-listed species on approximately 20 acres in 2003.

Metropolitan Water District of Southern California - San Diego Pipeline No. 6, San Diego, California. Conducted rare plant surveys for federal- and state-listed species within project area in 2003. Project consists of a 30 mile 9 foot diameter water conveyance pipeline.

Conservation Planning. Ms. Weigand serves on the Dudek project team preparing the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) which cover approximately 1.2 million acres. Ms. Weigand provides assistance with the adaptive management plan of the reserve system, research on potentially covered plant species, and document preparation.

Regional Resource Planning. Ms. Weigand serves on the Dudek project team preparing the Southern Orange County Natural Communities Conservation Planning (NCCP) effort covering an area of 131,000 acres, five local jurisdictions, and a portion of the Cleveland National Forest. Ms. Weigand provides assistance with resource inventory and evaluation of sensitive plant species habitat.

Utility Pole Maintenance Project. San Bernardino and San Gabriel Mountains, California. Conducted botanical surveys and surveyed for sensitive and U.S. Forest Service Threatened, Endangered, and Sensitive species at pole replacement locations.

Bark Beetle Tree Removal Project. San Bernardino and San Gabriel Mountains, California. Conducted botanical surveys and surveyed for sensitive and U.S. Forest Service Threatened, Endangered, and Sensitive species along Southern California Edison power lines.

Residential Development Projects. Conducted biological surveys, vegetation mapping, wetlands delineations and prepared wetlands permits, and coordinated with resource agencies for public and private development projects within San Diego, Orange, Riverside, and San Bernardino counties.

Sewer Realignment Project. Conducted biological surveys, vegetation mapping, and wetlands delineations for sewer realignment projects within the City of San Diego, California.

California Department of transportation Stormwater BMP Piolet Study and Statewide Wet Basin Projects. Statewide, California. Conducted botanical surveys for the BMP pilot study and wet basins projects to account for potential endangered species issues related to installation of the BMP's in Santa Barbara, San Luis Obispo and Monterey counties.

ADDITIONAL EXPERIENCE

Experience with seed and plant propagation

Greenhouse work (Humboldt State University- volunteer): watering, caring and maintenance of plants, re-potting/propagation, nomenclature of species housed in greenhouse, and preparation of species used for classroom and experimental purposes.

Horticulture and nursery experience: watering, fertilizing, caring and maintenance of plants, propagation (plant cuttings, roots, and seeds), re-potting, installation and design of irrigation systems.
Experience with growth chambers, preparation and implementation of fertilizers and composts, and the irrigation of greenhouses and farm properties.

Riparian and wetland revegetation implementation.

Seed and pollen collection.

Supervising of farm and revegetation crews.

Implementation of farm crops, community and personal gardens using sustainable agricultural practices.

Revegetation and landscape design and implementation, monitoring, maintenance, and data collection.

TRICIA WOTIPKA
Environmental Specialist / Biologist

EDUCATION

B.S., Wildlife and Fisheries Science, Pennsylvania State University (2000) -Dean's Honor List, Fall 1998 - Spring 2000

PROFESSIONAL AFFILIATIONS

Audubon Society, 2000
Member, Women's Environmental Council
Secretary, 2001
Newsletter Chair, 2002
Member, Southern California Botanists

PROFESSIONAL CERTIFICATIONS

CDFG Rare, Threatened, and Endangered Plant Voucher Collection Permit (05078)

EXPERIENCE

Ms. Wotipka has over three years experience in environmental document preparation and resource conservation planning. Project experience includes vegetation mapping, rare plant surveys, general wildlife surveys, biological resource surveys, data collection and analysis, environmental assessments, wetlands delineations, permitting, mitigation design and monitoring, and endangered species surveys. Projects include issues relative to the California Fish and Game Code, the federal Clean Water Act (Sections 401 and 404), the National Environmental Policy Act (NEPA), the Migratory Bird Treaty Act, and the Endangered Species Act (ESA). Ms. Wotipka has also trained with the Wetlands Training Institute, Inc. and has successfully completed a course in basic wetlands delineation.

PROFESSIONAL ASSIGNMENTS

Pipeline Relocation along Gird Road, Rainbow Municipal Water District, San Diego County, California. Conducted vegetation mapping and wetlands delineation for this pipeline relocation project, necessitated due to a bridge expansion along Gird Road. Prepared and processed permits from ACOE, CDFG and RWQCB and prepared Addendum to County of San Diego MND. The project involved the addition of relocating a pipeline in this bridge expansion project. Issues discussed include impacts to state and federal jurisdictional wetlands, community character and traffic.

Aliso Creek Emergency Sewer and Park Improvements, Moulton Niguel Water District, County of Orange, California. Conducted vegetation mapping and wetlands delineation for sewer pipeline relocation and trail relocation. Prepared and processed

permits from ACOE, RWQCB and CDFG for impacts to non-tidal wetlands along Aliso Creek within the Aliso and Wood Canyons Wilderness Park. Assisted in conducting focused rare plant surveys for the federally-listed threatened and state-listed endangered thread-leaved brodiaea (Brodiaea filifolia). Prepared biological resources technical report in support of a CEQA document and assisted in the preparation of a conceptual wetlands mitigation and monitoring plan for onsite mitigation.

Railway Expansion Project. Sorrento-Miramar Curve Realignment and Second Main Track Project. City of San Diego, California. Conducted vegetation mapping and field surveys for sensitive, state- and federally-listed plant species on approximately 190 acres.

San Marcos Creek Roadway Improvements Project, City of San Marcos, City of San Marcos, California. Prepared a Section 404 and 401 permit application in accordance with the federal Clean Water Act and a 1601 Streambed Alteration Agreement in accordance with California Fish and Game Code.

Sorrento-Miramar Curve Realignment and Second Main Track, North County Transit District, City of San Diego. Conducted a delineation of "waters of the United States" under the jurisdiction of the ACOE, CDFG, and California RWQCB and assisted in conducting rare plant surveys within the project study area, which occupies approximately 180 acres along the linear rail corridor.

Telegraph Canyon Road Widening Project, City of Chula Vista, City of Chula Vista, California. Prepared and processed a Water Quality Certification application pursuant to Section 401 of the federal Clean Water Act and a Streambed Alteration Agreement pursuant to Section 1601 of the California Fish and Game Code.

San Marcos Creek Roadway Improvements and Flood Protection Project, City of San Marcos, City of San Marcos, California. Prepared a Section 404 and 401 permit application in accordance with the federal Clean Water Act and a 1601 Streambed Alteration Agreement in accordance with California Fish and Game Code.

Poway Creek Channel Maintenance Project - City of Poway, California. Provided baseline biological surveys for channel maintenance project consisting of silt removal affecting over three acres of riparian habitat.

Homestead Dam, Commanding General MCAS Miramar, County of San Diego, California. Conducted biological surveys including vegetation mapping, wetlands delineation and focused surveys for willowy monardella. Prepared BA for section 7 consultation between MCAS Miramar and FWS for coastal California gnatcatcher. Project included maintenance activities to an existing dam in accordance with the Dam Safety Maintenance and Repair program, including replacement of outlet pipe, installation of erosion control devices for bank stabilization, removal of woody vegetation from the dam surface and revegetation with non-woody native plants.

Old Mission Dam, City of San Diego Parks and Recreation Division, San Diego, California. Assisted in wetlands delineation and vegetation map upstream of the historic Old Mission Dam.

Salt Creek Channel Stage 6 Channel Widening Project, Riverside County Flood Control and Water Conservation District, County of Riverside, California. Delineated wetlands and prepared vegetation map along the approximately five-mile alignment.

El Cuervo Norte Project, City of San Diego, City of San Diego, California. Conducted a delineation of "waters of the United States" and wetlands under the jurisdiction of the U.S. Army Corps of Engineers, California Department Fish Game, and California Regional Water Quality Control Board for the 24-acre Wetlands Mitigation Site for State Route 56 located within the Los Penasquitos Canyon Preserve along Los Penasquitos Canyon Creek.

Valpreda Footbridge Crossing Project, City of San Marcos, City of San Marcos, California Conducted a delineation of "waters of the United States" and wetlands under the jurisdiction of the U.S. Army Corps of Engineers, California Department Fish Game, and California Regional Water Quality Control Board for the approximately two acre site. The jurisdictional delineation was conducted to determine the biological constraints on the site during the due diligence phase of the project.

La Jolla Crossroads, La Jolla Crossroads, LLC, City of San Diego, California. Prepared and processed wetlands permits from ACOE, RWQCB and CDFG for impacts to non-tidal wetlands for mixed-use, in-fill project. Prepared alternatives analysis and functional values assessment. Evaluated wetlands mitigation sites and prepared conceptual wetlands mitigation and monitoring plan. Prepared CEQA Addendum for CDFG and conducted community outreach meetings for wetlands mitigation site.

Newhall Specific Plan, Newhall Land and Farming, Inc., counties of Los Angeles and Ventura, California. Conducted focused surveys for sensitive plant species, including the state-listed San Fernando Valley spineflower and participated in San Fernando Valley spineflower seed collection.

East Grove, Lyon Homes, Inc., City of Escondido, California. Prepared alternatives analysis, Public Notice and EA for ACOE.

University Commons Development Project, Brookfield Homes, City of San Marcos, California. Performed a delineation of "waters of the United States" and wetlands under the jurisdiction of the U.S. Army Corps of Engineers and California Department of Fish and Game on approximately 400-acres. Prepared and processed a Section 404 and 401 permit application in accordance with the federal Clean Water Act and a 1603 Streambed Alteration Agreement in accordance with California Fish and Game Code. In addition, Dudek conducted focused surveys for least Bell's vireo, quino

checkerspot butterfly, arroyo toad, southwestern willow flycatcher, and California gnatcatcher.

Gateway Vista de Oro Residential Development, Gateway Vista de Oro, L.L.C., City of Vista, California. Conducted a delineation of "waters of the United States" and wetlands under the jurisdiction of the U. S. Army Corps of Engineers (ACOE) and California Department of Fish and Game (CDFG). Obtained a Section 401 permit application in accordance with the federal Clean Water Act and a 1603 Streambed Alteration Agreement in accordance with California Fish and Game Code. Conducted a pre-construction nesting bird survey within the wetlands habitat and coordinated with the client regarding tree removal and mitigation planting installation.

Lowe's Retail Store, Lowe's, Inc., City of Santee, California. Conducted biological surveys including vegetation mapping and wetlands delineation. Obtained permits from ACOE, RWQCB and CDFG for impacts to non-tidal wetlands. Conducted informal consultation with FWS for least Bell's vireo. Prepared alternatives analysis and functional values assessment.

Western Riverside Multiple Species Habitat Conservation Plan (MSHCP), County of Riverside, County of Riverside, California. Research for potentially covered plant species followed by syntheses of ecological information into species accounts.

Newhall Ranch Project, Newhall Land and Farming Company, Los Angeles and Ventura County, California. Conducted focused surveys for the state-listed endangered San Fernando Valley spineflower (Chorizanthe parryi var. Fernandina) and other sensitive plants on approximately 6,000 acres in 2002 and 14,500 acres in 2003. In addition, collected San Fernando Valley spineflower seed from nine occurrences on Newhall Ranch.

PUBLICATIONS

Researched and prepared the introduction of the "Spring Creek Watershed Water Sampling Protocol" for the Clearwater Conservancy, State College, Pennsylvania - Fall 1999.

Compliance Biology

David G. Crawford

President/Principal Biologist
Compliance Biology, Inc.

David Crawford is the owner and principal biologist of Compliance Biology, Inc. He has over 11 years of professional experience with specialties in fisheries and wildlife ecology. He has managed and conducted a variety of aquatic and terrestrial studies including endangered species surveys, biological assessments, biological constraints analyses, mitigation monitoring plans, habitat evaluations, and environmental document preparation. During Mr. Crawford's career, he has conducted over 20,000 cumulative trap-nights surveying small mammals in a variety of habitats in California and has conducted over 1,600 field hours of aquatic sampling in rivers, streams, estuaries, and ponds. He has a thorough understanding of both State and Federal Endangered Species Acts, holds a current Section 10(a)(1)(A) Endangered Species Recovery permit to survey for California gnatcatcher (*Polioptila californica*), tidewater goby (*Eucyclogobius newberryi*), and unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), and is authorized by the US Fish and Wildlife Service to survey for arroyo toad (*Bufo californicus*), and California red-legged frog (*Rana aurora draytonii*). Mr. Crawford has also been included in several State Memoranda of Understanding (MOUs). In addition to listed species, he as also conducted numerous special-status reptile and amphibian, fish, bird, and small mammal surveys under state and federal permits throughout southern California.

Representative Professional Experience

Governmental Services

Mr. Crawford provides assistance to City governments with projects involving environmental document review and advises on major biological issues. In this capacity he currently serves twice weekly as the City Biologist for the City of Malibu. Duties include regular correspondence with the public and local officials, review of general landscape plans to ensure compliance with local ordinances, review of biology sections in EIRs, Chair of the Environmental Review Board, and interpretation and implementation of the Malibu Local Coastal Plan as certified by the California Coastal Commission.

Project Management

As Principal Biologist, Mr. Crawford manages general day to day operations of his consulting business located in Camarillo, California. He has written and contributed to numerous biology sections for CEQA and NEPA documents including EIRs, EISs, Biological Assessments, and Mitigated Negative Declarations. Mr. Crawford has also conducted and managed numerous focused endangered species projects throughout southern California. Management tasks include scoping and cost estimating, communication with clients and state and federal agency personnel, managing sub-consultants, field surveys, and development and/or editing documentation of survey results. Projects also often include managing the preparation and implementation of suitable mitigation and monitoring programs.

Environmental Compliance

- Designed and implemented several on-site relocation programs for western spadefoot toad populations in Los Angeles and Ventura Counties. Tasks included design and construction of relocation ponds, capture, harboring, and relocation of tadpoles and adult toads, habitat enhancement and restoration, and the design of five year monitoring plans. Mr. Crawford works closely with senior CDFG wildlife biologists on each of these projects.

- Manages preconstruction surveys and monitors preconstruction activities for major development projects pursuant to state and local regulatory agency requirements.

- Designed and manages a habitat restoration mitigation and monitoring plan for Newhall Land's Hasley Creek stream alteration project. Tasks included determination of plant species assemblage, relocation area selection, supervision of non-native plant removal and native stock plantings, and preparation and management of a 5-year monitoring plan.

- Manages several wetland delineation projects in Los Angeles and Ventura Counties pursuant to California Department of Fish and Game and US Army Corps of Engineers' survey standards. These projects also include impact analyses for associated development projects and mitigation/monitoring plans where appropriate.

- Prepared multiple biological assessments consistent with requirements for the California Coastal Commission. Tasks include site evaluations, impact analyses, report preparation, and mitigation/monitoring plans where appropriate.

- Conducted numerous constraints-level analyses of biological resources for due diligence purposes throughout southern California. Tasks include literature search for special-status species occurrences and on-site habitat evaluations to determine site potential to support special-status species.

- Designed and implemented mitigation relocation plan for southwestern pond turtles and two-striped garter snakes for the Dos Vientos project in Newbury Park, California.

- Participated in the development the development of the biological resources section of the Playa Vista EIS/EIR and Ballona wetlands restoration plan data collection. Duties included over 4,000 trap-nights of focused pacific pocket mouse and saltmarsh shrew surveys, coordination of and participation in marine, estuarine, and freshwater fisheries surveys, as well as focused sensitive reptile surveys.

- Participated in a 7,500 cumulative trap-night small mammal survey for the U.S. Army Corps of Engineers Land Condition Trend Analysis study at Camp San Luis Obispo and Camp Roberts in San Luis Obispo and Monterey counties. Duties involved live trapping, handling and identifying several small rodent species including the sensitive Salinas pocket mouse and Monterey dusky-footed woodrat.

Selected Focused Studies

- Manages and conducts on-going focused surveys for the unarmored threespine stickleback (UTS) within approximately 12 miles of drainage courses including the Santa Clara River and San Francisquito Creek in the Santa Clarita area, in Los Angeles and Ventura Counties. Tasks include focused presence/absence surveys and reporting for UTS and other special-status aquatic vertebrates.

- Conducted several focused surveys for western spadefoot toad in Ventura and Los Angeles Counties resulting in the documentation of multiple previously unknown populations. Mr. Crawford has also been responsible for housing numerous spadefoot tadpoles, juveniles and adults in preparation for relocation under the direction of CDFG.

- Completed numerous Essential Fish Habitat (EFH) assessments in coastal waters of Ventura and Los Angeles Counties following survey guidelines established by the National Marine Fisheries Service.

- Performed numerous focused surveys for the California gnatcatcher in Ventura, Los Angeles, Riverside, San Bernardino and Orange Counties. Tasks included focused presence/absence surveys and reporting following U.S. Fish and Wildlife Service recommended survey protocol guidelines.

- Performed numerous focused presence/absence surveys for tidewater goby in San Luis Obispo, Santa Barbara, Ventura, and San Diego Counties. Tasks include seining and identification of species captured and reporting results.

- Performed focused surveys and habitat evaluation for the arroyo toad on approximately 8 miles of drainage courses including the Santa Clara River and its major tributaries in the Santa Clarita area, Los Angeles County. Tasks included focused presence/absence surveys for arroyo toad following U.S. Fish and Wildlife Service recommended protocol survey guidelines. Additionally, a comprehensive habitat analysis was conducted throughout the study reach including upland habitats extending approximately 500 meters outward from the stream channels surveyed. Surveys also included identification of special-status aquatic reptiles and habitat evaluation for California red-legged frog.

- Managed and conducted numerous habitat analyses and focused protocol surveys for Delhi sands flower-loving fly in Riverside and San Bernardino Counties. Tasks included focused presence/absence surveys for DSF following US Fish and Wildlife Service recommended protocol surveys guidelines and preparation of comprehensive reports to clients and the Service.

- Performed burrowing owl surveys and implemented exclusion mitigation plans for numerous projects in Los Angeles, San Bernardino and Riverside Counties, California. Tasks included walk-over surveys to determine presence/absence of burrowing owls and to identify potential owl burrows. Several surveys resulted in implementation of passive relocation programs.

- Conducted habitat evaluations, and focused USFWS protocol surveys for special-status wildlife species on Tejon Ranch in Kern County including San Joaquin kit fox, blunt-nosed leopard lizard, western spadefoot, and Tehachapi slender salamander.

- Conducted and participated in California red-legged frog habitat evaluations and focused surveys in Los Angeles, and Ventura Counties. Tasks included evaluation and mapping of potential red-legged frog habitat, basic water quality evaluations, and potential prey base evaluations.

Professional History

Compliance Biology, Inc. – Owner/Principal Biologist; May 2002 - Present
Impact Sciences, Inc. - Senior Biologist; May 1995 – May 2002
Crawford Ecological Surveys – Principal Biologist; June, 1994 – May 1995
Cal Poly San Luis Obispo

- Wildlife Technician; U.S. Army Corps of Engineers, LCTA Program; March 1994 – June 1994
- Wildlife Technician; Kit Fox Recovery Program; January 1994 – March 1994

Manager Alba Plastics, Sydney, NSW Australia May 1987-April 1989
US Navy April 1977-October 1986

Education and Certifications

Bachelor of Science, Ecology and Systematic Biology (Fisheries and Wildlife Science Concentration); California Polytechnic State University at San Luis Obispo; 1994
Joint State and Federal Scientific Collecting Permit # 801085-01
Federal Section 10(a)(1)(A) Endangered Species Recovery Permit for Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*), Tidewater Goby (*Eucyclogobius newberryi*), and coastal California gnatcatcher (*Polioptila californica californica*). Permit #TE-821229-4.
Authorized surveyor for Arroyo Toad (*Bufo californicus*) and California red-legged frog (*Rana aurora draytoni*).
Certification, Desert Tortoise: handling, burrow construction, and egg handling techniques. U.S. Fish and Wildlife Service approved workshop and training session.
Certification, Advanced Open Water Diver, PADI

Professional Affiliations

The Wildlife Society
American Fisheries Society
American Society of Mammalogists

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Hemet, California 92544
e-mail: bugguy@pe.net

Home (909) 927-4170
FAX (909) 927-3605

Guy P. Bruyea
Entomologist/Biologist

Education

Bachelor of Science, Arizona State University, Tempe, Arizona, 1985.

Continuing education in the biological sciences at Riverside Community College, Riverside, California, 1991-1993. Coursework in General Entomology, Ecology, Organic Chemistry, Microbiology, General and Field Botany.

Experience

1992 - present **Bruyea Biological Consulting,** Hemet, California.
Owner and Principal Biologist.

1990 – present **University of California, Riverside**, California.
Entomology Museum. Research Associate.

1990 - 1995 **University of California, Riverside**, California.
Department of Entomology. Laboratory Technician and Research Associate.

1986 -1987 **Tierra Madre Consultants**, Riverside, California.
Administrative Secretary and Field Biologist.

Mr. Bruyea has been studying and surveying for insects in southern California for over twenty five years. He is well-versed in southwestern U.S. insect taxonomy, especially Coleoptera (beetles) and Lepidoptera (butterflies and moths). He has a good understanding of plant taxonomy in the southwestern U.S. and is interested in most aspects of natural history. Independent research efforts include the distribution, life history, and pheromone characteristics of buck moths in the genus *Hemileuca* (Lepidoptera: Saturniidae) of the western United States. In addition, he is currently conducting taxonomic studies of jewel scarab beetles in the genus *Chrysina* (Coleoptera: Scarabaeidae). In 1999 and 2000, he assisted Dr. Ronald Cave (Escuela Agricola Panamericana de El Zamarano, Honduras) and David Hawks (University of California, Riverside) in population studies of *Chrysina* species in Honduras, in part funded by the National Geographic Society.

As an entomological consultant, Mr. Bruyea has been involved in numerous biological resource site analyses in southern California for endangered and/or sensitive invertebrates including (but not limited to) the following:

Quino Checkerspot Butterfly (*Euphydryas editha quino*)
Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*)
El Segundo Blue (*Euphilotes battoides allyni*)
Palos Verdes Blue (*Glaucopsyche lygdamus palosverdesensis*)
Wandering Skipper Butterfly (*Panoquina errans*)
San Emigdio Blue (*Plebulina emigdionis*)
Tehachapi Silverspot (*Speyeria egleis tehachapina*)

Coachella Valley Giant Sand-treader Cricket (*Macrobaenetes valgum*)
Coachella Valley Jerusalem Cricket (*Stenopelmatus cahuilaensis*)
Coachella Valley Grasshopper (*Spaniacris deserticola*)

In addition, Mr. Bruyea has performed biological monitoring, general biological evaluations and other focused surveys in association with non-invertebrate taxa since 1986, including surveys for Stephens' Kangaroo Rat (*Dipodomys stephensii*), Coastal California Gnatcatcher *(Polioptila californica californica*), western burrowing owl (*Speyotyto* (*Athene*) *cunicularia*), Desert Tortoise (*Gopherus agassizii*), and other sensitive and/or threatened mammals, birds, reptiles and plants.

Consulting responsibilities have included the identification of potentially sensitive habitat, mapping, site monitoring, biological inventories, the development of mitigation plans, constraints analyses, and invertebrate surveys involving the establishment of field trials, malaise, flight intercept, pan and pitfall trapping methods, reintroduction programs, mark/recapture studies, host/predator relationships, and literature and museum record searches. Mr. Bruyea has over fifteen years of experience as a biological (primarily entomological) consultant in southern California and has performed many environmental surveys for city and county agencies, the Metropolitan Water District, Southern California Gas Company, the Department of the Navy, the building industry, and other organizations. Consulting projects have included (but are not limited to) a year-long sensitive and general invertebrate survey on Point Loma for the Department of the Navy in San Diego; presence/absence surveys for the endangered Quino Checkerspot Butterfly (*Euphydryas editha quino*) for the Metropolitan Water District, Southern California Gas Company, and many other clients in Riverside and San Diego Counties; a five-year study of the Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) at the San Bernardino County Hospital site in Colton; numerous Delhi Fly surveys at other locations in Ontario, Fontana, Rialto and Colton since 1993; participation in a population monitoring project for the El Segundo Blue Butterfly (*Euphilotes battoides allyni*) for the Los Angeles International Airport; surveys for the endangered Palos Verdes Blue Butterfly (*Glaucopsyche lygdamus palosverdesensis*); a one year sensitive insect study at Owens Lake for the Great Basin Air Pollution Control District; and studies of sensitive and other insects inhabiting the Ballona Wetlands (Marina Del Rey), Big Canyon (Newport Back Bay), Ormond Beach (Oxnard), and Tejon Ranch (Kern County).

Current Section 10(a)(1)(A) Permits
A valid U.S. Fish & Wildlife Service Recovery Permit (Number TE-837439-4) is held for the Quino Checkerspot Butterfly and Delhi Sands Flower-loving Fly, both federally endangered, and the federally threatened California gnatcatcher.

Mr. Bruyea has held recovery permits for the federally endangered El Segundo Blue Butterfly, Palos Verdes Blue Butterfly and Laguna Mountains Checkered Skipper. These can be updated upon request.

Memberships
Coleopterist's Society
Xerces Society
Lepidopterist's Society
Friends of the Entomology Research Museum, University of California, Riverside
Audubon Society
California Native Plant Society
The Nature Conservancy

Awards
Edmund C. Jaegar Scholarship for Potential Contribution to Field Biology, Riverside Community College, Riverside, California, 1992.

Personal Information Mr. Bruyea was born February 12, 1962, and enjoys entomological research, invertebrate photography, hiking, and classroom presentations on entomology. References concerning Mr. Bruyea's entomological experience and publications are available upon request.

FORTHCOMING WILL BE INCLUDED UPON FINAL SUBMITTAL

ECOLOGICAL SCIENCES

CURRICULUM VITAE

Scott Cameron, Principal Biologist

Overview of Professional Experience

Mr. Cameron is the Principal Biologist of Ecological Sciences, Inc. Mr. Cameron has extensive experience in sensitive biological resources inventories, endangered species surveys, general wildlife biology, environmental mitigation monitoring, and wildlife and botanical habitat evaluations in the California counties of Riverside, San Bernardino, Los Angeles, Kern, San Diego, Orange, Fresno, Kings, Tulare, Santa Barbara, Alameda, Ventura, Santa Barbara, Monterey, Imperial, Del Norte, Sacramento, and San Joaquin. Mr. Cameron has extensive survey experience in Wyoming and Nevada as well. He provides project management and direction, preparation of environmental documents under the Endangered Species Act (ESA) and California Environmental Quality Act (CEQA), endangered species expertise, biological resources consultation, biological construction monitoring and sensitive biological resources educational training for a wide range of projects. Residential/commercial/industrial development projects, electrical transmission line and pipeline projects, oil industry projects, transportation and, and facility siting studies are some examples. He develops and implements mitigation and monitoring plans, permitting strategies, manages construction monitoring, and provides endangered species permitting assistance. Mr. Cameron also conducts wetland delineations and permitting per U.S. Army Corps of Engineers (USACOE) and California Department of Fish and Game (CDFG) requirements.

Documentation experience includes preparation of numerous environmental and biological assessments, biology sections of Environmental Impact Reports (EIRs), and mitigation/monitoring plans. Mr. Cameron also has extensive experience in CEQA compliance, preparation of Habitat Conservation Plans, and federal Section 7 consultations. Mr. Cameron has handled thousands of small mammals (55,000+ cumulative trapnights and over 5,000 individual captures) in California and Wyoming, and has been included in multiple Memoranda of Understanding (MOUs) throughout California and Nevada. He has designed numerous study plans to evaluate the presence/absence of special-status invertebrates, birds, reptiles, amphibians, and small mammals. He has also handled and/or surveyed for sensitive, threatened, and endangered birds, reptiles, and mammals under federal and state permits.

Mr. Cameron currently holds five federal Section 10(a) permits to conduct focused surveys for Delhi sands flower-loving fly, coastal California gnatcatcher, arroyo toad, California red-legged frog, and Pacific pocket mouse (1996-2005). Mr. Cameron is also certified to conduct surveys for the flat-tailed horned lizard and has been approved on numerous projects by USFWS to conduct desert tortoise surveys.

Selected Linear Projects

Southern California Gas Company/Sempra Energy. Principal Investigator for management and implementation of The Southern California Gas Company's Programmatic Permit/Biological Opinion, Northern Service Territory. Responsible for environmental compliance throughout the permit area, which included various linear facilities in Fresno, Kings, Kern, and Tulare counties. Also conducted numerous pipeline assessments in Los Angeles, Ventura, and Santa Barbara counties. Responsible for inventory of rare, threatened, and endangered plant and animal species using various field techniques.

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email: scameron@ecosciencesinc.com

Southern California Gas Company/Sempra Energy. Principal Investigator for sensitive avian species and environmental monitor for Line 6900, Riverside County, California. Responsible for focused California gnatcatcher surveys, worker education, and environmental compliance along the pipeline ROW.

Snow Valley Ski Area. Principal Investigator for siting a proposed water pipeline and evaluating suitable habitat to support the mountain yellow-legged frog, San Bernardino mountain kingsnake, southern rubber boa, two-striped garter snake, southwestern pond turtle, and sensitive plant species in the Big Bear area of the San Bernardino Mountains.

Kern River Gas Transmission Company. Pipeline Monitor/Staff Biologist for the performance of numerous preconstruction surveys along portions of the approximately 900 mile-long Kern River natural gas pipeline from Wyoming to California. Responsible for endangered species education and training programs, construction personnel supervision, coordination of environmental monitors, and production of regular activity reports to document the implementation of mitigation measures detailed in the Biological Opinion. Monitored all phases of construction throughout known sensitive species habitat. Documented all sensitive biological resources encounters and performed sensitive wildlife handling procedures following USFWS protocol. Included on the MOU for the Kern River Pipeline project.

Caltrans. Performed baseline inventory of flora and fauna for multiple Caltrans highway projects in the Fresno and Coalinga areas. Surveys included small mammal trapping (included in MOU for short-nosed kangaroo rats), scent station monitoring, spotlighting, and focused reptile and avian surveys. Evaluated habitat along highway ROWs for potential occurrence of sensitive species.

Black Mountain Electrical Transmission Line Project. Project Biologist for mitigation monitoring along 10 miles of electrical transmission line located between Lake Mead and Las Vegas, Nevada. Responsible for endangered species education and training programs, construction personnel supervision, coordination of environmental monitors, production of regular activity reports to document the implementation of mitigation measures.

San Diego Gas and Electric (SDG&E). Project Ecologist for Pipeline 2000 geotechnical study conducted in the Otay Mesa area, San Diego County, California. Assignments included evaluating sensitive habitats potentially occurring in the area and developing avoidance measures for planned gas pipelines.

San Diego Gas and Electric. Project Ecologist for biological monitoring activities for SDG&E's Arroyo/Trabuco transmission line, San Diego County. Duties included conducting California gnatcatcher surveys and ensuring compliance to environmental regulations.

San Diego Gas and Electric. Project Ecologist for vegetation mapping and analysis along a proposed pipeline route for SDG&E's Project Vecinos, in San Diego County, California.

Foothill Transportation Corridor (FTC). Project Ecologist for conducting numerous focused and/or habitat evaluations surveys over a two-year period along the proposed FTC located in Orange and San Diego counties, California. Focused surveys included those for arroyo toad, spadefoot toad, silvery legless lizard, coastal rosy boa, orange-throated whiptail, San Bernardino ring-necked snake, coast patch-nosed snake, southwestern pond turtle, San Diego horned lizard, and red diamond rattlesnake. Recorded and observed numerous arroyo toads during the survey efforts.

California Department of Corrections (CDC). Project Ecologist for mitigation monitoring of a Pacific Gas and Electric (PG&E) pipeline corridor. Included on CDFG MOU to trap and translocate short-nosed kangaroo rat (*Dipodomys nitratoides brevinasus*) in Kern and Fresno counties.

County of Kern. Work scope included preparation of a biological resources study report in the Kern River Plan Expansion Area, Highway 5 to Buena Vista Aquatic Recreation Area. Investigated threatened and endangered plant and wildlife species along a portion of the Kern River. Additional work included preparation of a Biological Inventory and Sensitivity Study, Kern River Specific Trails Plan, Manor Road to Kern Canyon.

Los Angeles Department of Water and Power. Project Manager/Ecologist for preparation of numerous Biological Assessments for reservoir sites and expansion facilities EIR. Responsible for directing other biologists in completing various field tasks and data collection.

Mojave Flood Control District. Project Biologist for field mapping and aerial photographic interpretation of sensitive riparian vegetation types occurring along portions of the Mojave River corridor. Responsible for transferring data onto multiple topographic cross sections for use in flood control engineering models.

Mobil Exploration & Producing U.S. Inc. Project Biologist for over 25 proposed small energy development projects, including linear facilities, such as pipelines and transmission lines, for the Westside Development Program and Kern River Oilfield Development Program, Kern and Monterey counties. Responsible for inventory of rare, threatened, and endangered plant and animal species using various field techniques, including transect surveys, small mammal trapping surveys under MOU with CDFG, scent station and burrow monitoring, and evaluations based on animal sign. Evaluated presence/ absence of sensitive habitats. Also responsible for training field biologists and coordination of field activities.

City of San Diego, Metropolitan Wastewater District. Project Ecologist for Fiesta Island Replacement Project/Northern Sludge Processing Facility (FIRP/NSPF) EIS/EIR in the Miramar area for the City of San Diego Metropolitan Wastewater Department. Conducted vernal pool surveys that included evaluating the presence of sensitive plant and amphibious wildlife species. Additionally, prepared a vernal pool appendices report for inclusion in the EIS/EIR.

Shell Western E&P Inc. Lead Biologist for S.W.E.P.I.'s 17Z portion of a gas transmission pipeline project. Responsible for endangered species education and training programs, construction personnel supervision, coordination of environmental monitors, production of regular activity reports to document the implementation of mitigation measures, and final post-monitoring report.

Professional History

Ecological Sciences, Inc. – Principal Biologist
EcoSciences – Principal Biologist
Impact Sciences, Inc. - Senior Biologist
Michael Brandman Associates - Project Ecologist/Manager
The Nature Conservancy - Project Biologist/Principle Investigator
Wyoming Department of Game and Fish - Biological Technician
Dames and Moore - Staff Biologist
San Joaquin Endangered Species Recovery Program/CSU Stanislaus Foundation-Research Assistant
County of Santa Barbara, Department of Environmental Review - Intern

Education/Permits/Certifications

- B.A., Environmental Studies (Natural Resource Management Emphasis; graduate-level courses in Ecology), University of California, Santa Barbara
- Certification, ***Flat-tailed Horned Lizard*** Survey Techniques, Arizona Department of Game and Fish
- Certification, ***Desert Tortoise*** Handling, burrow construction, and egg handling Techniques, U.S. Fish and Wildlife Service
- Certification, Marine Sciences Program, Santa Barbara City College

Education/Permits/Certifications-con't

- Certification, Rescue Diver, PADI
- CDFG agreement to trap and release ***small mammal California Species of Special Concern***
- CDFG Scientific Collecting Permit, 2003-2005
- Federal Section 10(a) Permit to capture and release an endangered small mammal species, ***Pacific pocket mouse***, 1996-2005 (TE-808242-4).
- Federal Section 10(a) Permit for performance of ***Delhi sands flower-loving fly*** surveys (TE-808242-4), 1997-2005
- Federal Section 10(a) Permit to capture and release threatened and endangered amphibian species, ***arroyo toad***, 1996-2005 (TE-808242-4)
- Federal Section 10(a) Permit to capture and release threatened and endangered amphibian species, ***California red-legged frog***, 1996-2005 (TE-808242-4)
- Federal Section 10(a) Permit for performance of ***coastal California Gnatcatcher*** surveys, 1996-2005 (TE-808242-4)

Professional Affiliations

The Wildlife Society
American Society of Mammalogists
Society for the Study of Reptiles and Amphibians
California Native Plant Society

Publications/Submittals

Cameron, S. D. and C. S. Garber. *Inventory and Monitoring of Small Mammal Distribution in the Bureau of Land Management's Casper District, Buffalo Resource Area*. The Nature Conservancy, Wyoming Natural Diversity Database. Cooperative Agreement Number K910-A4-0011, Task Order TO-002.

Cameron, S. D. and R. W. Hanson. 1994. *Range Extension of the Western Patchnose Snake (Salvadora hexalepis mojavensis)*. Herpetological Review, 25 (1): 34-35.

Recon

GERALD A. SCHEID

Senior Biologist

Education Master of Science, Ecology, San Diego State University, 1986
Bachelor of Science, Biology, Arizona State University, 1979

Permits/ Certificates U.S. Fish and Wildlife Service Permit #TE-797665 for San Diego Mesa Mint, Otay Mesa Mint, California Orcutt Grass, San Diego Button-Celery, Otay Tarplant, San Diego Thornmint, Munz's Onion, Del Mar Manzanita, Thread-leaved Brodiaea, No-named Navarretia, San Diego Ambrosia, and Willowy Monardella; under supervision for Coastal California Gnatcatcher surveys, Riverside Fairy Shrimp, Conservancy Fairy Shrimp, Longhorn Fairy Shrimp, Vernal Pool Fairy Shrimp, San Diego Fairy Shrimp, and Vernal Pool Tadpole Fairy Shrimp
CDFG Scientific Collecting Permit #002426 for Insects, Rodents/Small Mammals, Reptiles/Amphibians
Basic Wetland Delineation Certificate, Wetland Training Institute, Inc., 1989
Wetland Delineation in Southern California Certificate, Southern California Chapter of The Wildlife Society, 1994
Certified Biologist for the County of San Diego and Riverside
Certified Ecologist, Ecological Society of America

Experience **22 years**

RECON
1988-present, Senior Biologist

Responsible for conducting botanical research in California and Arizona since 1981. Over the last six years, has dealt primarily with surveying for sensitive, rare, and endangered species; mapping vegetation; assessing project-related impacts to biological resources; and working with clients and agencies to prepare mitigation recommendations. Experienced with Endangered Species Act Section 7 consultations with the U.S. Fish and Wildlife Service (USFWS). Trained in the current methodologies for the determination of "waters of the U.S." and the delineation of wetlands used in the preparation of 404 permit applications for compliance with the Clean Water Act. Also, has experience securing Streambed Alteration Agreements with the California Department of Fish and Game (CDFG) for compliance with Sections 1600-1603 of the Fish and Game Code. Prepares mitigation plans for riparian and upland habitat restoration programs and conducts monitoring of restoration efforts.

California Department of Parks and Recreation
1987-1988, Project Director

California Nature Conservancy
1987, Research Biologist

U.S. Air Force Office of Scientific Research
1986 - 1988, Research Biologist
San Diego State University
1983 - 1988, Research Biologist

Selected Projects **Biological Resources Inventory and Analysis Reports**
Loma Alta Creek Flood Control Surveys and Permitting, Oceanside, CA

Rancho Carlsbad Detention Basin Surveys and Permitting, Carlsbad, CA
Santa Clara River Enhancement and Management Plan, Los Angeles and Ventura Counties, CA
Tequesquite Landfill, Riverside, CA
Newhall Ranch Specific Plan, Santa Clarita, CA
River Road Environmental Studies, Tucson, AZ
Whitewater River Levee Improvements and Proposed Water Line 34 Extension, Riverside County, CA
FDIC Properties in Tecate, CA
Montana Mirador, San Diego, CA
Eagle Mountain Landfill and Rail Line, Riverside County, CA
River Management Plan for Newhall Ranch, Los Angeles/Ventura Counties, CA
Vista Alegre, San Diego, CA
Three Alternative Sites for Pima County Landfill, Tucson, AZ
Siting Studies for Pima County Landfill (11 sites), Tucson, AZ
Sabino Springs, Tucson, AZ
International Wastewater Treatment Facilities, San Diego, CA
Sycamore Ridge EIR, San Diego, CA
Fairbanks Highland Property EIR, San Diego, CA
Temescal Wash Vegetation Mapping and Impact Assessment, Riverside County, CA
Rare Plant Survey and Constraints Analysis for Sweetwater Authority Projects, San Diego County, CA
Vegetation Mapping of Otay River Valley, Fenton Corporation Property, San Diego, CA
Sycamore Ridge Rock Quarry, San Diego County, CA
Carroll Canyon Golf and Recreation Center, San Diego, CA
City of San Diego Clean Water Program, San Diego, CA

Biological Assessments for Section 7 Consultation
Gila River Crossing: 116th Avenue Bridge, Maricopa County, AZ
Headworks Acceleration Project, San Diego, CA
Proposed Expansion of Cyprus Casa Grande Mine, Casa Grande, AZ
Naval Radio Transmitting Facility, Chollas Heights, San Diego, CA
Eagle Mountain Landfill Project, Riverside County, CA
Secondary Treatment System, Clean Water Program, San Diego, CA
IBWC International Wastewater Treatment Plant, San Diego, CA
Vernal Pool Habitat on NAS Miramar, San Diego, CA

Wetland Delineation and Jurisdictional Analysis for USACE
Newport Road Extension, Riverside, CA
North Avenue Widening, Oceanside, CA
Olivenhain Road, Encinitas, CA
Tequesquite Landfill, Riverside County, CA
Stallions Crossing, San Diego, CA
Whitewater River Levee and Pipeline 34, County of Riverside, CA
Double Butte Landfill, Riverside County, CA
State Route 86 Alternative Alignments, Imperial County, CA
State Route 76 Improvements, San Diego County, CA
Black Mountain Ranch, San Diego, CA
Henderson Wastewater Outfall Pipeline, Henderson, NV
Calleguas Creek, Ventura County, CA
Carroll Canyon Golf and Recreation Center, San Diego, CA
Wastewater Treatment Plant Expansion at Hale Avenue, Escondido, CA
Pilgrim Creek Wetland and Riparian Habitat Cumulative Analysis, Oceanside, CA
Buena Vista Creek, Vista, CA
Santa Margarita River, Camp Pendleton, CA

Habitat Restoration Plans and Monitoring Programs
Penasquitos Creek near Black Mountain Road Bridge, San Diego, CA
Coastal Sage Scrub on Black Mountain Ranch Phases I and II, San Diego, CA
Riparian Revegetation Plan for Black Mountain Ranch, San Diego, CA
Westwood Valley Coastal Sage Scrub, San Diego, CA
Montana Mirador, San Diego, CA
Jones Ranch Flood Control Channel, Riverside, CA
Morro Hills Country Club, Oceanside, CA
Brocatto Development, Carlsbad, CA
Santaluz, San Diego, CA

Vernal Pool Projects
State Route 125 Vernal Pool Study, Caltrans District 11, San Diego, CA
State Route 905 Otay Mesa Survey and Mapping, Caltrans District 11, San Diego, CA
Interstate 15 Vernal Pool Monitoring, Caltrans District 11, San Diego, CA
Vista Alegre Vernal Pool and Fairy Shrimp Monitoring, San Diego, CA
California Terraces Soil Hydration and Fairy Shrimp Culture Trial, San Diego, CA
Clean Water Program Vernal Pool Survey and Mapping, San Diego, CA
Santaluz Vernal Pool Mitigation Plan, San Diego, CA

Publications

"Transplant Trials for Alverson's Foxtail Cactus at Eagle Mountain Mine in Riverside County." Presentation to the Desert Lands Rehabilitation Workshop.

Population Status and Management of Cuyamaca Cypress *(Cupressus arizonica* ssp. *stephensonii)* in Cuyamaca Rancho State Park. Department of Parks and Recreation, San Diego, CA.

Invasion of *Carpobrotus edulis* and *Salix lasiolepis* after Fire in a Coastal Chaparral Site in Santa Barbara County, California. *Madrono* 35:196-201. Co-author with Paul H. Zedler.

Impact of Extreme Acid Deposition on Competitive Interactions Between *Pinus muricata* and *Artemisia californica*. Chapter 3 in Final Report to the Air Force Office of Scientific Research: The Effect of Acid Deposition on Potentially Sensitive Soil-Plant Systems at Vandenberg AFB, California, P. H. Zedler and G. Marion. Co-author with Paul H. Zedler.

Habitat Characteristics of Willowy Monardella *(Monardella linoides* ssp. *viminea)* in San Diego County. In Proceedings from a Conference of the California Native Plant Society: The Conservation and Management of Rare and Endangered Plants, edited by T. S. Elias, pp. 501-506.

Comparison of Reproductive Modes in Two Species of *Cupressus:* Serotiny vs. Non-serotiny. M.S. thesis, San Diego State University, California.

Fire in the Ecology and Management of Torrey Pine (California). *Restoration and Management Notes* 5(2):88-89. Co-author with Paul H. Zedler, Carla Scheidlinger, and Greg McMaster.

Vegetation and Vascular Flora of Sky Oaks Biological Field Station. Chapter 3 in Sky Oaks Biological Field Station—Baseline Studies, edited by W. C. Oechel.

MATTHEW M. CARPENTER

project management
natural resources management
watershed hydrology & restoration
stream ecology & habitat assessment
environmental impact analysis
wetland delineation & assessment
water quality assessment & protection
stream habitat rehabilitation
environmental permitting
land use planning

EDUCATION

- California Polytechnic State University, San Luis Obispo: B.S., Forestry and Natural Resources, Environmental Management Concentration, 1995

PERMITS AND CERTIFICATION

- United States Army Corps of Engineers Wetland Delineation Training Program, Environmental Technology Center No. 253, 1996
- California Department of Fish and Game. Resident Scientific Collecting Permit No. 801075
- National Marine Fisheries Service. Secton 10(a)1(a) No. 1050 Salmonids Research ENTRIX, Inc.
- Cal-EPA Office of Environmental Health Hazard Assessment. Registered Environmental Assessor I. No. REA-07479

PROFESSIONAL HISTORY

- ENTRIX, Inc., Senior Project Scientist, 1995 to date
- Cal Poly Foundation, Morro Bay National Monitoring Project, Research Assistant, 1994-1995

REPRESENTATIVE EXPERIENCE

Mr. Carpenter is an interdisciplinary scientist with experience conducting a variety of natural resource studies involving an array of complex environmental impact analysis and restoration planning assignments. Mr. Carpenter has managed numerous projects, spanning several technical disciplines incorporating communication with a variety of stakeholder interests. Mr. Carpenter has performed numerous project management, field investigation, and reporting tasks involving a wide variety of projects. Representative projects are presented as follows:

Habitat Assessment and Restoration

- Mr. Carpenter directed activities involving the Tributaries Work Group for the assessment, restoration, and management of endangered southern California steelhead on the lower Santa Ynez River in southern California. The group was comprised of fisheries professionals from the Santa Ynez River Technical Advisory Committee (NMFS, CDFG, USFWS, BOR) developing consensus–based stream habitat enhancement measures for improved steelhead production within the tributaries below Bradbury Dam. The tributaries offer the only viable habitat for steelhead to successfully spawn and oversummer within the lower basin. Enhancement measures

included modification of fish passage impediments, structural instream improvements to provide additional spawning and rearing habitat, and working cooperatively with private landowners to protect existing steelhead habitat. The resultant work product was incorporated into a final Fish Management Plan, outlining the fishery management actions for steelhead recovery in the lower Santa Ynez River. Planning and implementation of five major enhancement efforts are underway.

- Mr. Carpenter recently managed the preparation of a steelhead habitat evaluation for the Matilija Dam Ecosystem Restoration Project. The report supplemented the F3 Feasibility Study prepared by the US Army Corps of Engineers and Ventura County Flood Control District. The F4 Alternatives Analysis studies being scoped, includes analysis of steelhead habitat quality and migration barriers in the upper Matilija basin. Restoration will connect endangered southern California ESU steelhead with nearly 50 percent of its historic Ventura River basin spawning and rearing habitat.

- Mr. Carpenter was the principal investigator for a fish habitat assessment of tributary streams to Lake Casitas in Ventura County, California. Fish habitat within three headwater streams, Coyote, Poplin, and Santa Ana creeks, was evaluated for rainbow trout habitat suitability and general aquatic health for a Bureau of Reclamation Resource Management Plan for the Lake Casitas Open Space Lands. Natural and anthropomorphic migration barriers were also documented and evaluated. In addition, the streams were evaluated for fishery enhancement, including recommended management actions for improving rainbow trout production.

- Mr. Carpenter inventoried steelhead/rainbow trout habitat on Malibu Creek from the mouth to Malibu State Park, upstream of Rindge Dam. Migration barriers, spawning gravel, water temperature, and instream shelter components were documented to characterize steelhead habitat conditions.

- Mr. Carpenter has performed riverine fish habitat mapping techniques, and qualitative habitat suitability evaluation for special-status terrestrial species. Mr. Carpenter has performed habitat typing and evaluation for resident and anadromous salmonids in southern and central California (coastal and mountain) streams. Mr. Carpenter has also performed stream classification utilizing the Rosgen methodology.

- Mr. Carpenter conducted studies of hydrology and geomorphology related to the hydroelectric relicensing of Southern California Edison's Big Creek system in the San Joaquin River watershed. Working collaboratively with resource agencies (USFS, CDFG, SWRCB), the studies inventory and characterize hydrologic and geomorphic conditions present on over 125 miles of the San Joaquin River and its tributaries. The characterization studies include Rosgen Level I and II classifications, as well as collecting USFS R5 Stream Condition Inventory data. The data will be evaluated holistically to prescribe future channel maintenance and sediment management practices.

- Mr. Carpenter served as a technical advisor during a third-party review of the Sequoia National Forest's Cumulative Watershed Effects analysis within the upper Kern River basin. The review included field validation of site monitoring information and general reconnaissance for fish habitat conditions for trout. The monitoring sites were located within active timber management zones to monitor the effects of timber harvest on erosion and downstream sedimentation. The focus of the review was aimed toward issues regarding CWE implementation and monitoring.

- Mr. Carpenter manages a multi-year sediment monitoring study on the lower Kern River below Southern California Edison's Kern River No. 1 hydroelectric diversion dam. The study was initiated in response to the FERC Additional Information Request concerning sediment releases in the lower Kern River and the potential impact to smallmouth bass spawning habitat. Study entailed annual surveys of selected pool habitat cross-sections to monitor channel aggradation and degradation following facility sediment flushing events. In addition, the study involved calculating sediment transport capacity to evaluate appropriate sediment management practices for future operation. Subsequent sediment management plan gained multi-agency support following review.

Environmental Permitting

- Currently, Mr. Carpenter manages FERC relicensing efforts for the United Water Conservation District's Santa Felicia Project on Piru Creek. Santa Felicia Dam forms Lake Piru on Piru Creek, a major tributary to the Santa Clara River. The primary resource issue includes assessment of habitat suitability for steelhead in Piru Creek below the dam. In addition, fate of flows and controlled flow studies have been developed to evaluate steelhead migration conditions in the Santa Clara River downstream of Piru Creek. A variety of special status species studies are slated to document arroyo chub, unarmored three-spined stickleback, Santa Ana sucker, southwestern arroyo toad, California red-legged frog, southwestern willow flycatcher, and least Bell's vireo. Whitewater and angling recreation activities are also major resource considerations. The collaborative relicensing effort involves facilitation of Focus Study Group meetings to develop appropriate resource study plans.

- Mr. Carpenter currently manages a large-scale study characterizing the Santa Clara River estuary for the City of San Buenaventura's Ventura Water Reclamation Facility. The NPDES compliance study focuses on two major components, ambient water quality and the resident macroinvertebrate assemblage. The water quality component characterizes ambient conditions at several stations over a 12-month period to develop a metals translator for dissolved- and total-metals present to better understand the likely bioavailability of metals to resident organisms. The macroinvertebrate bioassessment component involves stratified sampling of several estuarine habitats for benthic macroinvertebrates. The macroinvertebrate bioassessment sampling data characterizes the assemblage diversity and develop relationships between abundance, density, and microhabitat preferences (grain size, salinity tolerances, etc.). The objective of these studies is to support the City and LAWRQCB in the development of defensible site-specific NPDES limits for metals discharged to the estuary.

- Mr. Carpenter is currently engaged in permitting activities involving stream habitat enhancement on the lower Santa Ynez River tributaries. Responsible for enhancement implementation, Mr. Carpenter has been coordinating with several local, state, and federal agencies to ensure compliance with applicable permits and approvals necessary. Examples of enhancement projects are as follows: fish passage impediment (road crossings, drop structures, etc.) modification, instream habitat improvements (pool forming structures, BMPs), and bank stabilization and erosion control (BMPs, bioengineering, revegetation). Mr. Carpenter, as leader of the SYRTAC Tributaries Work Group, has also participated in the development of design concepts.

- Mr. Carpenter has managed several environmental permitting projects which required project area field studies (wetland delineation and biological resource inventories) and reporting to permitting regulatory agencies, including ACOE, USFWS, NMFS, CDFG, and RWQCBs. In addition, he has consulted with numerous agency representatives and developed measures to mitigate impacts to sensitive resources, including the southern California steelhead trout and California Red-legged frog under formal Section 7 consultation and preparation of the Biological Assessments adopted by NMFS/USFWS. Collaboration with agencies resulted in successful permitting of projects where impacts were fully mitigated.

- Mr. Carpenter has conducted several wetland delineations to identify the jurisdiction of ACOE and CDFG for permitting under Section 404 of the Clean Water Act and Section 1600 of the California Fish and Game Code. Field surveys were conducted to evaluate site for presence of hydrophytic vegetation, wetland hydrology, and hydric soils at numerous public works infrastructure facilities in streams throughout California. Reporting included biological resource determination for evaluation of special status species for review by the NMFS, USFWS, and CDFG.

- Mr. Carpenter recently completed management of an ESA compliance project on behalf of the Monterey County Water Resources Agency and Salinas Valley farmers. The project included development of a field surveying methodology to measure and delineate low-flow channel exclusion areas prior to initiating channel maintenance activities. Low flow channel delineation was incorporated to comply with interim channel maintenance guidelines developed by NMFS to protect steelhead migration habitat. Mr. Carpenter's survey methodology was adopted by other biologists within the Salinas Valley working on similar projects.

Affiliations

- American Water Resources Association – Stream Ecology Technical Committee
- American Fisheries Society, Cal-Neva Chapter

Technical Reports

- Avaliable upon request

CAMM SWIFT

fish and fisheries biology
aquatic ecology / habitat restoration
ESA compliance and consultation
environmental monitoring
estuarine and stream ecology
archaeological and paleontological analysis

EDUCATION

- Florida State University, Tallahassee, Florida: Ph.D., Biology (Ichthyology), 1970
- University of Michigan, Ann Arbor, Michigan: M. A., Zoology, 1965
- University of California, Berkeley, California: A.B., Zoology, 1963

PROFESSIONAL HISTORY

- Entrix, Inc., Senior Project Scientist, present
- Independent Consultant, 5 years
- Loyola Marymount University, Visiting, Department of Biology, 3 years
- Natural History Museum of Los Angeles County, Associate Curator of Fishes, 22 years

PROFESSIONAL TRAINING

- Electrofishing Workshop, Smith-Root Company, American Fisheries Society Annual Meeting, Phoenix, Arizona, August 2002
- Workshop on interactive teaching (National Science Foundation supported), Los Angeles Cooperative for Teaching Excellence, California State University, Dominguez Hills, California, Spring 1997

PROFESSIONAL EXPERIENCE

Camm Swift has more than 20 years of experience working on the biology and conservation of freshwater and estuarine fishes of coastal southern California. He has served on the Recovery Teams for the unarmored threespine stickleback and tidewater goby, both federally endangered species, and was an author of the recovery plans for both fish. He has extensive knowledge on the freshwater fishes of coastal southern California, including their biology, requirements for recovery, and habitat restoration needs for improving conservation status. He has major expeditionary experience in the fresh and estuarine waters of the southeastern United States, Pacific coastal Mexico and Costa Rica, the Indus River Delta, Pakistan, and Amazonian Peru. He has extensive field and supervisory experience. He has conducted literature searches, written comprehensive reports and peer-reviewed publications, and served as an expert witness on fishery conservation issues. He has considerable experience in the identification and analysis of archaeological and fossil fish bones from the southeastern United States, southern California, and coastal Pakistan.

RELEVANT EXPERIENCE

Environmental/Civil Engineering

Biology and Distribution of Federally Endangered Tidewater Goby on Vandenberg Air Force Base – California.
Dr. Swift developed a sampling program to assess relative population size and distribution with bimonthly sampling of five coastal lagoons and streams on Vandenberg Air Force Base to define the biological parameters of this fish species on the base. He and several students conducted sampling and preliminary aging with otoliths, and prepared a major report on the biology of the species and recommendations for management of the species on the Base.

Status of Freshwater Fishes - Southern California
Dr. Swift supervised crews of three to six graduate students surveying the esturarine and freshwaters of coastal southern California, and prepared a report of findings for the Department of Fish and Game. The report led to major publication on these fishes, and provided much of the information justifying eventual federal and state listing of the more threatened species.

Distribution, Migration, and Predation on the Federally Threatened Santa Ana Sucker - Santa Ana River, California
Dr. Swift conducted a study of Santa Ana suckers in the middle Santa Ana River in San Bernardino, Riverside, and Orange counties to determine population levels, areas of spawning, distribution of larvae and young-of-the-year fish, possible diversion (and loss) of suckers into settling ponds, and impacts of exotic predatory aquatic organisms on the suckers. Dr. Swift prepared a report that provided basis for several management strategies to improve conditions for the sucker and lead to its eventual recovery. The study included snorkel surveys, three-pass transect population estimates with electroshocking, pit tagging of larger suckers, and developing characters to identify larval suckers.

Dynamics of Estuarine Fish Populations in Small Coastal Lagoons - Camp Pendleton
Dr. Swift conducted periodic fish collections in seven coastal lagoons over 5 years to monitor status and fluctuations in populations of the federally endangered tidewater goby and associated estuarine fish species. He documented the effects of the 1998 El Nino on these populations and their rebound back to “normal.” He also documented true metapopulational phenomena among the tidewater goby populations subsequently confirmed by genetic studies.

Fish Communities of Ballona Marsh - western Los Angeles County
Dr. Swift conducted two studies (Natural History Museum of Los Angeles County in 1980-81 and San Marino Environmental Associates in 1997-98), each consisting of a series of collections over a 1-year period, to describe the existing fish communities, document changes over time, and recommend measures for long-term management of the marsh for native fishes.

Management Plan for Exotic Aquatic Organisms - Camp Pendleton
Dr. Swift prepared a comprehensive report on the distribution and status of exotic aquatic species on the base, and proposed many measures for their management and control.

Management and Control of Exotic Aquatic Organisms - Haines Creek-Lower Big Tujunga Wash, Los Angeles County
Dr. Swift is conducting a 5-year effort to remove or control exotic fishes, amphibians, turtles, and crayfish in this 1.7-kilometer stream and two associated ponds. A wide variety of methods are being utilized, including gill nets, various traps, removal of frog egg masses, seining, and snorkeling to spear fish and disrupt nesting basses and sunfishes. Dr. Swift is monitoring native fish populations to assess the effects of exotic control efforts by performing stratified random sampling of 16 transects in the stream.

Steelhead Surveys and Monitoring - Vandenberg Air Force Base, CA
Using methods based on the California Department of Fish and Game Salmonid Stream Restoration Manual, Dr. Swift provided comprehensive steelhead habitat description and assessment on five smaller drainages. The project included complete habitat typing of all five streams, snorkel and visual surveys for steelhead and other native fishes, upstream and downstream trapping during the winter migratory period, and historical research.

Advise Six-Agency Committee on Quality and Rationale for Critical Habitat Designations for Endangered Big River Fishes in the Colorado River - Southwestern United States
Dr. Swift conducted comprehensive historical research on the biology of four fishes and analysis of their needs for determining the validity and justification for the U.S. Fish and Wildlife Service Critical Habitat designations and how they might affect operations of the MWD.

Expert Witness on Coastal Minnow/Sucker Community – Southern California
Dr. Swift provided extensive and detailed information on the biology of these fishes to support the California Department of Fish and Game's position of the extreme importance of the wash habitat for their continued existence. The surviving remnant fish community consisted of the Santa Ana sucker (federally threatened) and Santa Ana speckled dace and arroyo chub, both California species of special concern.

AFFILIATIONS

- American Fisheries Society, President-Elect, President, and Past President, Cal-Nevada Chapter, 1996-1998
- American Society of Ichthyologists and Herpetologists
- Estuarine Research Federation (including recently formed California Estuarine Research Society [CAERS])
- Southern California Academy of Sciences, Secretary, President and Fellow, 1985-1991
- Society of Vertebrate Paleontology
- Western Field Ornithologists
- California Native Plant Society
- American Association for the Advancement of Science
- Sigma Xi

PUBLICATIONS AND PRESENTATIONS

Swift, C. C., J. S. Nelson, C. Maslow, and T. Stein. 1989. Biology and distribution of the tidewater goby, Eucyclogobius newberryi, (Pisces:Gobiidae) of California. Nat. Hist. Mus. Los Angeles Co., Contrib. Sci., 404, 19 pp.

Swift, C. C. 1989. Late Pleistocene freshwater fishes from the Rancho La Brea deposit, southern California. Bull. S. Calif. Acad. Sci., 88(3):93-102.

Imber, M. J., J. B. Cruz, J. S. Grove, R. J. Lavenberg, and C. C. Swift. 1992. Feeding Ecology of the dark-rumped petrel in the Galapagos Islands. The Condor, 94(2):437-447.

Swift, C. C., T. R. Haglund, R. Fisher, and M. Ruiz. 1993. Status and distribution of the freshwater fishes of southern California. Bull. S. Calif. Acad. Sci. 92(3):101-167.

Swift, C. C. 1996. Chapter 30. Distribution and Migration. Pp. 595-630. (excluding literature cited incorporated a single large section at end of book). In: Carl Bond. Biology of Fishes (Ichthyology Textbook). Second Edition. Harcort, Brace, and Co., Philadelphia Chapter revised and submitted for third edition in March, 2003 under overall editor, Michael Barton, Centre College.

Lafferty, K., R. Swenson, and C. C. Swift. 1996. Tidewater goby; endangered species profile. Environmental Biology of Fishes, 46:254.

Lafferty, K., Swift, C. C., and R. Ambrose. 1999a. Post flood persistence and recolonization of the endangered tidewater goby populations. North American Journal of Fisheries Management, 19(2):618-622.

_____. 1999b. Extirpation and recolonization in a metapopulation of an endangered fish, the tidewater goby. Conservation Biology, 13(6):1447-1453.

Swift, C. C., K. Hieb, and R. Swenson. 2002. Family Gobiidae, pp. 7-9. IN: William S. Leet, Christopher M. Dewees, Richard Klingbeil, and Eric J. Larson (editors), California's Living Marine Resources: A status report. The Errata. California Department of Fish and Game, Sacramento, CA (December, 2001). The larger work appeared in early 2002 lacking the Gobiidae Chapter due to editorial error; it was included in the Errata subsequently printed and added to the Web edition [www.dfg.ca.gov/mrd]

Dawson, M. N., K. D. Louie, M. Barlow, D. K. Jacobs, and C. C. Swift. 2002. Comparative phylogeography of sympatric sister species, Clevelandia ios and Eucyclogobius newberryi (Teleostei, Gobiidae), across the California transition zone. Molecular Ecology, 11:1065-1075.

Swift, C. C. and D. Holland. 2002. Exotic fish species and their impacts on small coastal lagoons in southern California. (Abst.). Bull. S. Calif. Acad. Sci., 101(2), Supplement, p. 32.

Swift, C. C. 2002. Interaction between native fish, habitat, and exotic species in the middle Santa Ana River, southern California. (Abst.), Bull. S. Calif. Acad. Sci., 101(2), Supplement, p. 32.

SEAN J. BARRY

zoology/herpetology
ecology/mammalogy
molecular biology
regulatory compliance

EDUCATION

- University of California, Davis, B.S., Zoology
- University of California, Davis, M.S., Zoology
- Thesis: The Distribution, Habitat, and Evolution of the San Francisco Garter Snake, *Thamnophis sirtalis tetrataenia*

REGISTRATION

- California Department of Fish and Game scientific collecting permit #000131, mammals, fish, reptiles, amphibians, invertebrates, California species of special concern, expires May 2005
- Section 10A US Fish and Wildlife Service Endangered Species Recovery Permit, #TE 827500, for distribution-wide studies of the California red-legged frog (*Rana aurora draytonii*), the giant garter snake (*Thamnophis gigas*), and the San Francisco garter snake (*Thamnophis sirtalis tetrataenia*). Expires 12/31/2006.

PROFESSIONAL HISTORY

- ENTRIX Inc, Project Scientist/Herpetologist, 2003 to date
- Independent Consultant/Herpetologist, 1974 to 2003
- Staff Research Associate, University of California, Davis, 1983 to 2003
- Curator of the Vertebrate Museum, Department of Zoology, University of California, Davis, 1972 to 1975
- Biologist, California Department of Fish and Game, Endangered Species Program Reptiles and Amphibians office, 1972 to 1975

PROFESSIONAL EXPERIENCE

Mr. Barry has more than 28 years of experience working with agencies and consulting firms on investigations of State and federally listed (threatened/endangered) California reptiles and amphibians, for refuge development, urban impact assessments, and evaluation of conservation status of individual populations. He is a nationally recognized authority on the endangered San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) and has also recently completed studies of special-status (e.g., Sierra Nevada) California red-legged frog populations (*Rana aurora draytonii*). His scientific background also includes projects related to molecular systematics (microsatellite and single nucleotide polymorphism analysis) and molecular biology of regulated genes (targeted gene studies, gene expression analysis, etc). Responsibilities have included project and safety management, budget planning, all aspects of field and laboratory technical work, grant and proposal preparation, and teaching/mentorship.

AFFILIATIONS

- Ecological Society of America
- American Society of Mammalogists

- American Society of Ichthyologists and Herpetologists
- Society for the Study of Amphibians and Reptiles
- Herpetologists' League
- Society for Systematic Biology
- Society for the Preservation of Natural History Collections

REVIEWS

- San Francisco Garter Snake Recovery Plan, US Fish and Wildlife Service, 1983-85.
- California Red-Legged Frog Recovery Plan, US Fish and Wildlife Service, 2000-2002.
- Check-list of Amphibians, Reptiles, Birds, and Mammals of California, California Department of Fish and Game
- "Measuring and Monitoring Biological Diversity" book series (mammals, amphibians, reptiles), Smithsonian Institution Press. February 2000-present
- Journal of Herpetology, 1998-present

SELECTED PUBLICATIONS

Barry, S.J. 1976. Investigations on the occurrence of the San Francisco garter snake at the Stanford Linear Accelerator Center. SLAC Tech. Note 76-2, 6 p.

Barry, S. J. 1978. The status of the San Francisco garter snake. California Department of Fish and Game Endangered Species Special Publ. 78-2. 20 p.

Barry, S. 1993. The San Francisco garter snake: protection is the key to recovery. Tideline 13:1-3,15.

Barry, S. J. and H. B. Shaffer. 1994. The California tiger salamander at Lagunita: a 50-year update. Journal of Herpetology 28:159-164.

Barry, S. J. and M. Mangel, 1994. Review of Harrison, L. Kinetic Theory of Living Pattern. Mathematical Biosciences. 124:237-241.

Barry, S. 1996. The San Francisco garter snake and the San Francisco Watershed. Prepared for City of San Francisco, Public Utilities Commission, San Francisco Water Department. 143p.

Barry, S. J., M. R. Jennings, and Hobart M. Smith. 1996. Current subspecific names for western *Thamnophis sirtalis*. Herpetological Review, 27:172-173.

Barry, S. J. 1997. Museum and Anatomical Preparation of Reptile Specimens. in Ackerman, L., ed. The Biology, Husbandry, and Medicine of Captive Reptiles. TFH, Neptune, NJ, 3 vols.

Barry, S. J. and M. R. Jennings. 1998. *Eutaenia sirtalis tetrataenia* Cope in Yarrow, 1875 and *Coluber infernalis* Blainville, 1835 (Currently *Thamnophis s. tetrataenia* and *T. s. infernalis*): proposed conservation of usage of the subspecific names by the designation of a neotype for *T. s. infernalis*. Bulletin of Zoological Nomenclature 55:224-228.

Barry, S. J. 1999. A study of the California red-legged frog (*Rana aurora draytonii*) of Butte County, California. Par Environmental Services, Sacramento, CA, Tech. Rept. No.3, 16p.

In Press

Barry, S. J., in prep. Preparing Reptiles as Scientific Specimens. *in* Foster, M., and McDiarmid, R., eds Measuring and Monitoring Biological Diversity: Standard Methods for Reptiles. Autumn 2003, Smithsonian Institution Press.

Submitted

Barry, S. J. and M. R. Jennings. Nomenclature of western *Thamnophis sirtalis* resolved by designation of a neotype for *T. s. infernalis*. Herpetological Review

STEVEN R. HOWARD

aquatic invertebrate ecology
fisheries biology
habitat assessments and mapping
instream flow analysis/IFIM
limnology
salmonid biology
stream and estuarine ecology
water quality assessment
environmental monitoring

EDUCATION

- Humboldt State University, Arcata, CA: B.S., Fisheries, 1999
- Ventura College, General Education, Biology & Mathematics 1993-1994
- Cuesta College, General Education, Biology & Mathematics 1992-1993

PERMITS, CERTIFICATION AND ADDITIONAL TRAINING

- California Department of Fish and Game. Resident Scientific Collecting Permit No. 801226-04
- USFWS Project Permitted Tidewater Goby Specialist in Ventura and Santa Cruz Counties
- Theory and Application of the Physical Habitat Simulation System, Utah State University, May 2002
- Sampling Theory and Design Workshop, Humboldt State University, March 2002
- Aquatic Ecological Assessment Workshop, CDFG, March 2002

PROFESSIONAL EXPERIENCE

Mr. Howard is an interdisciplinary scientist with an emphasis on aquatic studies including fishery habitat assessment and population surveys, fish species identification, fisheries techniques, fish passage assessment, fish and aquatic invertebrate population analysis, water quality assessment, and wildlife population and escapement surveys. Mr. Howard has preformed numerous projects in aquatic habitats ranging from high elevation lakes and streams to coastal estuaries. Mr. Howard has also conducted projects including subsurface soil and groundwater investigations, environmental impact studies, environmental monitoring, and site closure and remediation. Mr. Howard has been involved in permitting large power projects and smaller instream projects throughout California.

Fish Population Studies

Mr. Howard has conducted numerous fish population studies throughout many of the western states. Representative projects include chinook, steelhead and bull trout studies in northern California and Oregon, steelhead studies in central and southern California, various trout species studies in California, Oregon and Idaho, and native fish studies in Oregon and southern California. Mr. Howard has also conducted fish population surveys in southern and central California estuaries for the endangered tidewater goby.

RELAVENT EXPERIENCE

Fish and Wildlife Studies

- **McKenzie River Watershed Spring Chinook Population Study** – Lane County, OR
  Mr. Howard conducted chinook salmon spawning surveys, obtained biological samples from spawned-out salmon, collected downstream migrants, monitored fish passage though leaburg dam, and monitored bull trout migration under the Western Oregon Research and Monitoring Program. Mr. Howard conducted these projects for the Oregon Department of Fish and Wildlife.
- **Oregon State Elk Population Study** – Lane County, OR
  Mr. Howard managed an initial statewide effort to obtain elk teeth and tissue samples throughout the state of Oregon. This effort was successful and set precedent for future Oregon Department of Fish and Wildlife elk tissue collection efforts.
- **United Water Conservation District FERC Relicensing Project** – Ventura County, CA
  ENTRIX, Inc. designed multiple studies under agency consultation during the FERC application process. Mr. Howard conducted fish population studies and identified fish species present in Piru Creek below Santa Felecia Dam, within Piru Lake and above the lake in Piru Creek.
- **United Water Conservation District Steelhead Migration Project** – Ventura County, CA
  ENTRIX, Inc. directed fish passage monitoring and fish rescue consultation involving steelhead on the lower Santa Clara River. Mr. Howard was the lead fisheries biologist for the project. The Vern Freeman Diversion fish passage facility includes a fish ladder, fish screens, and a downstream migrant fish trap. During steelhead migration, facilities at the diversion were inspected for stranded steelhead and resident rainbow trout for relocation to the appropriate habitat. These operations were interim mitigation measures for section 10 incidental steelhead take.
- **PacifiCorp FERC Relicensing Project** – Jackson County, OR
  ENTRIX, Inc. conducted numerous aquatic studies under agency consultation during the FERC reliscencing application process. Mr. Howard analyzed fish population data in the upper Rogue River watershed to estimate salmonid population densities above and below dams.
- **Moyie River Fish Population Study** – Bonner County, ID
  ENTRIX, Inc. conducted a salmonid relative abundance survey in the Moyie River in Idaho. The survey was performed utilizing four divers at several gas pipeline river crossings. This was conducted in conjunction with past monitoring and a proposed expansion of the pipeline at the crossings in the Moyie River. Mitigation for each crossing consisted of installing Riprap wings to prevent bank Scour and rock-drop structures to form rearing and holding pools.
- **Ventura County Flood Control Tidewater Goby Project** – Ventura County, CA
  ENTRIX, Inc. served as fisheries professional to the Ventura County Flood Control District during pipe maintenance in the Hueneme drain. A temporary impoundment was placed around the work area which trapped numerous fish including tidewater gobies. Mr. Howard identified fish species within the impoundment and relocated all fish away from the work area.
- **Ventura County Flood Control Bank Stabilization Project** – Ventura County, CA
  ENTRIX, Inc. served as fisheries professional for Ventura County Flood Control District during a bank stabilization and habitat restoration project on the Sespe River.

Mr. Howard was in charge of identifying fish species for relocation outside of the project boundary.

- **San Clemente Dam Retrofit Drawdown Project –** Monterey County, CA
  ENTRIX, Inc. is conducting annual fish rescues upstream of San Clemente Dam and fish trapping and relocation activities to appropriate habitats downstream of San Clemente Dam for California-American Water Company. Water quality monitoring was also an important part of this project during the drawdown activities. Dissolved oxygen can drop dramatically during these types of projects. Aerators were installed throughout the reservoir to maintain adequate DO levels during the project. A low percentage of steelhead mortalities occurred during this project. Mr. Howard conducted fish rescues and relocations and water quality monitoring during this project. Mr. Howard was one of a few biologists permitted by NOAA Fisheries to conduct electrofishing and fish relocation activities during this project.
- **Haines Creek Native Fish Population Monitoring and Exotic Species Removal Project –** Los Angeles County, CA
  ENTRIX, Inc. is involved in a multi-year fish population monitoring project on Haines Creek. Haines Creek is one of a few creeks that has sustaining populations of Santa Ana suckers and Santa Ana speckled dace. Numerous exotic species are also found in Haines Creek such as largemouth bass, green sunfish, mosquito fish and crawfish. Sampling is conducted by a 2-pass seining method in 200-meter sample sites.
- **San Lorenzo River Steelhead and Tidewater Goby Relocation Project –** Santa Cruz County, CA
  ENTRIX, Inc. conducted steelhead and tidewater goby rescue and relocation activities during a bank stabilization project in the tidally influenced reach of the San Lorenzo River. A portadam was constructed around the work area and water was pumped out the impoundment. During fish rescue operations, Mr. Howard discovered the first known tidewater goby in the San Lorernzo River, which prompted further consultation to complete the project. Entrix, Inc. assisted in expediting this consultation process with the USFWS and NOAA Fisheries by monitoring water quality within the impoundment and describing tidewater goby habitat and in the San Lorenzo River.

Habitat Assessment Studies

- **Habitat Typing Projects** – California and Oregon
  ENTRIX, Inc. performs numerous habitat typing investigations for multiple clients throughout the United States. Mr. Howard has performed habitat typing field projects in northern California coastal rivers and in mountain streams in southern California and Oregon.
- **Steelhead Habitat and Passage Assessment** – Ventura County, CA
  ENTRIX, Inc. conducted a steelhead habitat and passage assessment for the City of Ventura to be included in the Ventura River Habitat Conservation Plan. Mr. Howard was the lead fisheries biologist in charge of assessing steelhead habitat on North Fork Matilija Creek. A diversion facility on the Ventura River currently blocks access to headwater steelhead habitat in North Fork Matilija Creek and its tributaries. A fish passage facility is planned for construction in the near future allowing upstream migration to important steelhead habitat in the North Fork Matilija. This habitat assessment quantified spawning and rearing habitat for southern California steelhead trout.
- **Matilija Creek Steelhead Habitat Evaluation** – Ventura County, CA
  ENTRIX, Inc. conducted a steelhead habitat evaluation for the Matilija Dam Ecosystem Restoration Project. Mr. Howard assisted a project team during this evaluation. The report supplemented the F3 Feasibility Study prepared by the US Army Corps of Engineers and Ventura County Flood Control District. The Matilija Dam

project is the largest dam removal and restoration activity ever proposed in California. Restoration will connect endangered southern California ESU steelhead with nearly 50 percent of its historic Ventura River basin spawning and rearing habitat.

- **Salsipuedes Creek Fish Passage Project** – Santa Barbara County, CA
  ENTRIX, Inc. modified an existing concrete apron to provide for fish passage along Salsipuedes Creek near Lompoc, California. Responsibilities included surveying, conducting site reconnaissance studies, preparing design drawings, permit information, and a grant application, and construction oversight. Mr. Howard assisted the project engineer on anadromous fish passage criteria for the project.

Bioassessment and Invertebrate Studies

- **Olympic View Sanitary Landfill Wetland Evaluation** – Kitsap County,WA
  ENTRIX, Inc. conducted statistical analysis of previously collected data to evaluate relationships between chemical and physical water parameters and the abundance and diversity of macroinvertebrates in a wetland adjacent to the landfill.
  Stepwise regression analysis attempted to correlate species abundance and richness with water quality and chemistry to assess localized impacts. Mr. Howard conducted this statistical analysis and assisted the project team with the final report.
- **Santa Clara River Estuary Bioassessment** – Ventura County, CA
  ENTRIX, Inc. designed and conducted this bioassessment study which involved stratified sampling of several estuarine habitats for benthic macroinvertebrates in the Santa Clara River Estuary. Mr. Howard was the lead field biologist on this project. The macroinvertebrate data characterized the assemblage diversity and develops relationships between species abundance, density, richness and microhabitat preferences (grain size, salinity tolerances, etc.). The objective of this study was to support the City and LAWRQCB in the development of defensible site-specific NPDES limits for metals discharged to the estuary.
- **Big Creek FERC Relicensing Bioassessment Project** - Sierra National Forest, CA
  ENTRIX, Inc. performed this study under agency consultation for the SCE Big Creek FERC relicensing application process. Mr. Howard was a lead biologist on this bioassessment project. The project was conducted in a large portion of the South Fork San Joaquin River watershed. Macroinvertebrate sampling occurred above and below large dams and small diversions to assess Southern California Edison project impacts.

Instream Flow Studies/PHABSIM Modeling

- **United Water Conservation District FERC Relicensing IFIM Project** – Ventura County, CA
  ENTRIX, Inc. conducted an instream flow study to determine the impacts of Santa Felicia Dam on the steelhead habitat in Piru Creek. Mr. Howard lead a crew comprised of client staff and sub-contractors.
- **United Water Conservation District FERC Relicensing Steelhead Migration Project**– Ventura County, CA
  ENTRIX, Inc. conducted a migration study on the Santa Clara River downstream of Piru Creek to determine adequate flow releases that would facilitate steelhead upstream migration to Piru Creek.
- **Ventura River IFIM Project** – Ventura County, CA
  ENTRIX, Inc. conducted this instream flow study to determine the impacts of dams and diversions on the steelhead habitat in the Ventura River. The results of this study will assist in the identification of factors potentially limiting fish populations in the effected reaches of the Ventura River and to determine appropriate minimum instream flows. Mr. Howard conducted the field investigation, PHABSIM Modeling

and produced the final report. Instream Flow Incremental Methodology (IFIM) studies in Oregon and California including the Ventura River. These projects use multiple flow regimes in determining fish habitat suitability downstream from dams and diversions.

- **Matilija Creek IFIM Project** – Ventura County, CA
  ENTRIX, Inc. conducted this instream flow study to determine the impacts of releases from Matilija Dam on Steelhead rearing and spawning habitat from the dam to the Robles Diversion on the Ventura River. The results of this study will assist in the identification of factors potentially limiting fish populations in the effected reach and to determine appropriate release flows and ramping rates. Mr. Howard conducted the field investigation, data collection, and modeling setup.
- **PacifiCorp FERC IFIM Project** – Jackson County, OR
  ENTRIX, Inc. conducted this instream flow study to determine the impacts of dams and diversions on fisheries habitat in the upper Rogue River watershed. Mr. Howard assisted in the field investigation and data collection.

Water Quality Studies

- **Santa Clara River Estuary Metals Translator Study** – Ventura County, CA
  ENTRIX, Inc. conducted a yearlong investigation focused on determining the metals translators for copper, nickel, zinc, and lead in the Santa Clara River Estuary. There are chemical differences between the Ventura Water Reclamation Facilities (VWRF) discharged effluent and the receiving Santa Clara River water. The Metals Translator Study determined what fraction of metals in the VWRF effluent were dissolved in the receiving water, and therefore bioavailable. Mr. Howard was the lead investigator on the Santa Clara River Estuary Metals Translator Study for the City of San Buenaventura.
- **Big Creek FERC Relicensing Water Quality Project** – Sierra national Forest, CA
  ENTRIX, Inc. conducted a water quality study related to the hydroelectric relicensing of Southern California Edison's Big Creek system in the San Joaquin River watershed. Study sites were selected by ENTRIX and a combined agency working group targeting large reservoirs, small impoundments, and streams below project facilities. Mr. Howard was in charge of multiple sampling teams working throughout the San Joaquin watershed.

Environmental Monitoring

- **360 Networks Fiber Optics Project** – Modoc, Lassen, Tehama, Glenn, Butte, Yuba, and Sutter Counties, CA
  ENTRIX, Inc. monitored fiber optic installation that occurred within a variety of sensitive habitats including rivers, wetlands, vernal pools, caves, and cultural resource areas. Many species listed under the California and Federal endangered species acts were of special concern on this project. Mr. Howard was the lead environmental monitor on this fiber optics project for the California Public Utilities Commission. No significant environmental impacts, under the adopted environmental mitigation measures, occurred on this project.
- **Southern Trails Gas Pipeline Project** – Riverside County, CA
  ENTRIX, Inc. monitored fiber optic installation that occurred within a variety of sensitive dessert habitats including rivers, washes, reptile and bird habitats, and cultural resource areas in the Mojave Dessert near Palm Springs, California. Mr. Howard was the Lead Field Coordinator for the California State Lands Commission on this project. The pipeline right-of-way was 8 miles long which crossed numerous washes including the San Gorgonio River. No significant environmental impacts, under the adopted environmental mitigation measures, occurred on this project.
- **Ventura County Flood Control Sediment Removal–** Ventura County, CA

ENTRIX, Inc. monitored a sediment removal and channel maintenance project on Pole Creek in Fillmore, California. Mr. Howard served as fisheries professional and Environmental Monitor to the Ventura County Flood Control District on this project. This creek is a tributary to the Santa Clara River which supports a small population of endangered southern California steelhead trout. Mr. Howard assessed steelhead habitat quality and steelhead migration barriers. Additionally, Mr. Howard monitored construction to eliminate the possibility of project related steelhead impacts.

PROFESSIONAL HISTORY

- ENTRIX, Inc. Senior Staff Scientist, 2003 to date
- ENTRIX, Inc. Staff Scientist, 2000 to 2003
- Oregon Dept. of Fish and Wildlife, 1998

AFFILIATIONS

- American Fisheries Society, Oregon and Cal-Neva Chapters since 1998
- Trout Unlimited

Guthrie

January 2004

CURRICULUM VITAE

Daniel A. Guthrie
Joint Science Department
Claremont McKenna, Scripps,
and Pitzer College
Claremont, California 91711
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Birthdate and place: March 5, 1939; Indiana
Health: Excellent

Education

Degree	Field	Date	School	Address
B.A. cum laude	Biology	1960	Amherst College	Amherst, MA
M.A.	Biology	1962	Harvard Univ.	Cambridge, MA
Ph.D.	Biology	1964	Univ. of Mass. (4 college program)	Amherst, MA

Society and organization membership (professional)

American Association for the Advancement of Science
Society of Vertebrate Paleontologists
Southern California Academy of Science, Editor, treasurer
Sigma Xi
National Audubon Society
Western Field Ornithologists
American Ornithologists Union

Grants

Summer 1965	Research grant from Claremont Graduate School and University Center
Summer 1966	Permission to use Shell Oil Fund to Joint Science Department for financing summer research
Summer 1968	Research Grant - Pitzer College
1968 - 1970	N.S.F. research grant
1970	Claremont McKenna College summer research grant
1972 - 1974	Scripps College research grants
1974 - 1977	Pitzer College research grants
1977 - 1979	Research grant - National Park Service
1985 - 1992	Keck Grant - Claremont Colleges

Consulting

1974 Garret Corp. - Paleontological reconnaissance of oil shale lands, Grand Junction,

Colorado.

1976 - 1979	Bandelier National Monument, New Mexico - mammal, bird and reptile surveys.
1978 - 1979	B.L.M. contract to Rockwell Int. Coso Geothermal Site - bird studies, (breeding and migratory bird censuses).
1980	Army Corp of Engineers - Study of Whitewater River Drainage, Palm Springs, CA. (bird and small mammal censuses).
1980 - 1981	Signal Oil Co. - Study of birds of Bolsa Chica Lagoon, Huntington Beach, CA.
1983	Bird and Mammal Studies - Electric power corridor Yuha Desert Energy Corp. of Calif. PUB: Util Comm.
1983	Bird and Mammal Studies - Laguna Laurel Site, Laguna Canyon, Irvine Company.
1983 - 1984	Ecological Studies of Santa Ana River Marsh, U.S. Army Corps. of Engineers.
1985 - 1986	Ecological Studies of San Mateo Estuary, U.S. Marine Corps, Camp Pendleton.
1985	Ecological Studies of the Santa Margarita River Sikand Corporation and U.S. Marines.
1985	Identification of Bird bones from Goleta Slough Scientific Research Surveys.
1985	Evaluation of land near Saugus potential Condor Habitat, Sikand Engineering Associates.
1985 - 1987	Identification of Bird Bones from Archeological Sites on Vandenberg Air Force Base, U.S. Dept. of Interior.
1986 - 1988	Avian Analysis of Upper Section of the Santa Clara River, with special emphasis on Least Bell's Vireo, Sikand Corp.
1986	Avian Analysis of 19th Street Corridor, Costa Mesa, with special emphasis on Least Bell's Vireo, Phillips Brandt and Reddick, Irvine, Ca.
1986 - 1987	Analysis of Ground Water Storage Plan for Prado Basin, with with special emphasis on Least Bell's Vireo, Montgomery Engineering.
1987 - 1988	Avian Analysis of Upper Reaches of Santa Ana River, Corp. of Engineers.
1987 - 1988	Ecological Studies of potential low level nuclear waste dump sites, California desert, U. S. Ecology.
1986 - 1997	Avian Studies at Bolsa Chica, Signal Landmark Co., and Koll Corp.
1997	Assessment of Tracts in Riverside County for California Gnatcatcher.
1988	Wildlife Survey Calabasus Glenfed Residential Project. Planning Consulting Research.
1988	Biological Assessment of a small portion of tract no. 43415, Los Angeles, California Planning Consultants Research.
1988	Assessment of Tentative Tract No. 35035, Burbank, California as Habitat for Least Bell's Virgo. Impact Sciences, Inc.
1987 - 1988	Avian Analysis of Coachella Waste Water Channel, Montgomery, Engineering
1989	Fauna of Potential Waste Dump Site, Afton, CA
1986 - Present	Avian Analysis of Upper Section of the Santa Clara River, with special emphasis on Least Bell's Vireo, Sikand Corp., and Newhall Land
1985 - Present	Identification of Bird Bones from Archeological Sites in Orange, Los Angeles, Ventura and Santa Barbara Counties.

Other

1978 - 1988	President, Pomona Valley Audubon Society
1993 - Present	President, Pomona Valley Audubon Society

Academic Experience - Positions

1960 - 1961	Teaching Fellow	Amherst College
1964 - Present	Assistant Professor of Biology	Claremont McKenna College

	to Full Professor	Pitzer and Scripps College
1974 (Summer)	Lecturer	UCLA
1976 (Summer)	Lecturer	Cal State, Los Angeles

Teaching (courses taught)

Introductory biology, comparative anatomy, human anatomy, organic evolution, vertebrate paleontology, environmental science, ornithology, mammalogy, animal behavior, terrestrial biology of So. Calif.

Administrative (committee membership)

Served on Executive, Curriculum, Registration, Admissions, and Research and Development Committees.
Chairman, Joint Science Department 1972-1974, 1986-1990
Chairman, Preprofessional Committee 1965-1979
Designed Biology, Human Biology, Natural History Concentrations
Coached 5 college women's lacrosse club, 1985-2001
Assistant coach, CMS women's lacrosse team, 2002-2004

References

Dr. Phillip Walker, Assoc. Professor of Anthropology, Dept. of Anthropology, U.C. Santa Barbara, Santa Barbara, CA 93106

Dr. Newton Copp, Professor of Biology, Joint Science Department, The Claremont Colleges, Claremont, CA 91711

Publications and Thesis Titles

1. Guthrie, D.A. "Relationship of the African Rodents Petromus and Thryonomys." (B.A. thesis, unpublished). **1960**.
2. Guthrie, D.A. "The Carotid Circulation in the Rodentia." Bull. Mus. Comp. Zool., Harvard University, 128, 455-481. **1963**.
3. Guthrie, D.A. "A New Species of Dichobunid Artiodactyl from the Lower Eocene of Wyoming." Mammalogy, 47, 487-490. **1966**.
4. Guthrie, D.A. "Paeneprolimnocyon, a New Genus of Early Eocene Limnocyonid. (Mammalia, Delthatheridia)." J. Paleontology, 41, 1285-1287. **1967**
5. Guthrie, D.A "The Mammalian Fauna of the Lysite Member, Wind River" **1967**.
6. Guthrie, D.A. "Formation (Early Eocene) Wyoming." Memoirs of So. Calif. Acad. Sci. 5, 1-52. **1967**
7. Guthrie, D.A. "The Tarsus of Early Eocene Artiodactyls." J. Mammalogy, 49, 307-402. **1968**.
8. Guthrie, D.A. "The Carotid Circulation in Aplodontia." J. Mammalogy, 50, -7. **1969**.
9. Guthrie, D.A. "The Titanothere from the Early Eocene of Wyoming." J. Mammalogy, 52(2); 474-475. **1971**.
10. Guthrie, D.A. "Primitive Man's Relationship to Nature." Bioscience. 31:721-723. **1971**.
11. Guthrie, D.A. "The Mammalian Fauna of the Lost Cabin Member, Wind River Formation (lower Eocene) of Wyoming." Ann. Carnegie Mus., 43(4) 47-113. **1971**.
12. Guthrie, D.A. "Environment and the Evolutionary View." J. of Environmental Education. 3(4) 13-17. **1972**.
13. Guthrie, D.A. Claremont, CA. Christmas Census No. 952. American Birds, 27, 505-506. **1973**.
14. Guthrie, D.A. "Suburban Bird Populations in Southern California." Am. Midland Nat., 92:461-466. **1974**.
15. Guthrie, D.A. Claremont, CA. Christmas Census No. 970. American Birds, 28, 514-515. **1974**.

16. Guthrie, D.A., V. Allen. "The Age of the Chadron Anthill Fauna from Nebraska." J. Mammalogy, 55:452. **1974**.
17. Guthrie, D.A., Claremont, CA. Christmas Census No. 1023 American Birds, 29, 558-559. **1975**.
18. Guthrie, D.A. "Ecological Assessment of the Lower Canyons of Bandelier National Monument." Report to National Park Service (16 pp.) **1976**.
19. Guthrie, D.A. "Analysis of Faunal Remains from Archeological Sites - Bandelier National Monument." Report to National Park Service.(10pp.) **1976**.
20. Guthrie, D.A. Claremont, CA. Christmas Census No. 1056 American Birds, 30, 583. **1976**.
21. Guthrie, D.A., N. Delong. "Carotid Arteries in the Rodent Genera Pappogeomys Geomys, and Thomomys (Fam Geomyidae). "Bull. So. Cal. Acad. Sci., 76:63-66. **1977**.
22. Guthrie, D.A. "Impact of Feral Burros on Small Mammal Populations within Bandelier National Monument." Interrim report to National Park Service. (7 PP.) **1977**.
23. Guthrie, D.A., P. Walker. "An Ethnozoological Analysis of Faunal Remains from Four Santa Barbara Channel Islands Archeological Sites." Report to National Park Service. (139 pp.) **1977**.
24. Guthrie, D.A. Claremont, CA. Christmas Census No. 1108 American Birds, 31, 85. **1977**.
25. Guthrie, D.A. "Mammal Survey of Bandelier National Monument." Interim report to National Park Service. (5 pp.) **1978**.
26. Guthrie, D.A. "Effects of Fire on Small Mammals within Bandelier National Monuments." Report to the National Park Service. (10 pp.) **1978**.
27. Guthrie, D.A. Claremont, CA CHristmas Census No. 1152 American Birds, 32, 8857-858 **1978**.
28. Guthrie, D.A. "Analysis of Faunal Remains from La 13659 and La 12117, Bandelier National Monument." Report to National Park Service. (10 pp.) **1978**.
29. Guthrie, D.A., G.T. MacIntyre. "Paeneprolimnocyon. A Junior Synonym ofOodectes Wortman, 1901." J. Paleontology, 53: 1034-36. **1979**.
30. Guthrie, D.A. "Status of the Jemez Mountains Salamander (Plethodon neomexicanus) within Bandelier National Monument." Final report to the National Park Service, (8 pp.). **1979**.
31. Guthrie, D.A. Claremont, CA. Christmas Census No. 1169 American Birds, 33, 646-647. **1979**.
32. Guthrie, D.A. "Effects of Fire on Sma11 Mammals within Bandelier National Monument." Final report to the National Park Service, (36 pp.) **1980**.
33. Guthrie, D.A. Claremont, CA. Christmas Census No. 1217 American Birds 34:643. **1980**.
34. Guthrie, D.A., K. Guthrie. "Breeding Bird Survey 144, Desert Scrub." American Birds, 34:79. **1980**.
35. Guthrie, D.A., K. Guthrie. "Breeding Bird Survey 142, Creosote Bush Scrub I." American Birds, 34:79. **1980**.
36. Guthrie, D.A., K. Guthrie. "Breeding Bird Survey 143, Creosote BushScrub II." American Birds, 34:79. **1980**.
37. Guthrie, D.A., K. Guthrie. "Breeding Bird Survey 145, High Desert Hot Springs." American Birds, 34:79-80. **1980**.
38. Guthrie, D.A., K. Guthrie. "Breeding Bird Survey 148, High Desert Spring." American Birds, 34:80. **1980**.
39. Guthrie, D.A., K. Guthrie. "Breeding Bird Survey 147, High Desert Reservoir." American Birds, 34:80. **1980**.
40. Guthrie, D.A., K. Guthrie. "Breeding Bird Survey 149, Joshua Tree Woodland." American Birds, 34:80. **1980**.
41. Guthrie, D.A., K. Guthrie. "Breeding Bird Survey 152, Saltbush Scrub." American Birds, 34:80. **1980**.
42. Guthrie, D.A. "Analysis of Avifaunal and Bat Remains from Midden Sites on San Miguel Island." The Channel Islands, Proceedings of a Multi- disciplinary Symposium, Denis Powers, ed. Santa Barbara Museum of Natural History. pp. 689-702. **1980**.
43. Guthrie, D.A. Claremont, CA. Christmas Census No. 1248 American Birds, 36:735. **1980**.
44. Guthrie, D.A. Claremont, CA. Christmas Census No. 1312 American Birds, 36:735. **1980**.

45. Guthrie, D.A. "Suburban Bird Populations." Handbook of Census Methods for Terrestrial Vertebrates. David E. Davis, ed., CRC Press, Boca Raton, FL pp. 293-94. **1980**.

Publications Continued:

46. Guthrie, D.A. Claremont, CA. Christmas Census No. 1344, American Birds 37:748-749. **1981**.
47. Guthrie, D.A. Claremont, CA. Christmas Census No. 1248. American Birds, 35:705.
48. Guthrie, D.A. Claremont, CA. Christmas Census No. 1312. American Birds, 36:735.
49. Guthrie, D.A. "Suburban Bird Populations." Handbook of Census Methods for Terrestrial Vertebrates. David E. Davis, ed., CRC Press, Boca Raton, FL pp. 293-94. **1982**.
50. Guthrie, D.A. "Faunal Remains in Bandelier: Excavations in the flood pool of Cochiti Lake, New Mexico." Lyndi Hubbel and Diane Traylor, eds. Submitted by National Park Service Southwest Cultural Research Center to Interagency Archeological Service Division, National Park Service, Denver. **1982**.
51. Guthrie, D.A. Claremont, CA. Christmas Census No. 1344 American Birds, 37:748-749. **1983**.
52. Guthrie, D.A. "Effects of Fire on Small Mammals within Bandelier National Momument, New Mexico." La Mesa Fire Symposium, T. Fox. ed., Los Alamos Nat'l. Lab., Los Alamos, NM, pp. 115-134. LA-9236-NERP. **1984**.
53. Moeur, S., & Guthrie, D.A. "The Effects of Clearing Fire-killed Trees on Wildlife" La Mesa Fire Symposium, T. Fox. ed., Los Alamos Nat'l. Lab., Los Alamos, NM, pp. 135-144. LA-9236-NERP. **1984**.
54. Guthrie, D.A. "Section on Avian Remains." An Ethnozoological Analysis of Faunal Remains from Four Santa Barbara Channel Island Archeological Sites, Phillip Walker.
55. Lagenwalter, Paul El, II. and Daniel A. Guthrie. "Avian Remains from the Field III Excavations at San Juaquin De La Punta De Los Guijarrus," Fort Guijaros Quarterly, vol 1 (3a) pp. 24-37. **1997**.
56. Guthrie, D.A. "Turning the Dreams into Reality: Challenges." in Project Kaleidoscope: What Works: Building Natural Science Communities, Vol. II, Wash., D.C. **1992**.
57. Guthrie, D.A. "A Pleistocene Avifauna from San Miguel Island, California," Papers on Avian Paleontology, E. Campbell ed., Sci. Series 36, Nat. Hist. Mus., Los Angeles, CA., pp. 320-327. **1992**.
58. Guthrie, D.A. "Listen to the Birds? The Use of Avian Remains in Archeology," in Archaeology on the Northern Channel Islands of California, Michael A. Glassow ed., Coyote Press, Archives of California Prehistory No. 34.pp. 155-167. **1993**.
59. Guthrie, D.A. "New information on the Prehistoric Fauna of San Miguel Island," pp. 405-416. Third Channel Islands Symposium, F.G. Nocaberg ed., Santa Barbara, CA. **1993**.
60. Erlandson, J.M., Kennett, D.J., Ingram, B.L., Morris, D.P., Tveskov, M.A., West, G.J., Walker, P.L. and D.A. Guthrie. AAn Archaeological and Paleontological Chronology for Daisy Cave (CA-SMI-261), San Miguel Island, California.@ Radiocarbon, v. 38, pp. 355-373. **1996**.
61. Guthrie, D.A. "Fossil Vertebrates from Pleistocene Terrestrial Deposits on the Northern Channel Islands, Southern California." pp. 187-192. **In** Contributions to the Geology of the Northern Channel Islands, Southern California, P.W. Wiegand, (ed.). Pacific Section, American Association of Petroleum Geologists publication MP-45. **1998**.
62. D.A. Guthrie, Thomas, H.W., and G.L. Kennedy. Fratercula dowi n. sp., "An Extinct Late Pleistocene Puffin from the Southern California Channel Islands" (Aves:Alcidae) in Proceedings of a Fifth California Islands Symposium. US Dept of Interior Minerals Management Service, Pacific OCS Region (published as CD) MMS 99-0038. **Feb 2000**.

GeoSyntec
Consultants

LISA AUSTIN

stormwater management
nonpoint source control
erosion control
NPDES permitting

EDUCATION

Southern Illinois University at Carbondale: M.S., Civil Engineering, 1992
Southern Illinois University at Carbondale: B.S., Environmental Engineering, 1986

REGISTRATIONS

Professional Civil Engineer: Washington State #30370, July 23, 1993

PROFESSIONAL HISTORY

Senior Professional, GeoSyntec Consultants, 2002 – Present
Water Resources Engineer, City of Bellevue Utilities Department, 2001-2002
Water Quality Engineer, Washington State Department of Ecology, 1990-2001

REPRESENTATIVE SKILLS AND EXPERIENCE

Ms. Austin has 14 years of experience in the area of water quality and stormwater management. She has in-depth knowledge of both industrial and municipal National Pollutant Discharge Elimination System (NPDES) permitting; municipal stormwater program planning and operations; stormwater best management practice (BMP) selection, design, and maintenance; nonpoint source control; and construction erosion control.

Ms. Austin's previous positions have given her the unique perspective of being both the regulator (the State) and the permittee (the City). Through this experience, she has developed an understanding of the relationships between regulatory programs such as NPDES stormwater permits, Total Maximum Daily Loads (TMDLs), and the Endangered Species Act.

Ms. Austin has developed many skills through her years of water quality project work, including organizing and leading technical committees; conducting public information meetings and hearings; making technical presentations; writing detailed technical documents such as technical memos, reports, and manuals; contracting; and managing projects to meet a schedule.

Recent project experience includes:

- Provided technical assistance to the Washington State Department of Ecology in support of the issuance of the NPDES Phase II Permit. Tasks included identifying special purpose districts for inclusion in the permit and developing a model Interlocal Agreement for use by Special Purpose Districts and the jurisdictions in which they are located; identifying waterbodies that are on the 303(d) list and TMDLs for those waterbodies that include wasteload allocations for municipal stormwater discharges; identifying approaches taken by other key states in regulating MS4 discharges to 303(d)-listed water bodies, TMDL implementation, and stormwater program effectiveness evaluation; and describing basic stormwater program effectiveness assessment concepts and approaches and recommending an approach for the Western Washington NPDES Phase II Permit.

- Conducted a survey of municipal stormwater BMP implementation in the San Francisco Bay watershed to assess the current level of stormwater BMP implementation. The survey was designed to gather information on the level of site design, treatment control BMP, and maintenance practice implementation, including costs and design information where available. The primary objective of the survey was to obtain information that would help the Clean Estuary Partnership, a consortium of wastewater and stormwater agencies in the San Francisco Bay area, to better understand the costs, benefits, and feasibility of BMP implementation alternatives for urban runoff programs to comply with the San Francisco Bay mercury, PCB, and organo-chlorine pesticide TMDLs. The survey results were presented in a GIS format linked to a database containing information on catchment characteristics, design criteria, and capital and O&M costs.

- Acted as Project Manager for the Ballona Creek Structural BMP Planning and Implementation Strategy Project with the Santa Monica Bay Restoration Commission. This project is to develop a planning and implementation strategy that could be used by the various municipalities in the Ballona Creek Watershed to successfully plan, design, implement, and monitor structural retrofit BMPs for stormwater quality management on a subwatershed basis. A key element in the project is to select and design a BMP package that can be successfully implemented in a highly developed urban subwatershed and then demonstrate, through water quality monitoring, the effectiveness in treating the suite of constituents identified on the 303(d) list for Ballona Creek.

- Assisted the Fresno Metropolitan Flood Control District in several NPDES Permit implementation tasks. Provided recommendations and examples of educational and informational tools used by stormwater programs in California and elsewhere in the U.S. to help contractors simplify implementation of BMPs at construction sites. Helped to develop

a Stormwater Pollution Prevention Plan (SWPPP) for typical storm sewer installation projects that will be used a template for future projects and developed an informal SWPPP for stormwater infiltration basin maintenance projects. Developed stormwater management guidelines and provided training for parks and open space operation and maintenance personnel. Developed and provided a training program for Industrial General Permit non-filers. Prepared a technical memo on Best Management Practices that District personnel and contractors can use to control fugitive dust emissions and track-out during infiltration basin excavation and maintenance activities. Assisted with program effectiveness evaluation and NPDES permit reapplication.

- Assisted with the development and writing of Water Quality Management Plans for several major new development projects in Southern California. These reports identify regulatory issues, constituents of concern and significance thresholds; model stormwater runoff volumes, flow rates, and water quality; develop and evaluate the effectiveness of conceptual BMP plans; and assess the significance of potential water quality and hydromodification impacts. Projects include the Mountain Park Development Project, Santiago Hills II/East Orange Phase I, and East Orange Phase 2 & 3 WQMPs for The Irvine Community Development Company and the Rancho Mission Viejo WQMP in Orange County, and various Newhall Land projects in Los Angeles County.

- Developed a Stormwater Water Master Plan for the redevelopment of the Amgen Campus in Thousand Oaks California, including gaining approval from the City of Thousand Oaks for provision of innovative stormwater treatment using cartridge filtration in underground vaults.

- Developed a Stormwater Pollution Prevention Plan for the Immunex Helix Campus in Seattle, Washington. This Stormwater Pollution Prevention Plan focused on source control and operation and maintenance of stormwater treatment Best Management Practices.

- Participated in a reconnaissance-level study to assist the City of Milpitas in quantifying the degree that existing City stormwater lagoons may be used as regional stormwater treatment facilities for new development and redevelopment projects, as allowed under Provision C.3 of their NPDES Permit. Tasks included a regulatory analysis of permit provisions related to regional treatment, technical evaluation of the available treatment capacity in the existing lagoons, and analysis of the cost to a developer for incorporating a treatment BMP on a development project site.

Representative past experience includes:

- *Municipal Water Resource Management* – Water Resource Engineer for the City of Bellevue Utilities Department, responsible for the operation and maintenance of a large regional stormwater treatment facility consisting of a wet vault, sand filters, and a detention pond. Provided technical assistance to city departments including Transportation, Utilities, and Parks, on water resource issues related to the Endangered Species Act, Clean Water Act, and state stormwater management regulations. Developed Maintenance Standards for the Storm and Surface Water System. Provided technical assistance to drainage review staff on innovative stormwater BMP selection and design.

- *Municipal Stormwater Program Planning and Evaluation* – Performed technical review and assisted in the development of stormwater management plans, local stormwater ordinances, stormwater technical manuals and monitoring programs within a seven county region in northwest Washington State as a Water Quality Engineer for the Washington State Department of Ecology. Participated in the development of the proposed stormwater management program for the Tri-County Region in response to the listing of Chinook salmon under the Endangered Species Act.

- *Stormwater BMP Selection, Evaluation and Design.* Served as the technical lead in the update of the Stormwater Management Manual for Western Washington for Volume II, Construction Stormwater Pollution Prevention, and a portion of Volume V, Runoff Treatment BMPs while working for the Washington State Department of Ecology. In addition, participated in development of the stormwater BMP monitoring protocol for Washington State.

- *NPDES Permitting*. As a Water Quality Engineer for the Washington State Department of Ecology, wrote and managed NPDES permits for process wastewater and stormwater discharges from industrial facilities, including shipyards, solid waste facilities, and SEATAC airport. Wrote and managed stormwater permits for large construction projects and conducted compliance inspections. Reviewed engineering reports, plans and specifications for industrial wastewater treatment facilities and BMP practices for stormwater pollution prevention. Reviewed wastewater and stormwater monitoring plans and monitoring data. Conducted Class II inspections, including sampling of industrial and municipal wastewater discharges.

ERIC W. STRECKER

water resources
water quality
stormwater management
fisheries biology

EDUCATION

University of Washington: M.S.E., Civil Engineering, 1985
Humboldt State University, Arcata, California: B.S., Fisheries Science, 1983;
B.S. Environmental Engineering, 1983

REGISTRATIONS

Registered Civil Engineer: California, 1987
Registered Civil Engineer: Oregon, 1991
Environmental Engineer: Oregon, 1995

PROFESSIONAL HISTORY

GeoSyntec Consultants, Principal, 2000-Present
URS Greiner Woodward Clyde, National Manager-Water Quality Practice, 1985 - 2000
University of Washington, College of Engineering, Lecturer, 1985
California Department of Fish and Game, Fisheries Seasonal Aide, 1983
U.S. Forest Service, Fisheries Technician, 1979 - 1982

REPRESENTATIVE SKILLS AND EXPERIENCE

Mr. Strecker is a recognized authority in the area of stormwater management, especially in the design, monitoring, and evaluation of best management practices (BMPs). For the past 17 years, Mr. Strecker has provided technical direction and assistance to public and private sector clients in stormwater master planning, National Pollutant Discharge Elimination System (NPDES) permitting and surface water pollution assessment and control. This work has included conducting applied National and local research studies for US EPA and the Federal Highway Administration, as well state and local governments throughout the western United States.

Representative project experience includes:

- *Watershed Management/TMDL Implementation.* Mr. Strecker served as Project Manager for the development of San Diego Creek Natural Treatment Systems Master Plan for the Irvine Ranch Water District. The plan includes the selection, sizing and initial design of over 35 wetland treatment systems in the Watershed. The purpose of the plan is to meet TMDL loading limits for stormwater system discharges. He currently is leading an effort to assess potential BMPs for implementation of TMDLs Lake Tahoe. This work includes assessing potential BMP implementation scenarios as well as assessing their costs. He will also be providing guidance on the overall watershed modeling and monitoring efforts. He has also assisted in the development of TMDL implementation plans for the Columbia Slough in Portland, Oregon.
- *Stormwater Master Planning.* Mr. Strecker served as Project Manager for the development of integrated stormwater master plans for the City of Spokane, Washington; and West Linn, Oregon. He also developed master plans for the Spokane and Snohomish counties. The plans addressed flood control, water quality, and habitat protection, and included detailed hydraulic hydrologic modeling, water quality modeling and analysis, and natural resource evaluations. Mr. Strecker directed the decision analyses associated with preparation of these plans and played a key role in public participation efforts. He has also assisted large development projects with stormwater master planning, including the Irvine Company, Rancho Mission Viejo, Newhall Ranch, and Playa Vista. For Playa Vista, Mr. Strecker serves as Project Manger on a study to determine the effects of the project on receiving waters, a project that included design of stormwater treatment wetlands.
- *NPDES Stormwater Permitting.* Mr. Strecker prepared municipal NPDES stormwater permit applications for the cities of Portland, Eugene, and Gresham, Oregon, and Boise, Idaho, All four permits involved development of city-wide stormwater management plans specifically designed to address local stormwater pollution issues. The permits prepared for Portland and Eugene also included design, installation, and operation of nationally acclaimed stormwater monitoring programs. He has also assisted numerous development projects in meeting post-construction permit compliance issues.
- *Water Quality Design Standards Development.* The City and County of Honolulu retained Mr. Strecker to develop water quality standards that the City and County could use to reduce runoff pollution from new development projects. He is providing the same assistance to the County of Santa Barbara.

- *BMP Research.* On behalf of the United States Environmental Protection Agency (USEPA), Mr. Strecker conducted a comprehensive, nationwide study of BMP effectiveness. Included in this study was an assessment of the protocols used to evaluate BMPs. The results, which concluded that there exist wide discrepancies in evaluating the effectiveness of BMPs, were provided to USEPA headquarters. He also managed the effort to develop a detailed BMP monitoring guidance document based upon the ASCE BMP database.
- *Water Quality Research Projects, USEPA.* Mr. Strecker served as Project Manager for three separate research projects for USEPA. The projects involved 1) an extensive literature review on the use of wetlands to control stormwater pollution; 2) development of a probabilistic methodology to assess the impacts of urban stormwater run off on lakes; and 3) development of a statistical characterization of storm events to evaluate non-point source contributions to runoff.
- *Federal Highway Administration (FHWA) Highway Runoff Studies*. Mr. Strecker contributed to the development of a probabilistic approach that the FHWA uses to predict highway runoff pollutant loading. The database developed by Mr. Strecker includes 31 highway sites nationwide, and covers over 1000 storm events and 20 pollutants. Mr. Strecker also managed a project to assist FHWA in research related to field-testing methods for water quality, monitoring technologies applicable to highway sites, and the development of a detailed stormwater monitoring guidance documents.
- *Stormwater Permits for Construction Activities:* Mr. Strecker assisted a large semi-conductor company with construction monitoring and pollution prevention planning for stormwater control during development of new facilities for the company. He also provided expert testimony on a legal matter involving compliance with Oregon's 1200-C NPDES Construction Stormwater permit.

AFFILIATIONS

American Society of Civil Engineers, Urban Water Resources Research Council
American Fisheries Society
American Water Resources Association
American Public Works Association
Oregon Association of Clean Water Agencies, Stormwater Committee
Water Environment Federation, Watershed Management Committee

SELECTED PUBLICATIONS

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Strecker, Eric W., Marcus M. Quigley, and Ben Urbonas, 2003. A Reassessment of the Expanded EPA/ASCE National BMP Database, AGU 2003 Fall Meeting, 8-12 December, San Francisco, California. Invited Presentation H32D-05

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Strecker, E.W., "Low Impact Development (LID): How Low Impact Is It?," Water Resources Impact, Vol. 3 NO. 6, pp. 10-15, Nov. 2001.

Strecker, E., and B.R. Urbonas, "Assessing Receiving Water Effects of Urban Stormwater Best Management Practices (BMPs)," In: Linking Stormwater BMP Designs and Performance to Receiving Water Impact Mitigation, Proceedings of An Engineering Foundation Conference, Snowmass Village, Colorado, August 1-24, 2001, Edited by Ben R. Urbonas, ISBN 0-7844-0602-2, pp. 426-437.

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Strecker, E.W., K. Reininga, "Implementation of Nonpoint Pollution Source Control Programs for Municipal Separate Storm Sewer NPDES Compliance in Oregon—Plan and Lessons Learned," presented at the Pacific Northwest Pollution Control Association Annual Conference, Spokane, Washington, September 1994.

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Conference on the Vulnerability of Soil and Groundwater to Pollutants, Noordwijk, The Netherlands, 1987.

Strecker, E.W., and Wen-sen Chu, "Parameter Identification of a Groundwater Contaminant Transport Model, Groundwater 24(1), 1986, pp. 56-62.

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Strecker, E.W., and Wen-sen Chu, "Parameter Identification of Water System Models, Proceedings of the *ASCE Specialty Conference on Computer Applications in Water Resources*, Buffalo, New York, June 1985, pp. 1190-1197.

GeoSyntec Consultants

EDWIN TODD HESSE **Water quality Chemistry**

EDUCATION

Oregon State University, Corvallis, OR: M.S., Civil Engineering, 2001
University of Oregon, Eugene, OR: B.S., Chemistry, 1991

PROFESSIONAL HISTORY

GeoSyntec Consultants, Portland, OR, Senior Staff Engineer, 5/2000 to present
Oregon State University, Corvallis, OR, Research Assistant, 1/99 to 3/00
Hewlett Packard, Corvallis, OR, Research Assistant, 2/96 to 3/98
Pops & Talbot, Halsey, OR, Laboratory Technician, 5/95 to 2/96
Hall Laboratories, Portland, OR, Quality Control Chemist, 2/92 to 3/95

REPRESENTATIVE EXPERIENCE

As a Senior Staff Engineer, Mr. Hesse's primary responsibilities involve model development and application, technical analysis, and report preparation for water resources engineering and water quality projects. He is also responsible for performing field investigations and monitoring in support of stormwater and water quality projects and providing project support for small to large stormwater management projects, water-related permit applications, and environmental compliance assignments. Highlights of Mr. Hesse's experience include:

- **Water Quality Analysis:** Preparation of reports assessing potential impacts to water quality for several development projects, including the Irvine Northern Sphere Project. Reports include analysis of potential water quality impacts based in part on model results and qualitative assessment for parameters of concern, not conducive to modeling.

- **Water Quality Modeling:** Developed average annual pollutant loads models for several development projects, including the Irvine Northern Sphere Project, utilizing local stormwater monitoring data from LA County and BMP performance data from the National Stormwater Best Management Practices database.

- **Hydrologic Modeling:** Developed Stormwater Management Model (SWMM) models representative of development projects in order to calibrate BMP capture efficiencies and runoff coefficients for water quality models. Use of SWMM to evaluate developed versus existing hydrology (e.g. runoff or infiltration volumes).

- **BMP Recommendations:** Selection and sizing of structural BMPs for development projects, including the Irvine Northern Sphere Project, based upon local rainfall analysis and methods consistent with NPDES permit requirements. Use of the SWMM for verification of sizing results.

- **Monitoring:** Conducted stormwater monitoring for the City of Portland's Bureau of Environmental Services. Assisted with development of a stormwater monitoring plan for the City of Gresham. Conducted groundwater monitoring for Western Farm Services at their Independence, OR site.

- **Model Development:** Revised and improved a transport and fate computer model used to predict the environmental effects of leachate from new road construction. Devised and implemented a numerical method to solve the advection – dispersion equation and other model calculations. Responsible for research for model improvements, all model programming (in Visual Basic for Applications), analysis of laboratory data for model parameters, report writing, and preparation of a user's manual.

- **Laboratory Analysis:** Tested and analyzed experimental dyes and inks. Prepared ink formulations. Calibrated and maintained analytical test equipment and modified experiments to maximize efficiency. Laboratory equipment used included a pH meter, surface tensionmeter, visco meter, Nicomp particle size equipment, centrifuge, and a brightness meter. Contributed to the design of experiments and analytical techniques employed.

Pace

Bruce Phillips, P.E.

Sr. Vice President – Stormwater Management

EDUCATION

M.S. Civil Engineering
Water Resources
Long Beach State University

M.S. Petroleum Engineering
University of Southern California

B.S. Civil Engineering
University of Southern California

YEARS OF EXPERIENCE

Joined Pacific in 2002
With others over 21 years

REGISTRATIONS

Professional Engineer/AZ
34867

Professional Engineer/CA
38635

AFFILIATIONS

American Society of Civil Engineers (ASCE)

Floodplain Management Association (FMA)

PUBLICATIONS

Current Regulatory Best Management Practices for Urban Runoff

Effectiveness of Storm Water Detention Basins for Pollutant Removal

Stream Bank Restoration Design with Vinyl Sheet Pile Grade Control Structures

Design of Riparian Habitat Replacement within Active Floodplains

Bruce Phillips has worked in the civil engineering field since 1981. With two master degrees, one in Civil Engineering and one in Petroleum Engineering, his areas of expertise include of sediment transport, regional flood control facility plans, watershed hydrology analysis, storm water quality assessment studies, detailed hydraulic structure analysis and design, urban drainage facility master plan development, floodplain analysis, and watershed modeling. He has developed significant specialized experience in river engineering and geomorphic studies, including assessment and design of river/stream restoration programs that incorporate unique biological control measures as well as creative stabilization techniques.

RELATED EXPERIENCE

Marriott Shadow Ridge Resort Villas, Palm Desert, California – Mr. Phillips prepared the master plan of drainage for this 312-acre resort that is home to the newest Faldo Golf Institute by Marriott. The engineering requirements involved early planning to integrate the drainage requirements into the overall development that included complete retention of the 100-year onsite flow rate within the development through the use of innovative drainage system designs and utilizing the golf course for storm water storage.

Bighorn Country Club, Palm Desert, California – Prepared the overall drainage master plan and engineering design of the drainage facilities for this high-end golf course development. These drainage requirements included evaluation of the large natural offsite watersheds tributary to the project, preparing onsite hydrology, drainage facility requirements, onsite storm water storage, debris retention facilities, floodplain mapping, and sensitive hydraulics for tributary drainage to the regional Palm Valley Channel traversing the project. The project involved extensive coordination and processing with CVWD and their technical review consultant Bechtel. Extensive use of architectural water features was integrated to provide flood control benefits.

Ocean Trails Golf Course, Rancho Palos Verdes, California – Mr. Phillips provided the overall drainage master plan and also performed hydrology studies for this unique coastal bluff golf course that involved the preservation of the dramatic natural topography and arroyos with this Pete Dye designed golf course.

The Reserve, Palm Desert, California – Mr. Phillips developed a comprehensive regional flood control program and facility improvement plans for this high-end planned golf course community located on a 42-square mile alluvial fan. One of the major issues associated with this project was coordinating and processing the approval of the flood control plans through Coachella Valley Water District (CVWD) and FEMA because of the highly critical flooding issues associated with alluvial fans and desert hydrology. The hydrologic and hydraulic engineering studies for the project required detailed sediment transport analysis, watershed modeling, physical modeling of the hydraulic structures, and complicated channel hydraulic analysis to fully evaluate the effects of the drainage facilities. The recommended flood protection program involved transverse levee systems, numerous grade control structures, large regional flood control conveyance channels, and energy dissipation.

Talega Valley Planned Community, San Clemente, California – Mr. Phillips provided the Runoff Management Plan for the proposed residential golf course communities of Rolling Hills and Champion Hills that collectively comprise the Talega Valley Parcel, encompassing approximately 3,500 acres of undeveloped land. A critical element of the watershed management for the site that required post project runoff to be mitigated to the existing runoff quantities for all storm events. This mitigation requirement was accomplished through a system of five regional detention basins. Highly specialized hydrologic modeling was developed in order to evaluate this specialized design system and to analyze the mitigation requirements for the different storm events.

David A. Jaffe, Ph.D.

Project Engineer

EDUCATION

Ph.D., Civil & Environmental Engineering
University of California, Irvine
2002

M.S., Civil & Environmental Engineering
University of California, Irvine
2000

M.S., Physical Marine Science
University of Southern Mississippi/Stennis Space Center
1998

B.A., Earth Science
Johns Hopkins University
1994

REGISTRATION

Professional Engineer/CA
2005/68321

YEARS OF EXPERIENCE

Joined Pacific in 2002
With others over 4 years

AFFILIATIONS

American Society of Civil Engineers (ASCE)

David Jaffe has a wide variety of Civil, Environmental, and Coastal Engineering experience. His experience includes work with flood control design, floodplain modeling, and floodplain management. Other experience includes urban runoff sampling, and coastal and oceanographic analysis and design.

RELATED EXPERIENCE

Near-Shore Bacterial Pollution Source Study – Huntington Beach, CA
Directed field studies to determine the source of near-shore bacterial pollution in Huntington beach, California in conjunction with Orange County Sanitation District, California. Developed a sampling methodology to determine the role of urban run-off and vertical mixing in pollution transport. Helped oversee and conduct established study protocols.

The Crest Sediment Basin Design – Palm Desert, CA
Sediment basin design as part of the flood control and water quality design. Included in the design was a sediment yield analysis for annual discharge and 100-year flows.

Pole Creek Alternative Flood/Sediment Control Design – Fillmore, CA
Mr. Jaffe designed structures and methods to control bulked flow and manage sediment on Pole Creek. The designs routed flow through urban environments before joining the Santa Clara River.

Centennial Runoff Mitigation Modeling – Los Angeles County, CA
Mr. Jaffe was responsible for the development of a numerical model to analyze the discharge of stormwater and resultant pollutant loading. The model also demonstrated how and where mitigation measures could be implemented most efficiently.

University of Southern Mississippi/Stennis Space Center
Circulation and transport studies, Indonesian Seas, Central Western Pacific Ocean
Analytic circulation studies performed to determine the pathway of waters in regions influenced by heavy rainfall and runoff. Determined contributions to transport at multiple near-shore locations.

Shallow water surface runoff contamination, Bay St. Louis, MS
Attempted to determine if the source of surface slicks on Bay St. Louis, MS was related to chemical runoff from an adjacent processing facility. Developed protocols to study wind-driven transport of slicks.

PUBLICATIONS

Jaffe, D. A., Rovansek, R. J. (2003) “Creating 2-D Velocity Distributions from a 1-D Hydraulic Model: Applications for Impact Analysis.” Headwaters to Oceans Conference Abstract, Long Beach, CA

Jaffe, D. A., and B. F. Sanders (2003) “Dynamics of off-line diversions for flood stage reduction.” Water Resources Research, Submitted.

Jaffe, D. A. (2002) “Levee Breaches For Flood Reduction.” Doctoral dissertation, UCI

Sanders, B. F., D. A. Jaffe, and A. K. Chu (2002) “Discretization of integral equations describing flow in non-prismatic channels with uneven beds.” Journal of Hydraulic Engineering, accepted.

Jaffe, D. A., and B. F. Sanders (2001) “Engineered levee breaches for flood mitigation.” Journal of Hydraulic Engineering, 127(6), pp. 471-479.

Burnett, B. H., V. Kamenkovich, D. A. Jaffe, A. L. Gordon, and G. L. Mellor (2000) “Dynamical balance in the Indonesian Seas circulation.” Geophysical Research Letters, 27(17), p. 2705-2708.

Jaffe, D. A. (1999) “Effects of Engineered Structures on Coastal Erosion: A Review.” Surfrider Foundation Summit, Conference Abstract, San Diego.

Mark E. Krebs, P.E.

President

EDUCATION

B.S./Civil Engineering (cum laude) Structures & Hydraulics, University of Kentucky, 1988

YEARS OF EXPERIENCE

Joined Pacific in 1989
With others over 2 years

REGISTRATIONS

Professional Engineer/AZ 1993/27388

Professional Engineer/CA 1992/049292

Professional Engineer/CO 2000/34093

Professional Engineer/KY 1993/17891

Professional Engineer/NV 1994/10587

Professional Engineer/NM 1997/13635

Professional Engineer/UT 1996/321370

AFFILIATIONS

American Society of Civil Engineers (ASCE)

American Concrete Institute, ACI 230, Soil Cement Committee Member

American Water Works Association (AWWA)

Floodplain Management Association (FMA)

Water Environment Federation (WEF)

Tau Beta Pi, Chi Epsilon

Eagle Scout - Boy Scouts of America

Mark Krebs has engineering and construction experience with both public and private sector projects spanning back to 1988. His design and construction experience includes lakes, water features, all phases of infrastructure, grading, drainage, roadway, water, sewer, reclaimed water, storage, distribution, wetland evaluation and mitigation. His water resources expertise includes hydrology, sediment transport and hydraulic computer modeling analyses and design for many private and municipal FEMA flood-control projects.

In addition to the responsibility of being an officer of the company and President of PACE, Mr. Krebs has been Principal/Sr. Project Manager and the lead design engineer on numerous water resources projects.

RELATED EXPERIENCE

Bridgeport Development Stormwater Management, Valencia, CA
Mr. Krebs served as Project Manager for the lake and flood control measures at this residential lake community. The focal point of the development is a 15-acre lake that provides both visual and natural resource amenities to the residents. The Lake has a tributary drainage area of 70 acres, and provides several urban storm water pollution treatment and water quality maintenance features that serve to fulfill the post-construction requirements of the NPDES for the Bridgeport development. Mr. Krebs also oversaw the use of buried soil cement as for bank stabilization along the Santa Clara River, which runs through the project site. The use of buried soil cement protects against flooding without creating the costly, unsightly, and environmentally damaging bank protection system that traditional design methods would require.

Cardinal Development Soil Cement Bank Protection, Santa Clarita, CA
Mr. Krebs was the Principal-in-charge of the soil cement bank protection project for the Cardinal Development storage site adjacent to the Santa Clara River. The project was for protection of a 1,200 lineal foot segment of the South Fork of the Santa River utilizing 6,400 cubic yards of soil cement, and included coordination with the Client, Government Agencies, and the Project Biologist.

Hidden Creek and Creekside Soil Cement Bank Protection, Santa Clarita, CA
Mr. Krebs was the Project Manager for these soil cement bank protection projects for Newhall Land development adjacent to the San Francisquito Creek. The soil cement bank protection was designed with strict coordination issues for pipe penetrations through the soil cement through numerous water agencies including Valencia Water Company, Castaic Lake Water Agency, and Metropolitan Water District.

Westcreek Soil Cement Bank Protection, Santa Clarita, CA
Mr. Krebs served as the Project Manager for the first soil cement bank protection approved by Los Angeles County Department of Public Works for Newhall Land's Westcreek development adjacent to the San Francisquito Creek. The project is for protection of a 4,300 lineal foot segment of the west side of the San Francisquito Creek of the Santa Clara River. The project also includes design of a concrete structure to protect the existing 16'-9" diameter prestressed Metropolitan Water District concrete pipe.

The Reserve, Palm Desert, CA
Mr. Krebs served as the PACE Project Manager and lead design engineer for this exclusive Weiskopf / Morrish golf course and residential development in Palm Desert. The project elements included flood control solutions in addition to 20 acres of lakes, 11 bridges, 3,000 linear feet of streams, five recirculation pump stations, numerous waterfalls, and one 16-foot high drop structure. The Reserve project team set out to create a first-class golf course/residential development situated within the Deep Canyon watershed. Mr. Krebs initiated PACE's involvement with the redesign of a proposed drainage plan. The redesign provided The Reserve with a signature entry to the project and reduced flood control costs. PACE's involvement then carried into the design of 11 bridges, the largest of which extends 260 feet over a 6-acre entry lake, a plunge pool for 35,000 cfs (more than the Colorado River), and the design of numerous lakes and streams.

APPENDIX I

Permits or Memoranda of Understanding

FORTHCOMING WILL BE INCLUDED UPON FINAL SUBMITTAL

DRAFT

LANDMARK VILLAGE BIOTA REPORT
LOS ANGELES COUNTY, CALIFORNIA

Supplemental Information Submitted to SEATAC at Their Request on August 1, September 12, and October 3, 2005

VOLUME I OF IV

County Project No. 00-196
Vesting Tentative Tract Map No. 53108

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November~~July~~ 2005

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1.0 INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

This document identifies and analyzes potential impacts to the biological resources associated with the Landmark Village project, which is the first proposed subdivision within the Riverwood Village portion of the approximately 11,963-acre Newhall Ranch Specific Plan. The Specific Plan was approved by the Board of Supervisors of the County of Los Angeles (County) on May 27, 2003. The Landmark Village project is proposed on 292.6 acres of land, located within the boundaries of the approved Specific Plan. To facilitate development of this site, several off-site, project-related components would be implemented on an additional 679.2 acres of land within the boundaries of the approved Specific Plan. These project-related components include:

(1) a cut and fill grading operation, which includes fill imported to the Landmark Village tract map site from a 215-acre borrow site located south of the Santa Clara River, and grading to accommodate improvements to State Route 126 (SR-126) adjacent to the tract map site and debris basins for stormwater flows collected by the project's storm drainage system on approximately 120 acres of land, located off site directly north of SR-126 within Chiquito Canyon (and related haul routes);

(2) a 110-acre underground utility corridor proposed along the south side of SR-126 extending from the Valencia Water Reclamation Plant (WRP) (Plant 32) on the east to the proposed Newhall Ranch WRP on the west, which would serve to extend municipal services to the tract map site;

(3) two separate water tank sites, one within the Valencia Commerce Center and another within the proposed borrow site, to convey potable water to the tract map site;

(4) two reclaimed water tanks proposed off site in Chiquito Canyon to implement a portion of the Specific Plan's reclaimed water storage and distribution system; and

(5) construction of the Long Canyon Road Bridge, approximately 17,700 linear feet of associated bank stabilization and storm drainage improvements.

For the purposes of this report, the "tract map site" refers only to the proposed location of the Landmark Village development site itself, and the "project site" includes the tract map site, plus the borrow site, the Chiquito Canyon grading site, the utility corridor, the potable and reclaimed water tank sites, the Long Canyon Road Bridge, bank stabilization, drainage improvements and related haul routes (on a total of 971.8 acres). The project site is discussed in detail in **Section 2.0, Project Description**.

When a project is proposed within or adjacent to a County-designated Significant Ecological Area (SEA), the County's Department of Regional Planning (Department) requires the preparation of both a Biological Constraints Analysis (BCA) and a separate Biota Report, which are to be reviewed by the Significant Ecological Areas Technical Advisory Committee (SEATAC). Portions of the Landmark Village project

site are adjacent to or are within the Specific Plan's River Corridor Special Management Area (SMA)/Significant Ecological Area 23 (SEA 23) boundaries. Given that the Board of Supervisors already approved the Newhall Ranch Specific Plan and WRP, including SEA Conditional Use Permit (CUP) No. 94-087-(5), the Department has directed that this document serve as both the BCA and Biota Report for the Landmark Village project site. The Department's direction is provided because of the following:

(1) the Newhall Ranch Specific Plan area, including the project site, has been analyzed from a biological perspective in the previously certified Newhall Ranch Program Environmental Impact Report (EIR) for the Newhall Ranch Specific Plan and WRP (SCH No. 1995011015), dated March 8, 1999, (see Section 4.6, Biota), the related Biota Report, dated July 1996 (see Draft Program EIR, Volume III, Appendix 4.6) and the Newhall Ranch Revised Additional Analysis, Volume VIII, dated May 2003; and

(2) SEATAC already conducted extensive reviews of the previously submitted Newhall Ranch BCA, Biota Report, draft environmental documentation and portions of the Newhall Ranch Specific Plan.[1] SEATAC's review dates on the Newhall Ranch Specific Plan were December 5, 1994; October 2, 1995; November 6, 1995; December 4, 1995; January 8, 1996; May 6, 1996; and June 3, 1996.

The Department considers the previously certified Program EIR and Biota Report to be a sufficient baseline analysis of impacts to biological resources associated with development of the Newhall Ranch Specific Plan and WRP. As such, the Department has directed the preparation of this document as the Biota Report required to be submitted to SEATAC for its review, comments and recommendations with the overriding criteria that overall conclusions and findings regarding impacts on biological resources be consistent with those found in the certified Program EIR and Biota Report for the Newhall Ranch Specific Plan and WRP. The Department has also directed that this document be prepared in a manner that satisfies SEATAC's format and content guidelines.

1.2 BACKGROUND

On May 27, 2003, the Los Angeles County Board of Supervisors certified the Newhall Ranch Program EIR and Final Additional Analysis for the Newhall Ranch Specific Plan and WRP. At that time, the Board also adopted several project approvals, including the Newhall Ranch Specific Plan and construction of the Newhall Ranch WRP. Other project approvals included (a) General Plan and Sub-Plan Amendment Nos. 94-087-(5); (b) Zone Change No. 94-087-(5); (c) Vesting Tentative Parcel Map No. 24500; and (d) SEA CUP No. 94-087-(5) for boundary adjustments to, and development within, SEA 20 and SEA 23. Finally, the Board adopted environmental findings and revised Mitigation Monitoring Plans for the Specific Plan, WRP, and the related approvals.

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1 Please see Newhall Ranch Draft EIR, Volume III, July 1996, Appendix O, for copies of the SEATAC meeting minutes, reports, comments and responses to SEATAC comments.

Minutes - August 1, 2005

1. **Review the document for consistent use of terms such as 'project', 'site', 'on-site', 'off-site', *et cetera*. The descriptions of the scope of the report given on page three and the project area on page 9 are unclear.**

   As described in the Draft Biota Report (page 1), the "tract map site" refers only to the proposed location of the Landmark Village development site itself, and the "project site" includes the tract map site, plus the borrow site, the Chiquito Canyon grading site, the utility corridor, the potable and reclaimed water tank sites, the Long Canyon Road Bridge, bank stabilization, drainage improvements and related haul routes. As appropriate, the document and graphics have been revised to ensure consistent use of terms describing the various project components.

   The Draft Biota Report (page 3) has been revised to state "this report analyzes impacts to biological resources on the project site, as well as the project's consistency with the findings of the Newhall Ranch Program EIR and the Final Additional Analysis for the Newhall Ranch Specific Plan and WRP."

As part of the Board of Supervisors' project approvals for the Specific Plan, the previously adopted SEA CUP No. 94-087-(5) and General Plan Amendment authorized, among other things, (1) boundary adjustments to the existing SEA 23, consistent with General Plan policies requiring protection of natural resources within SEAs; and (2) Specific Plan development within SEA boundaries, including bridge crossings (i.e., Long Canyon Road Bridge, Commerce Center Drive Bridge and the Potrero Road Bridge), trails, bank stabilization and other improvements. The approved SEA boundary adjustments were found to be consistent with the adopted Specific Plan, which established a Specific Plan "SMA" designation over the adjusted SEA 23 boundaries. Although the adjusted boundaries within SEA 23 were designated as the River Corridor SMA in the adopted Specific Plan, the County's underlying SEA 23 designation also remains in effect. Given that SEA CUP No. 94-087-(5) adjusted SEA boundaries, including SEA 23, this report analyzes project impacts on sensitive biological resources in and adjacent to the previously approved and revised SEA 23 boundary (see **Figure 9**, as shown later in this report) depicting the project location in relation to the revised SEA 23 boundary). This report analyzes impacts to biological resources on the project site, as well as the project's consistency with the findings of the Newhall Ranch Program EIR and the Final Additional Analysis for the Newhall Ranch Specific Plan and WRP.

1.3 NEWHALL RANCH SPECIFIC PLAN

The adopted Newhall Ranch Specific Plan will guide the long-term development of the 11,963-acre Newhall Ranch community, comprising a broad range of residential, mixed-use and non-residential land uses developed within five village areas. The Specific Plan contains the approved land use plan, development regulations, design guidelines and implementation program that are designed to create a mixed-use community consistent with the goals, policies and objectives of the Los Angeles County General Plan and Santa Clarita Valley Areawide Plan. The Specific Plan is regulatory in nature and serves as the zoning for Newhall Ranch. Subsequent development plans and tentative subdivision maps must be consistent with the adopted General Plan, Areawide Plan and Specific Plan.

Furthermore, the Specific Plan establishes the regulations and standards for the protection of open areas adjacent to development and the two large river corridor and High Country SMAs, totaling approximately 6,170 acres. In addition, an off-site condition requires the applicant to dedicate to the public 1,517 acres of land in the Salt Creek watershed in Ventura County, adjacent to the Specific Plan site. These regulations and standards are part of the Newhall Ranch Resource Management Plan (RMP), contained in Section 2.6 of the adopted Specific Plan and provided to SEATAC under separate cover along with this report.

As approved by the Board of Supervisors, the Specific Plan allows for up to 21,308 dwelling units (including 423 second units); 629 acres of mixed-use development; 67 acres of commercial uses; 249 acres of business park land uses; 37 acres of visitor-serving uses; 1,014 acres of open space, including 181 acres of community parks and 833 acres in other open spaces; 5,157 acres in special management areas, 55 acres in 10 neighborhood parks; a 15-acre lake; a public trail system; an 18-hole golf course; two fire stations; a public library; an electrical station; reservation of five elementary school sites, one junior high school site and one high school site; a 6.8 million gallon per day (mgd) WRP; and other associated community facilities. Build-out of the Specific Plan is projected to occur over approximately 25 to 30 years, depending upon economic and market conditions.

The Specific Plan's adopted Land Use Plan and the Overall Land Use Plan Statistical Table provide the framework for development of the Specific Plan area. The adopted Land Use Plan describes the Newhall Ranch Specific Plan land use designations. The designations include five types of Residential uses (estates, low density, low-medium density, medium density and high density); Mixed Use; Commercial; Business Park; Visitor-Serving; open area uses; two SMAs/SEAs; and a Spineflower Conservation Overlay Easement area, all linked by a comprehensive system of roadways, trails and utility easements. Land use overlays are also included on the approved Land Use Plan to show approximate locations of public facility and recreation uses, such as parks, schools, library, golf course, fire stations and the WRP. The Specific Plan contains an approved Village Plan, which identifies the five distinct villages within the Newhall Ranch Specific Plan. The five villages are

(1) **Riverwood** – situated north of the Santa Clara River and along SR-126;

(2) **Oak Valley** – located in the westerly portion of Potrero Canyon;

(3) **Potrero Valley** – occupying the central and easterly portions of Potrero Canyon;

(4) **Long Canyon** – situated in the valley and hills adjacent to the Sawtooth Ridge, south of the Santa Clara River; and

(5) **The Mesas** – overlooking the Santa Clara River in the northeast portion of the Specific Plan site.

The Newhall Ranch Specific Plan land use designations for the Landmark Village tract map site include Low-Medium Residential, Medium Residential, Mixed Use, Commercial and River Corridor SMA/SEA 23. The River Corridor SMA/SEA 23 forms the southern boundary of the Landmark Village tract map site. The land use overlays delineated on the Newhall Ranch Land Use Plan, which are pertinent to the Landmark Village tract map site, consist of "Community Park" and "Elementary School." The Landmark Village project represents the first phase in implementing the Newhall Ranch Specific Plan.

1.4 APPROVED RESOURCE MANAGEMENT PLAN AND MITIGATION MEASURES

The Landmark Village project would be subject to the mitigation measures contained in the RMP of the Specific Plan, the Newhall Ranch Program EIR (March 1999) and the Revised Additional Analysis (May 2003). These mitigation measures were approved by the Board of Supervisors in association with the Newhall Ranch Specific Plan and WRP project approvals on May 27, 2003. These measures are documented in the adopted revised Mitigation Monitoring Plans for both the Specific Plan and WRP and the approved RMP (see Specific Plan [May 27, 2003], Section 2.6, Resource Management Plan). **Appendix C** contains copies of the adopted Specific Plan and WRP Mitigation Monitoring Plans. At the County's request, the approved Specific Plan RMP (Section 2.6) is provided under separate cover to SEATAC.

1.4.1 Specific Plan Resource Management Plan

The Specific Plan RMP contains numerous mitigation measures designed to offset the loss of habitat due to implementation of the Specific Plan (see Specific Plan RMP, Section 2.6, pp. 2-85–2-135). For example, the RMP contains a mitigation and habitat management program for the (1) River Corridor SMA/SEA 23 (Section 2.6, pp. 2-92–2-107); (2) High Country SMA/SEA 20 (Section 2.6, pp. 2-108–2-116); and (3) Open Area (Section 2.6, pp. 2-117–2-118). The RMP permits the use of mitigation banking within the Specific Plan area (Section 2.6, p. 2-119). It also establishes a San Fernando Valley spineflower special study mitigation overlay and preserve program (Section 2.6, pp. 2-120–2-123), an oak resources replacement program (Section 2.6, pp. 2-124–2-126), a wildfire fuel modification plan (Section 2.6, pp. 2-127–2-130), and the hillside preservation and grading plan (Section 2.6, pp. 2-134–2-135).

The RMP also requires that a conservation easement be established over the River Corridor SMA/SEA 23 after development of areas adjoining the river are complete and includes the removal of cattle grazing. Furthermore, the RMP requires that a plan be prepared by the applicant and approved by the County for the permanent ownership and management of the adopted River Corridor SMA/SEA 23 as a "Significant Ecological Area."

The RMP further requires that a conservation agreement be established over the High Country SMA/SEA 20 and that a detailed program be developed for its long-term management and ownership. All of the existing High Country SMA/SEA 20 will be retained in a natural state. Vegetative cover within the adopted High Country SMA/SEA 20 will be enhanced by the eventual removal of cattle grazing, with the exception of grazing for management purposes, as provided in the Newhall Ranch RMP. The High Country SMA/SEA 20 is identified as a primary location for oak resource planting and enhancement to mitigate impacts that will occur within the development areas of the Specific Plan.

A critical component of the open area system to be established by the RMP is the connection between the High Country SMA/SEA 20 and the River Corridor SMA/SEA 23 along Salt Creek. As a condition of approval, the County has required the applicant to dedicate to the public in fee and/or by conservation easement the approximately 1,517 acres of land encompassing the Salt Creek watershed in Ventura County, adjacent to the Newhall Ranch Specific Plan. This additional land dedication will be managed in conjunction with the High Country SMA/SEA 20. The Salt Creek Corridor will provide a permanent regional linkage between the Santa Clara River (SEA 23) and the High Country SMA Santa Susana Mountains (SEA 20). Salt Creek is the most appropriate location for such a wildlife corridor connection because of several distinguishing characteristics. These include provision of a direct link between the two major open areas; less disturbance (i.e., grazing, agriculture, off-road impacts, etc.) than any of the other potential connections; it is bound through most of its length by open area on the north side and, therefore, will not be surrounded by development in the future; it includes both upland and riparian vegetation through most of the corridor; and it is topographically isolated from areas of development on Newhall Ranch.

1.4.2 Newhall Ranch Program EIR Mitigation Measures

The Newhall Ranch Program EIR incorporates mitigation from the Specific Plan RMP and requires additional mitigation to address impacts to special-status plant and wildlife species, including San Fernando Valley spineflower, unarmored threespine stickleback, arroyo toad, southwestern pond turtle, southwestern willow flycatcher, least Bell's vireo and other special-status species (of the species listed here, all but the arroyo toad have been found on the Specific Plan site). Measures are also included that address impacts to sensitive plant communities (e.g., riparian habitat) and other resources under the jurisdiction of the Army Corps of Engineers (ACOE) and California Department of Fish and Game (CDFG).[2]

1.5 LANDMARK VILLAGE PROJECT SUMMARY

The project applicant proposes to develop the 292.6-acre Landmark Village tract map site, along with 679.2-acres of land within and adjacent to the boundaries of the approved Specific Plan for several off-site, project-related components.[3] The Landmark Village project is located within the first phase of the Riverwood Village area of the approved Newhall Ranch Specific Plan. The land uses proposed as part of the project are consistent with the Newhall Ranch Specific Plan. The proposed project consists of residential, mixed-use and commercial development, along with roads, an elementary school site, a

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2 For a complete description of all of the adopted biota-related mitigation measures, please refer to the Specific Plan Revised Mitigation Monitoring Plan, Mitigation Measures 4.6-1–4.6-80, found in **Appendix C** to this report.

3 Portions of the proposed utility corridor and the proposed potable water tank site (located within the Valencia Commerce Center business park) are outside the boundaries of the Newhall Ranch Specific Plan.

community park, recreational centers, open space, trails and off-site grading/improvements, including the Long Canyon Road Bridge, bank stabilization, drainage improvements, potable and reclaimed water tanks, utility corridor, borrow site and related haul routes. Other facilities and infrastructure necessary to support the proposed project include a transportation, transit and circulation system, drainage and flood protection system, domestic water system and sanitary sewer system.

The project applicant is requesting approval of the following discretionary entitlements to allow implementation of the proposed Landmark Village project: (a) General Plan, Sub-Plan and Specific Plan Amendment Nos. 00-196-(5); (b) Vesting Tentative Tract Map No. 53108; (c) SEA CUP No. 00-196-(5) for project-level development within the Specific Plan's River Corridor SMA/SEA 23 boundary; (d) Oak Tree Permit 00-196-(5); (e) Off-Site Soil Transport Approval; and (f) CUP for off-site grading in excess of 100,000 cubic yards (collectively, "Project Approvals").

If the requested Project Approvals are adopted by the County, the proposed Landmark Village project would allow for construction of 1,444 residential dwelling units (308 single-family units, 1,080 multi-family units), 1,033,000 square feet of commercial/mixed uses, a 9-acre elementary school, a 16.1-acre community park, public and private recreational facilities, trails and roads improvements including the Long Canyon Bridge (**Table 1, Landmark Village Statistical Summary**).

Table 1
Landmark Village Statistical Summary

Land Use	Acres	Amount (units/square feet)	Density (du/acre or FAR)
Residential*			
Single Family	49.9	308	6.2
Multi-Family	60.7	685	11.3
Apartments	21.0	451	21.5
Subtotal	131.6	1,444	11.04
Commercial/Mixed Use	36.5	1,033,000	0.65
Elementary School	9.0	NA	NA
Open Space			
Parks	16.1	NA	NA
Recreation Centers	5.2		
Trails & Misc. (slopes, water quality basins)	38.3		
Subtotal	59.6		
Roads	55.8	NA	NA
TOTAL	292.6	1,444 du 1,033,000 sf	0.65

Source: Vesting Tentative Tract Map No. 53108.
** Includes units within mixed-use areas.*
du = dwelling unit; sf = square feet.
FAR=floor area ratio.

Additional actions, such as grading permits, building plan review and building permits, would be required by the County prior to actual grading and construction on the project site.

1.6 DOCUMENTS/STUDIES USED OR REFERENCED IN THIS REPORT

Numerous studies have been conducted to describe the existing conditions on the Landmark Village project site and to analyze anticipated project-related impacts on water quality, the hydrology and hydraulics of the Santa Clara River and special-status plant and wildlife species. A complete list of biological surveys conducted on the Landmark Village project site and the technical reports incorporated into this Biota Report is included in **Section 5.0, Methods, Table 5**. The resumes of the consultants involved in the field surveys and the preparation of incorporated technical reports are included in **Appendix H.**

2.0 PROJECT DESCRIPTION

2.1 LOCATION

The Landmark Village project site is located within the approved Newhall Ranch Specific Plan area, in northwestern Los Angeles County, approximately 30 miles northwest of downtown Los Angeles (**Figure 1, Project Site Location**). The project site is in an unincorporated portion of Los Angeles County in the Santa Clarita Valley Planning Area. The City of Santa Clarita is located east of the site, just beyond Interstate 5 (I-5). The banks of the Santa Clara River form the southern boundary of the tract map site, and SR-126 defines the northern boundary, of the tract map site. The eastern boundary of the tract map site abuts Castaic Creek and the western boundary abuts Chiquito Canyon Creek.

Land uses surrounding the Landmark Village tract map site include (a) to the north, relatively sparse rural residential uses (the community of Val Verde and San Martinez Grande), the Chiquito Canyon Landfill, high-intensity business park uses (Valencia Commerce Center); (b) to the east, an existing WRP (Valencia WRP No. 32), a California Highway Patrol station, high-intensity commercial/recreational uses (Magic Mountain Theme Park), hotels, restaurants and service stations adjacent to I-5; and (c) to the south and west, currently undeveloped grazing or agricultural land associated with the Newhall Ranch Specific Plan site (**Figure 2**, **Project Vicinity Map**).

2.2 PROJECT CHARACTERISTICS

Consistent with the Newhall Ranch Specific Plan, the applicant proposes to develop the Landmark Village tract map site with a total of 1,444 residential dwelling units (308 single-family units and 1,136 multi-family units), approximately 1,033,000 square feet of commercial/mixed-use space, a 9-acre elementary school and supporting roadway and infrastructure improvements. A total of 59.6 acres of public and private recreational facilities, trails, and open space, including a 16.1-acre community park, are also planned as part of the proposed project.

A hiking/biking trail is proposed as part of the tract map site, along the bank of the Santa Clara River beginning at the northeastern project boundary along Castaic Creek and extending west along the Santa Clara River. The conceptual alignment follows the top of the bank stabilization (approximately 50–150 feet from the existing riparian edge), which runs along the southern boundary of the tract map site. The trail is approximately 16 feet wide and approximately 2 miles in length, and it will be constructed of asphalt or similar material. Themed fencing will define the perimeter of the trail and the alignment will be landscaped with native plant materials and the trail will not be lighted at night. The trail will implement a portion of the "Regional River Trail" contemplated by the approved Specific Plan.

Table 1, Landmark Village Development Statistical Summary, above, provides a specific breakdown of the project land uses.

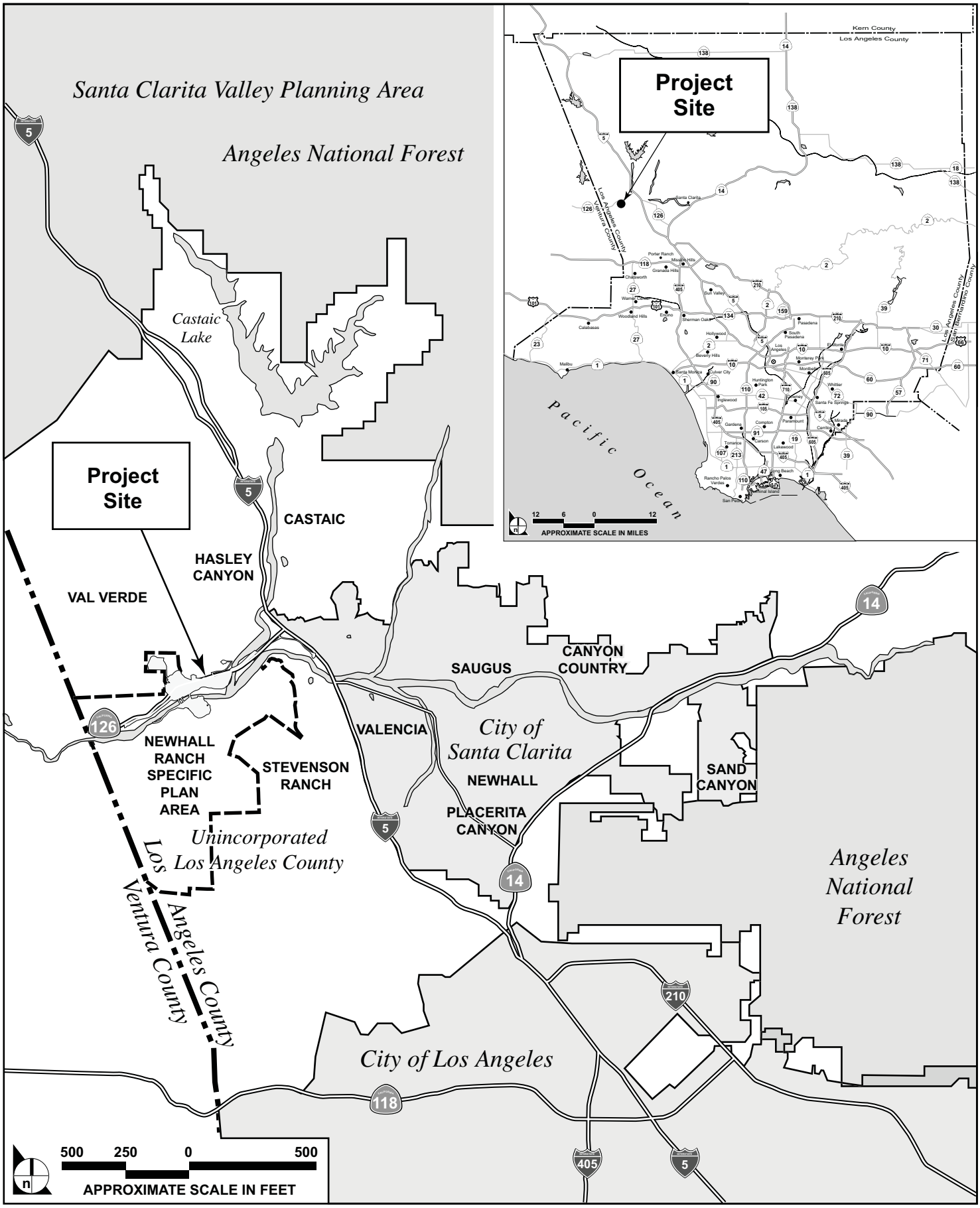
2.3 ASSOCIATED OFF-SITE PROJECT COMPONENTS

In addition to the 292.6-acre tract map site, the project also includes 679.2 acres of grading and/or development at locations beyond the tract map site. The locations of these project components relative to the tract map site are shown in **Figure 3, Tract Map Site and Associated Off-Site Projects.**

The proposed project includes construction of the Long Canyon Road Bridge. The bridge is intended as the primary bridge crossing over the Santa Clara River providing access to the central portions of the Newhall Ranch Specific Plan. The bridge will span approximately 1,000 feet over the Santa Clara River, with a width of approximately 100 feet. Support for the bridge will involve construction of 11 piers within the river corridor. Each pier will be spaced approximately 100 feet apart. Additionally, abutments and bank stabilization would be required on both sides of the bridge to protect against erosive forces.

To elevate the tract map site above the floodplain of the Santa Clara River, soil would be imported from a borrow site located within Long/Adobe Canyon south of the river. This borrow site is approximately 215 acres in size and is located due south of the tract map site. Haul routes would be created to cross the river between Long Canyon and the tract map site (river crossings would be similar in construction to those installed annually to support agricultural operations on the Specific Plan site; steel piping is placed in the river and then covered with earth material). To accommodate project-necessitated improvements to SR-126 and debris basins for storm water flows that are collected by the project storm drainage system, land directly north of SR-126 within Chiquito Canyon would be graded. The Chiquito Canyon grading site is approximately 120 acres in size. The project also includes a 110-acre utility corridor that runs parallel to SR-126, from the western boundary of the tract map site to the Newhall Ranch WRP site near the Ventura County line, and from the eastern boundary of the tract map site to I-5, then south to the existing Los Angeles County Sanitation District 32 WRP. The utility corridor would serve to extend municipal services (e.g., wastewater lines, water lines, etc.) to the tract map site and would be largely placed within the existing utility easements within SR-126.

The proposed project would include buried bank stabilization along the Santa Clara River and Castaic Creek adjacent to and downstream of the tract map site. In total, approximately 17,700 linear feet (LF) of bank would be provided with buried bank stabilization. This would include approximately 10,900 feet fronting the southern and eastern boundary of the tract map site on the north bank of the river and the west bank of Castaic Creek, and approximately 6,800 LF on the south bank of the river off the tract map site, beginning at the Long Canyon Road Bridge and extending westward. Buried bank stabilization provides riverbank protection material in terms of both surface erosion and structural stability. Areas disturbed during installation of the buried bank stabilization would be revegetated following the conclusion of construction-related activities.

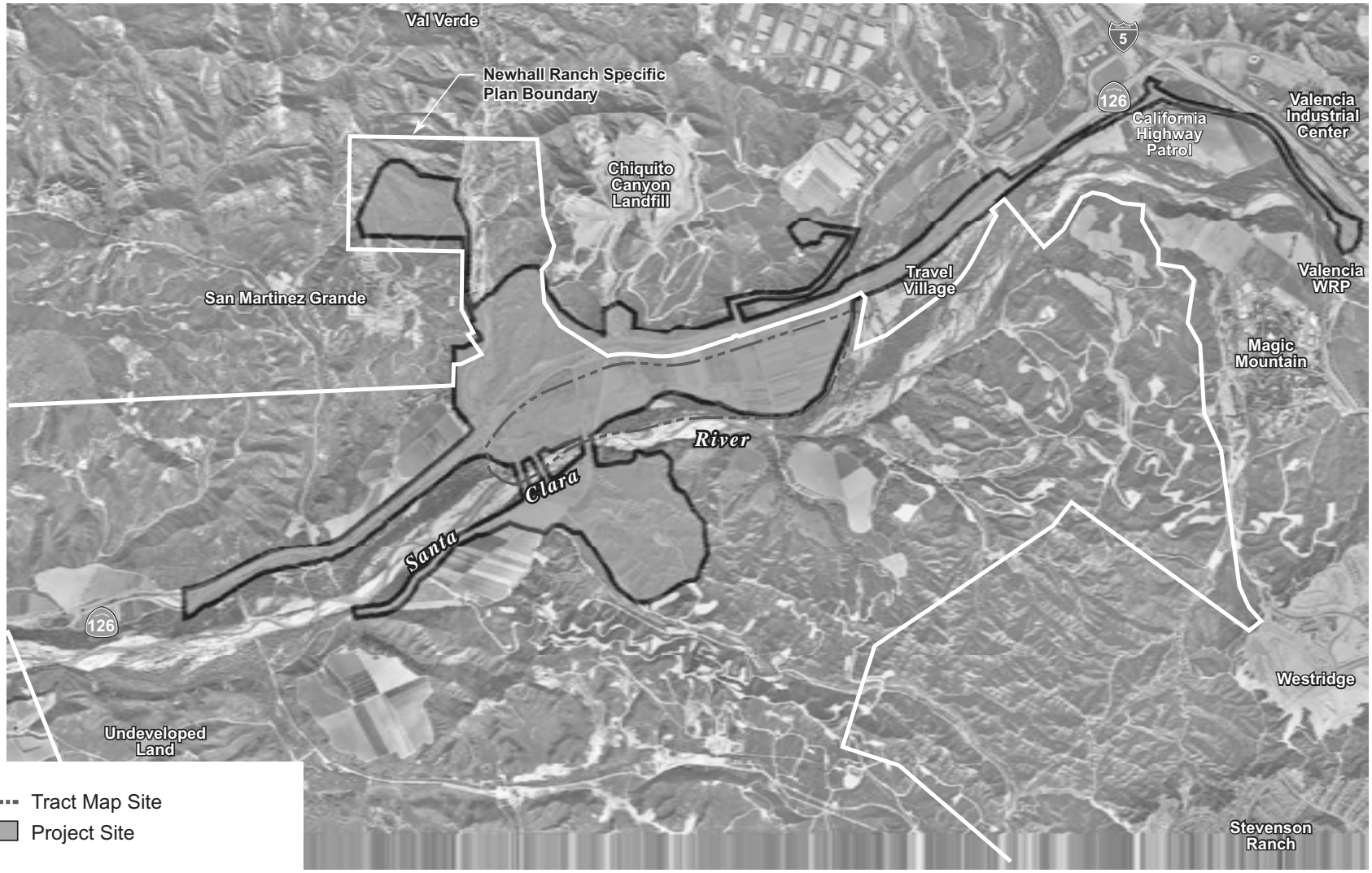


SOURCE: Impact Sciences, Inc. – April 2005

FIGURE **1**

Project Site Location

32-92•07/05



Legend:

Tract Map Site

Project Site

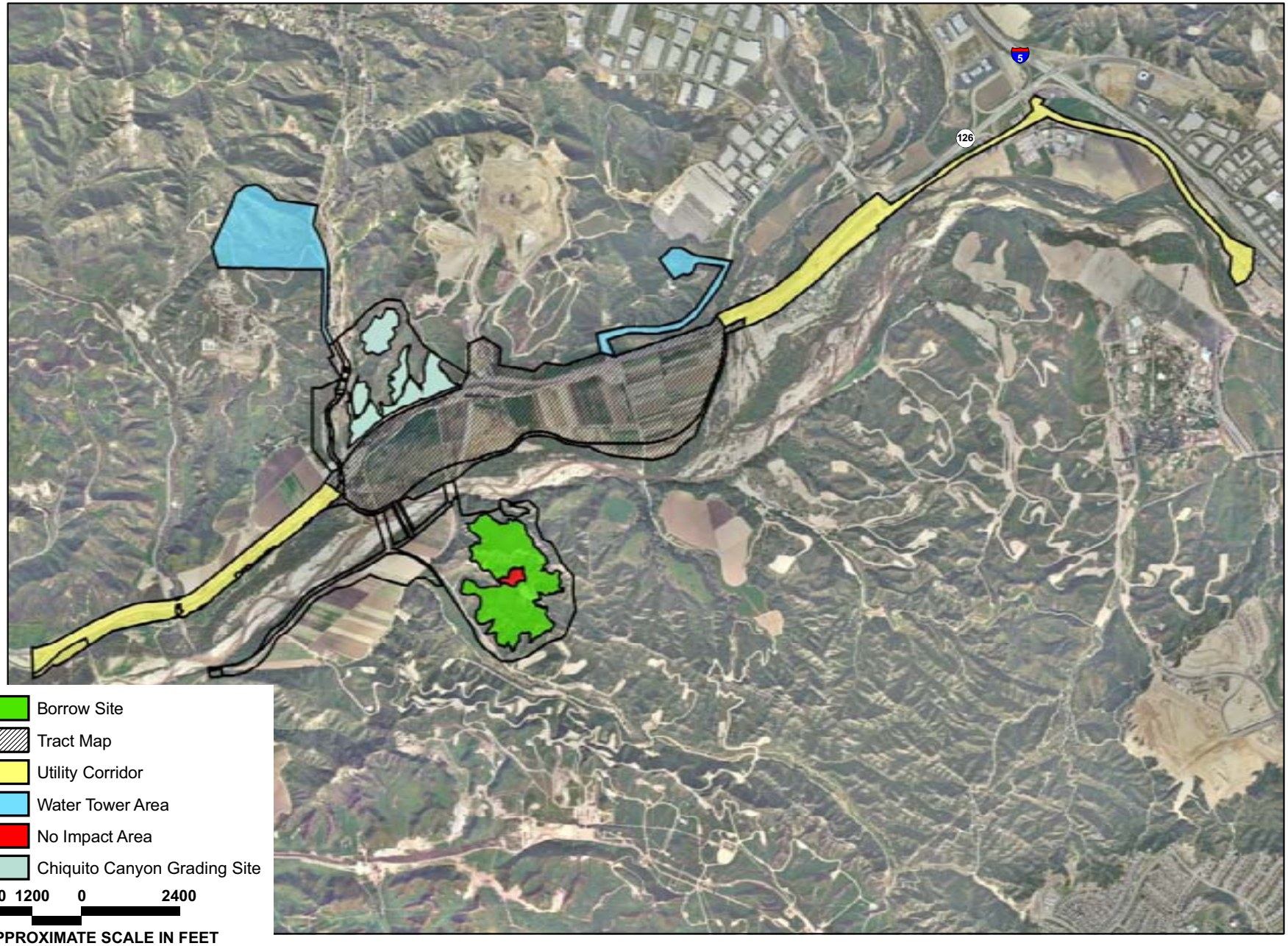
NOT TO SCALE

SOURCE: Impact Sciences, Inc. – October 2004

FIGURE **2**

Project Vicinity Map

32-92•11/05



SOURCE: Impact Sciences, Inc. – June 2005

FIGURE **3**

Tract Map Site and Associated Off-Site Projects

32-92•06/05

Potable water would be conveyed to the tract map site from two separate water tank sites. One tank is proposed north of SR-126 within the existing Valencia Commerce Center business park immediately adjacent to an existing water tank. Impacts to biological resources associated with development of this water tank site were previously analyzed as part of the Valencia Commerce Center EIR. The second potable water tank would be located within the borrow site, in an area to be graded as part of the proposed soil transfer. The project would also implement a portion of the Specific Plan's reclaimed water storage and distribution system by installing two reclaimed water tanks in Chiquito Canyon, north of the Chiquito Canyon grading site.

2.4 GRADING

The previously approved Newhall Ranch Specific Plan included the Conceptual Grading Plan (Program EIR, Figure 1.0-14), which identified the areas where proposed grading activities would occur within the Specific Plan. The adopted Specific Plan also incorporated the Hillside Design Guidelines established by the County Department of Regional Planning (December 1987). In addition, Chapter 4 of the Specific Plan contains grading guidelines designed to achieve the Specific Plan goals and objectives relevant to grading.

The Landmark Village Conceptual Grading Plan identifies areas where proposed grading will occur on the tract map site (**Figure 4, Conceptual Grading Plan**). Grading and associated earthwork would require the movement of approximately 4.2 million cubic yards of earth on the 292.6-acre tract map site during removal and re-compaction activity. Project grading requires the import of 5.8 million cubic yards from the Long/Adobe Canyon borrow site in order to meet flood control requirements on the tract map site. The depth of fill on the tract map site would be an average of 10 feet above the existing riverbank. Project grading also requires the balanced movement of approximately 1.2 million cubic yards at the Chiquito Canyon grading site. **Figure 3** depicts the borrow site, the haul routes, including the locations of the proposed river crossings, and the Chiquito Canyon grading site. The project's proposed Conceptual Grading Plan is consistent with the grading activities contemplated by the approved Specific Plan.

The off-site borrow site grading plan will excavate and reshape the hills and depressions forming the ridge separating Long and Adobe Canyons. Much of this work occurs along the top and bluffs of an unnamed plateau located just east of Sawtooth Ridge. This plateau ranges in elevation from a low of 1,130 feet at its northernmost point to a high of 1,220 in the southeast, and is characterized by an increasingly steeper grade. The proposed grading plan would excavate the southeastern portion of this plateau, creating a gentler slope leading up to the top of the ridge. The resultant manufactured slope angle would range from 5:1 to 2:1 (horizontal/vertical). The grading plan also alters the western facing slope leading up to the plateau, creating a bench separated by two manufactured slopes stepping down the west-facing ridgeline defining Adobe Canyon at a 3:1 grade.

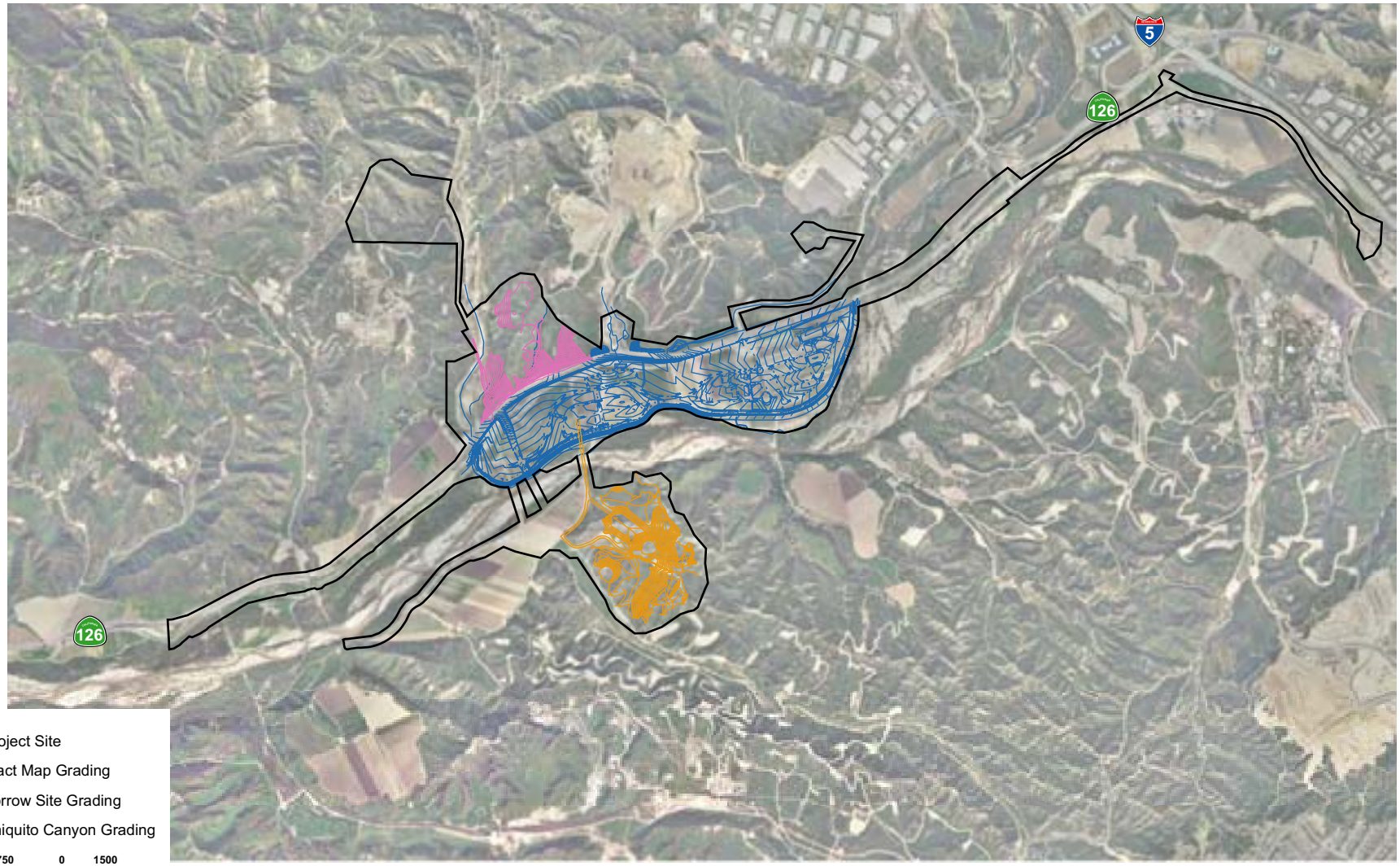
Additional earthwork is planned at the terminus of Adobe Canyon where a series of excavations will result in a manufactured slope approximately 100 feet in height at a relatively uniform 3:1 grade. A series of benches, swales and debris basins will also be constructed to collect, convey and release runoff in a controlled manner. A maximum of 5.8 million cubic yards of earth may be excavated from the Long Canyon/Adobe Canyon area and transported across the river to the tract map site generally using existing at-grade agricultural crossings that would be widened to accommodate earthmoving equipment. All of this area is within the approved development footprint of the Specific Plan.

The second off-site grading location (i.e., Chiquito Canyon grading site) is planned just north of SR-126 and east of its intersection with Chiquito Canyon Road. This grading site is proposed on the ridgeline of a northeast-southwest trending hillside. The terrain on the southwesterly portion of this hill gently slopes toward the intersection in a "finger" shape where elevations reach approximately 950 feet above mean sea level (msl) at its low point (slightly elevated above the roadbed). The terrain becomes progressively steeper and more rugged towards the northeast portion of the ridge, with the peak elevation reaching 1,160 feet above msl. The Conceptual Grading Plan would lower the "finger" of land extending towards the intersection of Chiquito Canyon Road with SR-126 by approximately 60 feet when compared to the existing elevation. Rather than a gradual incline that extends upward at an increasingly greater grade, the reshaped slope would approximate the grade of SR-126 for about 1,500 feet east of the intersection with Chiquito Canyon Road. At this point, the grading plan creates a manufactured slope that extends upward at a uniform 3:1 grade reaching a high of 1,160 feet above msl. A series of benches, swales and debris basins will also be constructed to collect, convey and release runoff in a controlled manner. Approximately 1.2 million cubic yards of earth will be excavated from this area and placed as fill in the adjacent canyons to facilitate creation of debris basins. All of this graded area is within the grading footprint of the Specific Plan.

Upon completion of the grading operations associated with the above activities, additional work is needed on the tract map site for grading of development areas and development pads. Grading would consist of rough grading operations for major roads and infrastructure, drainage patterns, and building pads for the various land uses within the tract map site. Graded slopes will be landscaped and irrigated pursuant to the County grading and erosion control requirements.

2.5 BANK STABILIZATION

The certified environmental documentation for the Newhall Ranch Specific Plan identified and analyzed the floodplain modifications resulting from implementation of the Specific Plan, including installation of bank stabilization where necessary, to protect against erosion at specified locations within the Specific Plan site (see Revised Additional Analysis, Figures 2.3-4, 2.3-5). The Conceptual Backbone Drainage Plan of the Newhall Ranch Specific Plan provided drainage and flood control protection to developed areas, while preserving the main river corridor as a natural resource.



SOURCE: PSOMAS – July 2005, Impact Sciences, Inc. – July 2005

FIGURE **4**

Conceptual Grading Plan

32-92•07/05

The approved Drainage Plan also identified the following criteria to be followed by projects implementing the Specific Plan (also see Specific Plan [May 2003], Chapter 2, pp. 2-71-2-75):

- the flood corridor must allow for the passage of Los Angeles County Capital Flood flow without the permanent removal of natural river vegetation (except at bridge crossings);
- the banks of the river will generally be established outside of the "waters of the U.S.," as defined by federal laws and regulations and as determined by the delineation completed by the ACOE in August 1993;
- where the ACOE delineation width is insufficient to contain the Capital Flood flow, the flood corridor will be widened by an amount sufficient to carry the Capital Flood flow without the necessity of permanently removing vegetation or significantly increasing velocity;
- where development is proposed within the existing Los Angeles County floodplain, the land where development is to occur will be elevated in accordance with Los Angeles County policies to remove it from the floodplain; and
- bank stabilization will occur only where necessary to protect against erosion.

The Landmark Village project proposes bank stabilization on the west side of the Santa Clara River as well as the west side of the Castaic Creek, consistent with the approved Specific Plan and associated environmental documentation. **Figure 5, Proposed Bank Stabilization**, shows the proposed locations of bank stabilization on the project site. The proposed project incorporates techniques to meet the requirements of flood control, while maintaining the natural resources within the river.

Buried bank stabilization provides riverbank protection material in terms of both surface erosion and structural stability. The Landmark Village project proposes buried bank stabilization where necessary to protect against erosion, consistent with the Federal Emergency Management Administration (FEMA) and Los Angeles County Department of Public Works' requirements. The proposed project would include buried bank stabilization along the Santa Clara River and Castaic Creek adjacent to and downstream of the tract map site. In total, approximately 17,700 LF of bank would be provided with buried bank stabilization. This would include approximately 10,900 feet fronting the southern and eastern boundary of the tract map site on the north bank of the river and the west bank of Castaic Creek, and approximately 6,800 LF on the south bank of the river, beginning at the Long Canyon Road Bridge and extending westward.

The buried bank stabilization along portions of the north and south bank of the river corridor would be designed and constructed to retain the river's significant riparian vegetation and habitat, to allow the river to continue to function as a regional wildlife corridor and to provide flood protection pursuant to County standards. Riparian and upland areas disturbed during installation of the buried bank stabilization would be revegetated following the conclusion of construction-related activities. All of the bank stabilization proposed in conjunction with the project is consistent with the Newhall Ranch Specific Plan.

Figure 6, **Bank Stabilization – Typical Cross Section**, depicts the two~~hree~~ typical cross-sections for buried bank stabilization to be used on the project site. As shown, the buried bank stabilization approach uses soil cement, which is buried beneath the existing banks of the river to resist scouring. The soil placed on top of the bank stabilization is replanted with native vegetation to return the disturbed area to its existing condition upon completion of construction. Typically, the lining must be buried at least twice the height of the lining in order to resist scouring. Burying the toe of the lining requires temporary excavation and backfilling. A temporary construction zone of approximately 75 feet would occur at the base of the bank protection in order to bury the material. The original channel elevation would be restored after construction. The area would also be replanted with native vegetation.

Figure 7, **Bank Stabilization Techniques**, provides illustrations of existing exposed and buried bank stabilization techniques to be used in this project. This figure also depicts the relationship between the river, buried bank stabilization and trail areas. The representative photographs used in this figure are taken from previously constructed projects located in the Valencia community, in which exposed and buried bank stabilization were used.

2.6 REQUESTED DISCRETIONARY ACTIONS AND APPROVALS

The project applicant is proposing an amendment to the Master Circulation Plan of the Newhall Ranch Specific Plan and the County Master Plan of Highways for the Specific Plan area. Specifically, the applicant is requesting that "A" Street as identified on Vesting Tentative Tract Map No. 53108 be downgraded from a Secondary Highway to a Collector Street. In addition to the proposed modification to the County Master Plan of Highways identified above, the applicant is seeking the following approvals/permits:

- Vesting Tentative Tract Map No. 53108;
- SEA CUP No. 00-196-(5) for project-level development within the Specific Plan's River Corridor SMA/SEA 23 boundary;
- CUP for off-site grading in excess of 100,000 cubic yards;
- Grading Permit;
- Oak Tree Permit;
- Off-Site Materials Transport Approval;
- U.S. Clean Water Act (CWA) Section 404 Permit;
- Regional Water Quality Control Board, CWA Section 401 Water Quality Certification;
- California Fish and Game Code Section 1601/1603 Streambed Alteration Agreement; and
- South Coast Air Quality Management District Permits for Air Emissions.

2. **Clarify the necessity of the various bank-stabilization methodologies presented in Figures 6 and 7.**

   Figures 6 and 7 have been revised to clarify the various bank-stabilization methodologies. Two types of bank-stabilization methodologies are proposed. The vast majority of the proposed bank-stabilization involves the excavation of uplands (outside of the riparian zone) to create riverbed (see Revised Biota Report, Figure 6, Section A); this process does not result in the permanent or temporary loss of riparian resources. The other type of bank-stabilization proposed involves the temporary excavation of riverbed (see Revised Biota Report, Figure 6, Section B); this process would primarily occur along Chiquito Canyon Creek and does not result in the permanent loss of riparian resources as these "buffer" areas would be revegetated. This process would be used when the proposed bank stabilization work extends into existing riparian resources.

   The County of Los Angeles Department of Public Works requires the use of exposed gunite at bridge abutments (see Figure 7). The reasons for this include the need to visually inspect and maintain the bridge structure and the necessity to provide higher freeboard (increased flood protection) along the bridge section. Additionally, velocities at a bridge tend to be higher and therefore more erosive as compared to other areas where flood protection is installed. A typical bridge abutment section includes: a 250- to 400-foot exposed gunite section extending both upstream and downstream of the bridge structure and a 50- to 150-foot transitional area typically utilizing rip rap tying in the abutment to the buried bank stabilization.

Minutes - August 1, 2005

10. **Soil cement shall not be used in the bank stabilization design; ungrouted rip-rap is preferred. Accommodations for streambed braiding and tributary flow must be part of the drainage plan for this project; this type of complexity helps stickleback escape stochastic events.**

    In the *Newhall Ranch Specific Plan CEQA Findings and Statement of Overriding Considerations*, the Board of Supervisors approved the use of buried bank stabilization (page 81 of the Findings). The Board found its use to be one of the project's overriding considerations or benefits. Additionally, the Board (page 69 of the Findings) adopted the following finding as summarized:

    "The drainage improvements proposed in connection with the Specific Plan would maintain the key hydraulic characteristics that largely determine the overall mosaic of habitats in the river. Development of the Specific Plan would increase runoff from upland areas due to increase impervious surfaces (e.g. pavement, roads, and buildings). The project identifies an effect out to a point about four miles downstream of the Specific Plan site in Ventura County. Beyond this point, however, the Specific Plan has no impacts on surface flows. For high frequency floods (2-year, 5-year, and 10-year), the proposed bank stabilization would not hinder flows or reduce the floodplain area. Instead, these flows would spread across the river channel, unaffected by the bank protection because the river would have sufficient width to allow <u>these flows to meander and spread out further than they would under pre-project conditions."</u>

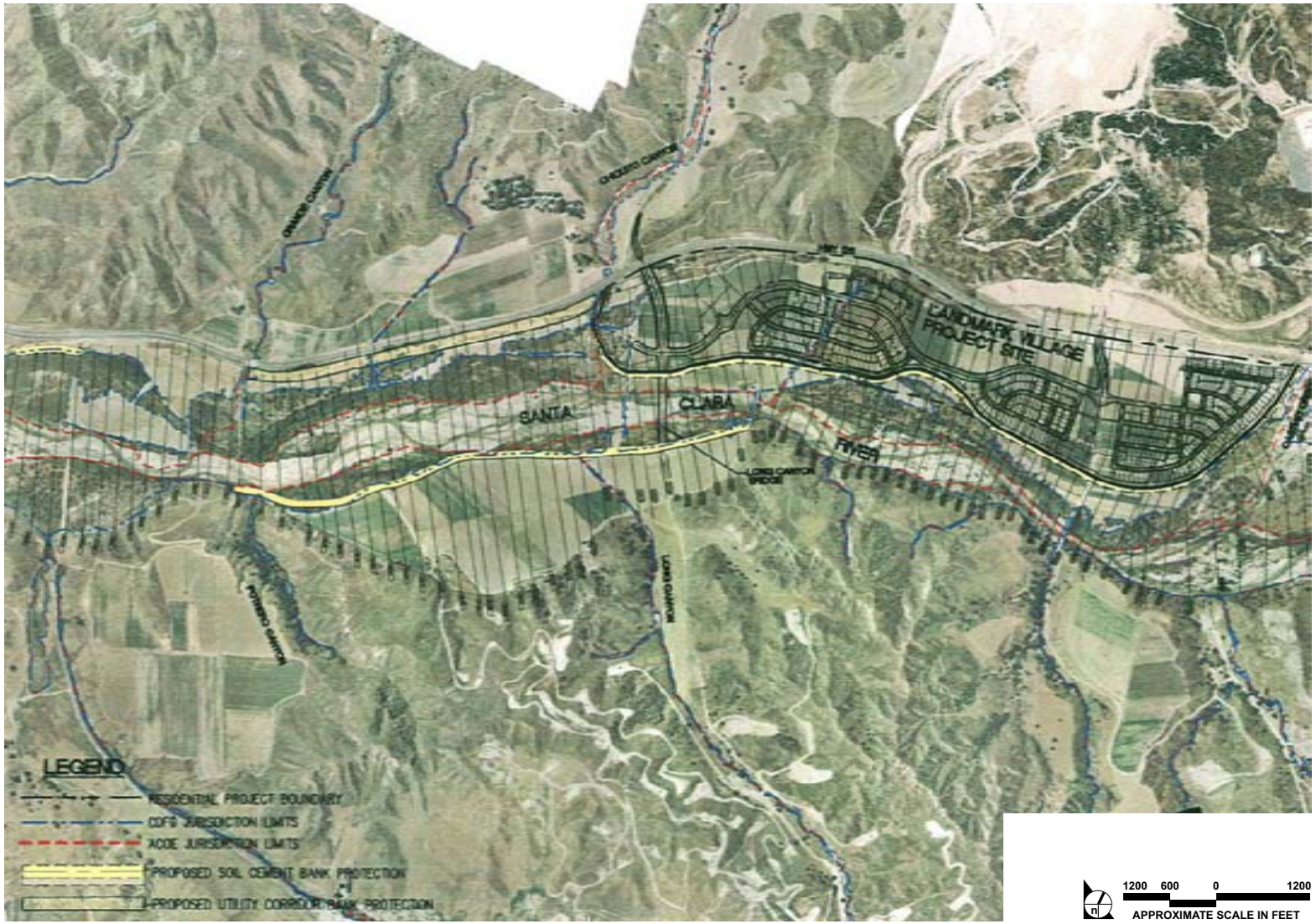
    "It is only during infrequent floods (20-year, 50-year, and 100 year events) where flows would spread out to the buried bank stabilization. This would limit the area of the floodplain during these infrequent flood events, causing inundation over a smaller area because the bank protection will prevent flooding of formerly adjacent floodplain areas. <u>However, the reduction in floodplain area caused by the bank protection does not create a significant increase in overall velocities or water depth, because the volume of flow carried in these shallow, slow moving areas along the margins of the river is small</u>. Moreover, variations are localized and limited in scope, especially when viewed in the entirety of the river corridor within the Specific Plan site and downstream. Therefore, the overall mosaic of habitats in the river would be maintained because the key hydraulic characteristics would not be significantly different under the Specific Plan site and downstream."

    In conclusion, the project-level floodway and biota analysis completed for Landmark Village are consistent with the Board's findings on the Specific Plan. The majority of the bank stabilization associated with Landmark Village is set back from the existing riparian resources in areas that are presently being used for agricultural purposes. This buffer or setback area will be established along the areas of the project where bank stabilization will be installed to protect sensitive habitat along the SMA/SEA 23. The project, consistent with the Specific Plan, would maintain a buffer ranging from 70 feet to 700 feet, which results in the retention of sufficient natural vegetative cover and/or open space areas to complement the adopted SMA/SEA 23.

Minutes – October 3, 2005

6. **SEATAC reiterates their concern that buried bank stabilization must be rough-sided.**

   Please see the response to Comment 10 from the August 1, 2005 Minutes.

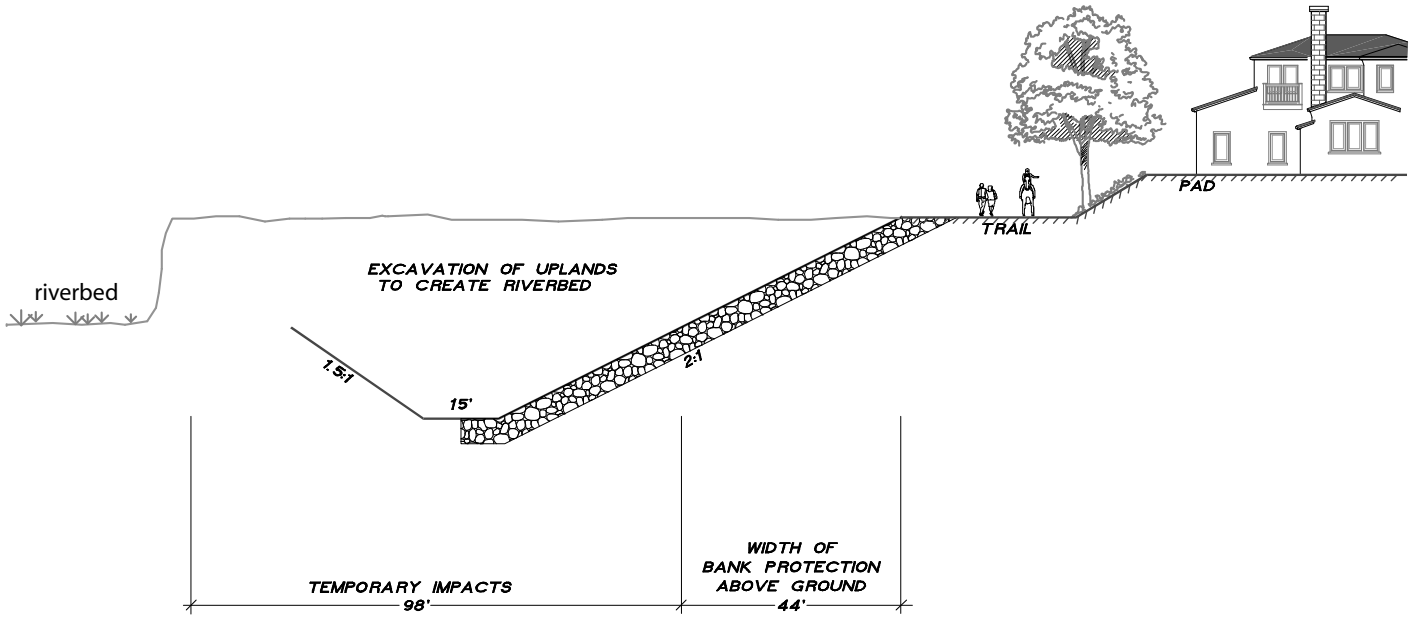


SOURCE: PACE Engineering – June 2005

FIGURE **5**

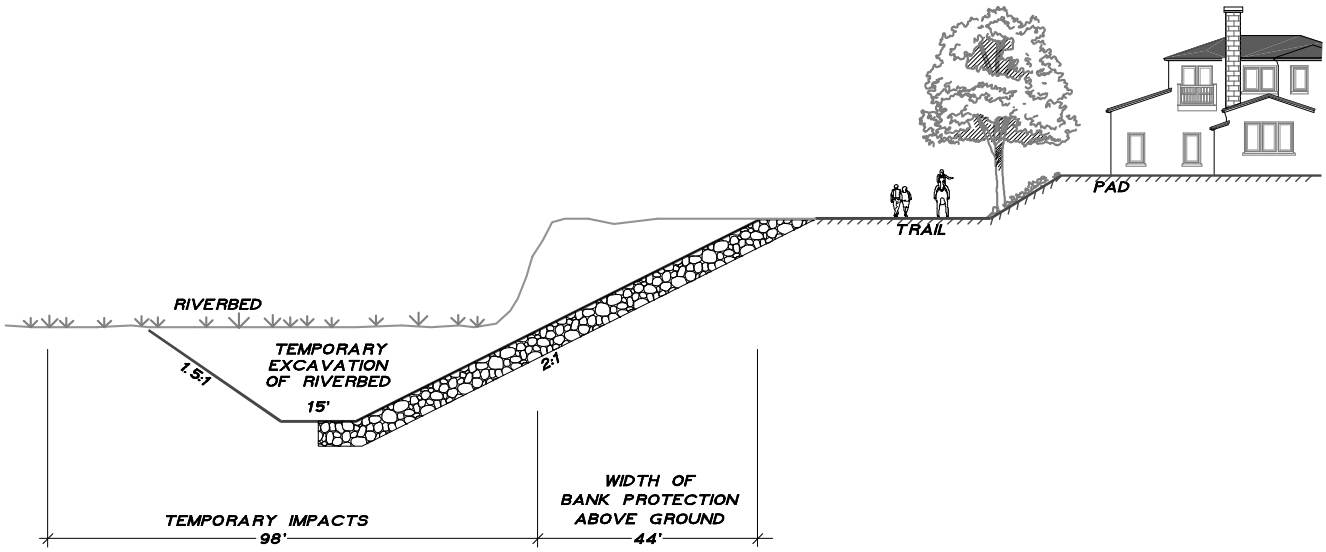
Proposed Bank Stabilization

32-92•06/05



Section A

No Permanent Loss of Riverbed and No Temporary Impacts



Section B

No Permanent Loss of Riverbed, Only Temporary Impacts

35.0 17.5 0 35.0

APPROXIMATE SCALE IN FEET

SOURCE: FORMA – March 2002

FIGURE 6

Bank Stabilization, Typical Cross Section

32-92•11/05

Stabilization at San Francisquito Creek at the West Bank
(This photo depicts exposed bridge abutment)

Stabilization at Bridgeport (This photo depicts Buried Bank stabilization)

SOURCE: PSOMAS – 2003

FIGURE **7**

Bank Stabilization Techniques

3.0 SUMMARY OF SIGNIFICANT IMPACTS

3.1 SUMMARY OF THE NEWHALL RANCH PROGRAM EIR AND ADDITIONAL ANALYSIS FINDINGS

The Newhall Ranch Specific Plan would develop approximately 5,793 acres of the 11,963-acre Specific Plan site (or 49 percent of the site), and would preserve as undeveloped land a total of approximately 6,170 acres (or 51 percent of the site). In addition, an off-site condition requires the applicant to dedicate to the public 1,517 acres of land in the remaining Salt Creek watershed in Ventura County, adjacent to the Specific Plan site. This land is also required to be managed in conjunction with and in the same manner as the High Country SMA/SEA 20. Portions of proposed development within the Specific Plan area would occur in sensitive upland and riparian habitats. Therefore, the Specific Plan was determined to have significant impacts on the biological resources located on the site. Implementation of measures contained in the Specific Plan RMP and the mitigation measures contained in the Newhall Ranch certified environmental documentation would reduce some, but not all, Specific Plan impacts to special-status plant and wildlife species, riparian, wetland and aquatic resources (located along the river corridor) to below California Environmental Quality Act (CEQA) thresholds of significance. While mitigation is also provided to reduce the magnitude of impacts to upland resources, certain of these impacts were also expected to remain significant. Also, despite the preservation of the major wildlife corridor along the Santa Clara River, the Specific Plan would significantly impact the ability of some animals to move across portions of the Specific Plan area. **Table 2, Significant Biological Impacts – Newhall Ranch Specific Plan and WRP**, summarizes the Specific Plan's impacts on biological resources, the applicable mitigation measures and the significance findings after the mitigation is implemented.

Table 2
Significant Biological Impacts – Newhall Ranch Specific Plan and WRP

Impact Description	Mitigation Measures	Final Conclusion After Mitigation
General Wildlife Impacts – Based on the amount of habitat lost (5,132 acres), the impact potential of implementation of the Newhall Ranch Specific Plan on the diminishment of habitat for wildlife or plants is considered significant.	See measures listed below for impacts to sensitive animal species.	Significant
The impact potential of implementation of the Newhall Ranch Specific Plan on the movement of resident wildlife species is considered significant due to the reduction in open land available for wildlife movement between the river and upland areas.	See measures listed below for impacts to sensitive animal species and habitats.	Significant

Impact Description	Mitigation Measures	Final Conclusion After Mitigation
Loss of Habitat – The loss of habitat on the site is substantial. As proposed, implementation of the Specific Plan would result in the loss of 1,820 of the 5,183 acres of coastal sage scrub, 202 of the 1,213 acres of chaparral, and 1,480 of the 1,896 acres of non-native grassland habitat present on the site (when combined, 42 percent of these vegetation types would be lost). Given the concern for this species (coast horned lizard) in the region, the substantial loss of habitat, and potentially the direct loss of individuals of this species, this impact would be considered significant without mitigation.	See measures listed below for impacts to sensitive animal species and habitats.	Significant
It is acknowledged that any loss of plant species listed as Rare, Threatened or Endangered is considered a significant impact. Those include the following		
Slender-horned spineflower (significant if present)	Mitigation Measures 4.6-27, 4.6-34, 4.6-35, and 4.6-53	Not Significant
California Orcutt grass	Mitigation Measures 4.6-27, 4.6-34, 4.6-35, and 4.6-53	Not Significant
Lyon's pentachaeta	Mitigation Measures 4.6-27, 4.6-34, 4.6-35, and 4.6-53	Not Significant
Nevin's barberry	Mitigation Measures 4.6-27, 4.6-34, 4.6-35, and 4.6-53	Not Significant
Thread-leaved brodiaea	Mitigation Measures 4.6-27, 4.6-34, 4.6-35, and 4.6-53	Not Significant
Santa Susana tarplant	Mitigation Measures 4.6-27, 4.6-34, 4.6-35, and 4.6-53	Not Significant
Braunton's milk vetch	Mitigation Measures 4.6-27, 4.6-34, 4.6-35, and 4.6-53	Not Significant
San Fernando Valley spineflower (significant in Additional Analysis)	Mitigation Measures 4.6-53, 59, and 65–80	Not Significant
Short-joint beavertail cactus (significant in Additional Analysis)[a]	Mitigation Measures 4.6-27, 34, 35, 53, and 59	Not Significant
Calochortus (potentially significant in Additional Analysis depending upon actual species present)	Mitigation Measures 4.6-27, 34, 35, 53, and 59	Not Significant
Dudleya (potentially significant depending upon actual species present)[a]	Mitigation Measures 4.6-27, 34, 35, 53, and 59	Not Significant
Based on this analysis of indirect impacts to spineflower and other sensitive plants, seven indirect impacts/edge effects are considered significant in connection with the proposed development of Newhall Ranch.	Mitigation Measures 4.6-53, 4.6-59, and 4.6-65–80	Not Significant
Project Construction and operation may potentially significantly impact a number of sensitive animal species through loss of habitat and/or decrease in water quality if impacts are unmitigated. Species include the following:		
Santa Ana sucker	RMP Mitigation Measure 4.6-44 and EIR Mitigation Measures 4.6-53, 4.6-55, 4.6-57, and 4.6-58	Not Significant
Unarmored threespine stickleback	Mitigation Measures 4.6-53, 4.6-54, 4.6-55, 4.6-57, 4.6-58, and 4.6-59	Not Significant
Arroyo chub	RMP Mitigation Measure 4.6-44, and EIR Mitigation Measures 4.6-53, 4.6-55, 4.6-57, and 4.6-58	Not Significant
Arroyo southwestern toad	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-55, and 4.6-56	Not Significant
Western spadefoot toad	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-56, and 4.6-55	Not Significant

Impact Description	Mitigation Measures	Final Conclusion After Mitigation
Silvery legless lizard	RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-53	Significant
Southwestern pond turtle	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-56, and 4.6-55	Not Significant
Coastal rosy boa	RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-53	Significant
San Bernardino ringneck snake	RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-53	Significant
Two-striped garter snake	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-56, and 4.6-55	Not Significant
California horned lizard	RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measures 4.6-53, 4.6-56, and 4.6-55	Significant
San Diego horned lizard	RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measures 4.6-53, 4.6-56, and 4.6-55	Significant
Coast patch-nosed snake	RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-53	Significant
Least Bell's vireo	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-56, and 4.6-59	Not Significant
Southwestern willow flycatcher	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-56, and 4.6-59	Not Significant
~~Arroyo chub~~	~~RMP Mitigation Measure 4.6-44, and EIR Mitigation Measures 4.6-53, 4.6-55, 4.6-57, and 4.6-58~~	~~Not Significant~~
~~Santa Ana sucker~~	~~RMP Mitigation Measure 4.6-44 and EIR Mitigation Measures 4.6-53, 4.6-55, 4.6-57, and 4.6-58~~	~~Not Significant~~
~~Southwestern pond turtle~~	~~RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-56, and 4.6-55~~	~~Not Significant~~
~~Western spadefoot toad~~	~~RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-56, and 4.6-55~~	~~Not Significant~~
~~California horned lizard~~	~~RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measures 4.6-53, 4.6-56, and 4.6-55~~	~~Significant~~
~~San Diego horned lizard~~	~~RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measures 4.6-53, 4.6-56, and 4.6-55~~	~~Significant~~
Northern harrier	RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation	Significant

Impact Description	Mitigation Measures	Final Conclusion After Mitigation
	Measure 4.6-53	
Cooper's hawk	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-55, and 4.6-56	Not Significant
Vermilion flycatcher	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-55, and 4.6-56	Not Significant
Yellow warbler	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-55, and 4.6-56	Not Significant
Summer tanager	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-55, and 4.6-56	Not Significant
Southern California rufous-crowned sparrow	RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measures 4.6-53, 4.6-56, and 4.6-55	Significant
Tricolored blackbird	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-56, and 4.6-55	Significant
~~San Diego desert woodrat~~	~~RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measures 4.6-53, 4.6-56, and 4.6-55~~	~~Significant~~
~~San Diego black-tailed jackrabbit~~	~~RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measures 4.6-53, 4.6-56, and 4.6-55~~	~~Significant~~
~~Two striped garter snake~~	~~RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-56, and 4.6-55~~	~~Not Significant~~
Great blue heron	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-55, and 4.6-56	Not Significant
Great egret	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-55, and 4.6-56	Not Significant
Snowy egret	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-55 and 4.6-56	Not Significant
Black-crowned night heron	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-55, and 4.6-56	Not Significant
White-tailed kite	RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-53	Significant
~~Mountain lion~~	~~RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-53~~	~~Significant~~
~~Arroyo southwestern toad~~	~~RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation~~	~~Not Significant~~

Impact Description	Mitigation Measures	Final Conclusion After Mitigation
	~~Measures 4.6-53, 4.6-55, and 4.6-56~~	
Swainson's hawk	RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-53	Significant
Mountain plover	RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-53	Significant
Western least bittern	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-55, and 4.6-56	Not Significant
Fulvous whistling duck	Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-55, and 4.6-56	Not Significant
Bell's sage sparrow	RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-53	Significant
Ferruginous hawk	RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-53	Significant
~~Silvery legless lizard~~	~~RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-53~~	~~Significant~~
~~Pale Townsend's big-eared bat~~	~~RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-55, and 4.6-56~~	~~Not Significant~~
~~Greater western mastiff bat~~	~~RMP Mitigation Measures 4.6-1–4.6-26, and EIR Mitigation Measures 4.6-53, 4.6-55, and 4.6-56~~	~~Not Significant~~
~~Coast patch-nosed snake~~	~~RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-53~~	~~Significant~~
Western burrowing owl	Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-53	Significant
Sharp-shinned hawk	RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-53	Significant
Golden eagle	RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-53	Significant

Impact Description	Mitigation Measures	Final Conclusion After Mitigation
Pallid bat	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-55, and 4.6-56	Not Significant
Pale Townsend's big-eared bat	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-55, and 4.6-56	Not Significant
Greater western mastiff bat	RMP Mitigation Measures 4.6-1–4.6-26, and EIR Mitigation Measures 4.6-53, 4.6-55, and 4.6-56	Not Significant
Mountain lion	RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-53	Significant
San Diego black-tailed jackrabbit	RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measures 4.6-53, 4.6-56, and 4.6-55	Significant
San Diego desert woodrat	RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measures 4.6-53, 4.6-56, and 4.6-55	Significant
~~Pallid bat~~	~~RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-55, and 4.6-56~~	~~Not Significant~~
~~Coastal rosy boa~~	~~RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-53~~	~~Significant~~
~~San Bernardino ringneck snake~~	~~RMP Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-53~~	~~Significant~~
Yuma myotis	RMP Mitigation Measures 4.6-1–4.6-26 and EIR Mitigation Measures 4.6-53, 4.6-55, and 4.6-56	Not Significant
Development of the Specific Plan would result in impacts to sensitive habitats including the following:		
Coastal sage scrub	Mitigation Measures 4.6-27–4.6-43	Significant
Valley oak woodland/savanna	Mitigation Measures 4.6-27–4.6-43	Significant
Elderberry scrub	Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-60	Not Significant
Mainland cherry forest	Mitigation Measures 4.6-27–4.6-43 and EIR Mitigation Measure 4.6-61	Not Significant
Southern willow scrub	Mitigation Measures 4.6-1–4.6-26	Not Significant
Southern cottonwood-willow riparian forest and southern willow riparian woodland	Mitigation Measures 4.6-1–4.6-26	Not Significant
Valley freshwater marsh and ponds	Mitigation Measures 4.6-1–4.6-26	Not Significant
Wetlands	Mitigation Measures 4.6-1–4.6-26	Not Significant
SEA 20 – High Country	Mitigation Measures 4.6-1–26	Not Significant
SEA 23 – River Corridor	Mitigation Measures 4.6-26a–52	Not Significant
Indirect Impacts – implementation of the Newhall Ranch Specific	Mitigation Measures 4.6-18 and	Significant

Impact Description	Mitigation Measures	Final Conclusion After Mitigation
Plan has the potential to indirectly impact adjacent natural areas and sensitive biological resources that occur proximal to the site. This would occur as a result of increased use of the Santa Clara River and upland areas by humans and domestic animals, increased use of adjacent natural areas by animals typical of an urban environment, and the potential effects of light, glare, and sediment and urban pollutant-laden runoff, unless mitigated.	4.6-19 and EIR Mitigation Measure 4.6-56	
Cumulative Biological Impacts	None Proposed or Required	Significant

Source: Biota Report for the Newhall Ranch Specific Plan (July 1996), Newhall Ranch Program EIR (March 1999) and Revised Additional Analysis (May 2003).
[a] It has since been confirmed that this taxon does not occur on the Newhall Ranch Specific Plan site.

3.2 PROJECT IMPACT SUMMARY

The Landmark Village project, including the necessary off-site project components, would result in the permanent conversion of, or temporary disturbance to, 373.60 acres of land currently used for agricultural purposes or otherwise substantially disturbed and/or developed, 123.58 acres of non-native grassland, 9.05 acres of coast live oak woodland, 12.50 acres of coastal sage chaparral scrub, 19.31 acres of mulefat scrub, 18.61 acres of southern cottonwood willow riparian forest, 305.13 acres of coastal sage scrub, 5.19 acres of southern willow scrub, 8.61 acres of river wash, 0.60 acre of alluvial scrub, 3.05 acres of great basin scrub, 8.22 acres of elderberry scrub, 6.45 acres of arrow weed scrub, 1.03 acre of freshwater marsh, and 8.82 acres of scalebroom scrub.

Significant impacts, as defined by CEQA, would occur with respect to the loss of mulefat scrub, coast live oak woodland, coastal sage scrub, elderberry scrub, southern willow scrub, southern cottonwood willow riparian forest, scalebroom scrub, valley freshwater marsh, wildlife habitat, special-status bird nests, special-status plant species, protected oaks, special-status wildlife species, and CDFG and ACOE jurisdictional resources.

Significant indirect impacts would occur with respect to increased light and glare, increased non-native plant species and increased human and domestic animal presence. However, the direct and indirect impacts associated with development and operation of the Landmark Village project are consistent with the findings of the Newhall Ranch Program EIR (March 1999) and Revised Additional Analysis (May 2003). Implementation of the mitigation measures required by the Newhall Ranch Program EIR, the Revised Additional Analysis, and the Specific Plan RMP, as well as the additional mitigation measures required by this Biota Report, would mitigate some, but not all, of the project-specific impacts identified by this report to a less than significant level. However, consistent with the findings of the Newhall Ranch

Program EIR and Revised Additional Analysis, unavoidable significant impacts would occur with respect to the loss of many sensitive animal species, loss of coastal sage scrub, the overall loss of wildlife habitat and increased human and domestic animal presence. The project would also contribute to an unavoidable significant cumulative impact related to the ongoing loss of biological resources in the project region. **Table 3, Landmark Village Significant Biological Impacts**, summarizes the proposed project's impacts on biological resources, the applicable mitigation measures, the significance findings after the mitigation is implemented, and consistency with the findings of the Newhall Ranch certified environmental documentation.

Table 3
Landmark Village Significant Biological Impacts

IMPACT DESCRIPTION	Mitigation Measures	Final Conclusion After Mitigation	Consistent with Newhall Ranch Specific Plan and WRP EIR (NREIR)
Bio-1, Common Plant Communities			
Agricultural	None Required	Not Significant	The NREIR included the loss of this land use as part of the analysis of the overall loss of wildlife habitat (see **Bio-2, Wildlife Habitat Loss**).
Non-Native Grassland	None Required	Not Significant	The NREIR included the loss of this plant community as part of the analysis of the overall loss of wildlife habitat (see **Bio-2, Wildlife Habitat Loss**).
Mulefat Scrub	4.6-1–4.6-26, 4.6-63	Not Significant	The NREIR included the loss of this plant community as part of the analysis of the overall loss of wildlife habitat (see **Bio-2, Wildlife Habitat Loss**).
Coastal Sage Scrub	4.6-37–4.6-43	Significant	Yes
Elderberry Scrub	4.6-43, 4.6-96	Not Significant	Yes
Arrow Weed Scrub	None Required	Not Significant	The NREIR included the loss of this plant community as part of the analysis of the overall loss of wildlife habitat (see **Bio-2, Wildlife Habitat Loss**).
Alluvial Scrub	None Required	Not Significant	The NREIR included the loss of this plant community as part of the analysis of the overall loss of wildlife habitat (see **Bio-2, Wildlife Habitat Loss**).
Great Basin Scrub	None Required	Not Significant	The NREIR included the loss of this plant community as part of the analysis of the overall loss of wildlife habitat (see **Bio-2, Wildlife Habitat Loss**).
Coastal Sage Chaparral Scrub	None Required	Not Significant	The NREIR included the loss of this plant community as part of the analysis of the overall loss of wildlife habitat (see **Bio-2, Wildlife Habitat Loss**).
Bio-2, Wildlife Habitat Loss			
Habitat Loss Within the SMA/SEA 23	4.6-1–4.6-26	Not Significant	Yes
Habitat Loss Outside of	4.6-27–4.6-43	Significant	Yes

3. **Organize Table 2 systematically; herps and birds are shuffled and a superficial scan of the table may lend the impression that amphibians are not covered; Mitigation Measures must be proposed for cumulative biological impacts.**

   Table 2 has been revised; special-status wildlife species are now organized by taxonomic group.

   Table 2 summarizes the findings of the Newhall Ranch Program EIR and Additional Analysis, which were certified by the Los Angeles County Board of Supervisors on May 27, 2003. These documents contain mitigation measures designed to offset the loss of habitat due to implementation of the Specific Plan. However, these documents conclude that neither the proposed mitigation measures, nor any other feasible additional mitigation measures, can mitigate from a biological perspective the permanent conversion of open space and associated plant and wildlife habitat. Accordingly, project and cumulative impacts to biological resources are identified as significant and unavoidable. As the Newhall Ranch Program EIR and Additional Analysis have been certified by the Los Angeles County Board of Supervisors with the understanding that impacts to biological resources would be unavoidably significant, and because it was determined that no feasible mitigation measures (beyond those included in the documents) are available that would fully mitigate for the loss of open space/wildlife habitat, additional mitigation measures to address cumulative impacts to biological resources were not provided.

IMPACT DESCRIPTION	Mitigation Measures	Final Conclusion After Mitigation	Consistent with Newhall Ranch Specific Plan and WRP EIR (NREIR)
SEA 23			
Bio-3, Setbacks From Riparian Resources Within the SMA/SEA 23			
Riparian Setbacks	None Required	Not Significant	The Newhall Ranch Final Additional Analysis (May 2003) concluded that the proposed land use plan and other design features were sufficient to maintain the function and values of the riparian habitat within the SMA/SEA 23.
Bio-4, Common Wildlife Within and Outside of the SMA/SEA 23			
Common Wildlife	4.6-88	Not Significant	Not previously analyzed as an individual topic at the program level; the NREIR did include an analysis of the overall loss of wildlife habitat (see **Bio-2, Wildlife Habitat Loss**).
Bio-5, Wildlife Habitat Linkages Within and Outside of the SMA/SEA 23			
Wildlife Habitat Linkages	4.6-1–4.6-26	Not Significant	Consistent with the findings of the NREIR, the proposed project would not significantly alter wildlife movement along the river corridor but would limit northern access to or disbursement from the Santa Clara River. However, given that the tract map site is currently used for agriculture, the tract map site is not expected to be part of a regional north-south movement corridor. In light of the above, project-related impacts to regional wildlife movement would be less than significant.
Bio-6, Special-Status Plant Species			
Everlasting (possible new species)	4.6-100	Not Significant	Not previously analyzed as an individual topic at the program level.
Slender Mariposa Lily	4.6-99	Not Significant	Yes
Peirson's Morning-Glory	4.6-27, 4.6-34, 4.6-35, 4.6-53	Not Significant	Yes
Southern California Black Walnut	4.6-48	Not Significant	Yes
San Fernando Valley Spineflower	4.6-67, 4.6-68	Not Significant	Yes
Bio-7, Protected Oaks and Coast Live Oak Woodland			
Oaks	4.6-48, 4.6-98, 4.6-101	Not Significant	Yes
Bio-8, Special-Status Wildlife Species			
Santa Ana Sucker	4.6-57, 4.6-81–4.6-86	Not Significant	Yes
Unarmored Threespine Stickleback	4.6-54, 4.6-57, 4.6-59, 4.6-81–4.6-86	Not Significant	Yes
Arroyo Chub	4.6-57, 4.6-81–4.6-86	Not Significant	Yes
Silvery Legless Lizard	4.6-89, 4.6-98	Significant	Yes
Southwestern Pond Turtle	4.6-81–4.6-85, 4.6-89, 4.6-98	Not Significant	Yes
Two-Striped Garter Snake	4.6-81–4.6-85, 4.6-89, 4.6-98	Not Significant	Yes
Cooper's Hawk (nesting)	4.6-88	Not Significant	Yes
Lawrence's Goldfinch (nesting)	4.6-88	Not Significant	Not previously analyzed as an individual topic at the program level.
Northern Harrier (nesting)	4.6-88	Not Significant	The NREIR concludes that due to the substantial loss of habitat, impacts would remain significant; this finding is consistent with the findings of **Bio-2, Wildlife Habitat Loss**.

IMPACT DESCRIPTION	Mitigation Measures	Final Conclusion After Mitigation	Consistent with Newhall Ranch Specific Plan and WRP EIR (NREIR)
Yellow Warbler (nesting)	4.6-88	Not Significant	Yes
White-Tailed Kite (nesting)	4.6-88	Not Significant	The NREIR concludes that due to the substantial loss of habitat, impacts would remain significant; this finding is consistent with the findings of **Bio-2, Wildlife Habitat Loss.**
California Horned Lark (nesting)	4.6-88	Not Significant	Not previously analyzed as an individual topic at the program level.
Yellow-Breasted Chat (nesting)	4.6-88	Not Significant	Not previously analyzed as an individual topic at the program level.
Least Bell's Vireo (nesting)	4.6-88	Not Significant	Yes
Pallid Bat (roosting)	None Required	Not Significant	Yes
Southern California Rufous-Crowned Sparrow (nesting)	4.6-88	Not Significant	The NREIR concludes that due to the substantial loss of habitat, impacts would remain significant; this finding is consistent with the findings of **Bio-2, Wildlife Habitat Loss.**
San Diego Desert Woodrat	4.6-89, 4.6-98	Significant	Yes
Arroyo Toad	4.6-81–4.6-84	Not Significant	Yes
Western Spadefoot	4.6-97	Not Significant	Yes
Coastal Western Whiptail	4.6-89, 4.6-98	Significant	Yes
Rosy Boa	4.6-89, 4.6-98	Significant	Yes
San Bernardino Ringneck Snake	4.6-89, 4.6-98	Significant	Yes
Coast Horned Lizard	4.6-89, 4.6-98	Significant	Yes
Tricolored Blackbird (nesting)	4.6-88	Not Significant	The NREIR concludes that due to the direct loss of habitat, the breeding behavior of this species may be directly impacted by Specific Plan implementation, if there is a breeding colony established at the time of construction.
Long-Eared Owl (nesting)	4.6-88	Not Significant	Not previously analyzed as an individual topic at the program level.
Western Yellow-Billed Cuckoo (nesting)	4.6-88	Not Significant	Not previously analyzed as an individual topic at the program level.
Southwestern Willow Flycatcher (nesting)	4.6-88	Not Significant	Yes
Merlin (wintering)	None Required	Not Significant	Not previously analyzed as an individual topic at the program level.
Summer Tanager	4.6-88	Not Significant	Yes
Pale Big Eared Bat	4.6-90	Not Significant	Yes
Western Mastiff Bat	4.6-90	Not Significant	Yes
Fringed Myotis	4.6-90	Not Significant	Yes
Yuma Myotis	4.6-90	Not Significant	Yes
Mountain Lion	None Available	Not Significant	The NREIR concludes that due to the substantial loss of habitat, impacts would remain significant; this finding is consistent with the findings of **Bio-2, Wildlife Habitat Loss.**
Monarch Butterfly	None Required	Not Significant	Not previously analyzed as an individual topic at the program level.
Coast Patch-Nosed Snake	4.6-89, 4.6-98	Significant	Yes
Bell's Sage Sparrow (nesting)	4.6-88	Not Significant	The NREIR concludes that due to the substantial loss of habitat, impacts would remain significant; this finding is consistent with the findings of **Bio-2, Wildlife Habitat Loss.**
Western Burrowing Owl	4.6-88	Not Significant	The NREIR concludes that due to the substantial loss of habitat, impacts

IMPACT DESCRIPTION	Mitigation Measures	Final Conclusion After Mitigation	Consistent with Newhall Ranch Specific Plan and WRP EIR (NREIR)
			would remain significant; this finding is consistent with the findings of **Bio-2, Wildlife Habitat Loss.**
Loggerhead Shrike	4.6-88	Not Significant	Yes
San Diego Black-Tailed Jackrabbit	4.6-89, 4.6-98	Significant	Yes
American Badger	4.6-89, 4.6-98	Not Significant	Not previously analyzed as an individual topic at the program level.
Bio-9, Sensitive Plant Communities			
Southern Willow Scrub	4.6-1–4.6-26, 4.6-55, 4.6-63, 4.6-87	Not Significant	Yes
Southern Cottonwood Willow Riparian Forest	4.6-1–4.6-26, 4.6-55, 4.6-63, 4.6-87	Not Significant	Yes
Valley Freshwater Marsh	4.6-1–4.6-26, 4.6-55, 4.6-63, 4.6-87	Not Significant	Yes
Scalebroom Scrub	4.6-1–4.6-26, 4.6-55, 4.6-63, 4.6-87	Not Significant	Yes
Bio-10, Jurisdictional Resources			
ACOE and CDFG	4.6-1–4.6-26, 4.6-55, 4.6-63, 4.6-87	Not Significant	Yes
Indirect Impacts			
Increased Light and Glare	4.6-56	Not Significant	The NREIR concludes that implementation of the Newhall Ranch Specific Plan has the potential to indirectly impact adjacent natural areas and sensitive biological resources that occur proximal to the site. This would occur as a result of increased use of the Santa Clara River and upland areas by humans and domestic animals, increased use of adjacent natural areas by animals typical of an urban environment, and the potential effects of light, glare, and sediment and urban pollutant-laden runoff, unless mitigated.
Landscaping Irrigation and Stormwater Runoff	None Required	Not Significant	
Increased Populations of Non-Native Species	4.6-92, 4.6-93, 4.6-95	Not Significant	
Increased Human and Domestic Animal Presence	4.6-17–4.6-19	Significant	
Construction and Grading Activities	None Required	Not Significant	
Cumulative Biological Impacts			
Cumulative Impacts	None Proposed or Required	Significant	Yes

4.0 SETTING

4.1 GENERAL PROJECT SITE CHARACTERISTICS

The 292.6-acre Landmark Village tract map site is located on the Val Verde 7.5-minute USGS quadrangle map (**Figure 8**), and is in northwestern Los Angeles County, approximately 30 miles northwest of downtown Los Angeles. The site lies on flat terraces above the Santa Clara River. The majority of the site is currently used for agricultural purposes and is subject to agricultural disking. Topography across the site is relatively flat, with elevations ranging from 800 feet to 960 feet above msl. Habitat on the tract map site varies in quality from high biological value in riparian areas associated with the Santa Clara River channel, to highly disturbed habitat such as upland agricultural areas.

The borrow site south of the river is characterized by sloping hillsides and adjacent agricultural use. The borrow site is dominated by coastal sage scrub, but also includes areas of coastal sage chaparral scrub, non-native grassland and live oak woodland. Elevations on the borrow site range from approximately 920 feet (near the river) rising to 1,260 feet above msl further south. The Chiquito Canyon grading site is characterized by non-native grassland, coastal sage scrub vegetation, and agricultural/disturbed areas. Elevations at this off-site grading site range from approximately 970 feet near SR-126 rising to 1,190 feet above msl further north.

4.1.1 Significant Ecological Area Boundaries

SEA 23 was created in consideration of the resource values present in the river corridor.[4] SEA 23 provides habitat for Rare, Threatened and Endangered species; it is also noted for its critical habitat for the unarmored threespine stickleback and the least Bell's vireo, and habitat for other sensitive aquatic and riparian-associated plant and animal species. The portion of SEA 23 within the Newhall Ranch Specific Plan area is 975 acres in size. Of this acreage, 131.73 acres are within the Landmark Village project site boundaries. As shown in **Figure 9, River Corridor SMA/SEA 23 Boundary**, portions of the Landmark Village project site that are within or adjacent to the boundary of the Specific Plan's River Corridor SMA/SEA 23 include the southern edge of the tract map site, portions of the utility corridor, proposed bank stabilization locations along the southern bank of the Santa Clara River and within Castaic Creek, and the proposed Long Canyon Road Bridge and associated haul routes. Development of these uses is consistent with SEA CUP No. 94-087-(5) approved by the Board of Supervisors on May 23, 2003, as part of the project approvals for the Newhall Ranch Specific Plan and WRP.

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4 See, General Plan, p. LU-A14.

4.1.2 Soil Characteristics

According to the Antelope Valley Area Soil Survey (Soil Conservation Service 1970), 12 soil types occur on the project site: Cortina sandy loam (0 to 2 percent), Sandy alluvial land, Metz sandy loam (0 to 2 percent), Metz sandy loam (2 to 9 percent), Mocho loam (0 to 2 percent), Hanford sandy loam (0 to 2 percent), Hanford sandy loam (2 to 9 percent), Sorrento loam (0 to 2 percent), river wash, Castaic and Saugus soils (30 to 65 percent), Yolo loam (0 to 2 percent), and Zamora loam (9 to 15 percent). These soils are discussed below in **Table 4**, **On-Site Soils**, and the location of the mapped soil polygons are shown in **Figure 10, Project Site Soils**.

Artificial fill has been placed on the tract map portion of the project site as a result of road construction, oil well drilling activities, previous utility line placement, agricultural activities and the abandoned Southern Pacific railroad line. Artificial fill also exists at various locations on the borrow site and the Chiquito Canyon grading site, ranging from minor spill fills to large dumped fill pads associated with oil well activities.

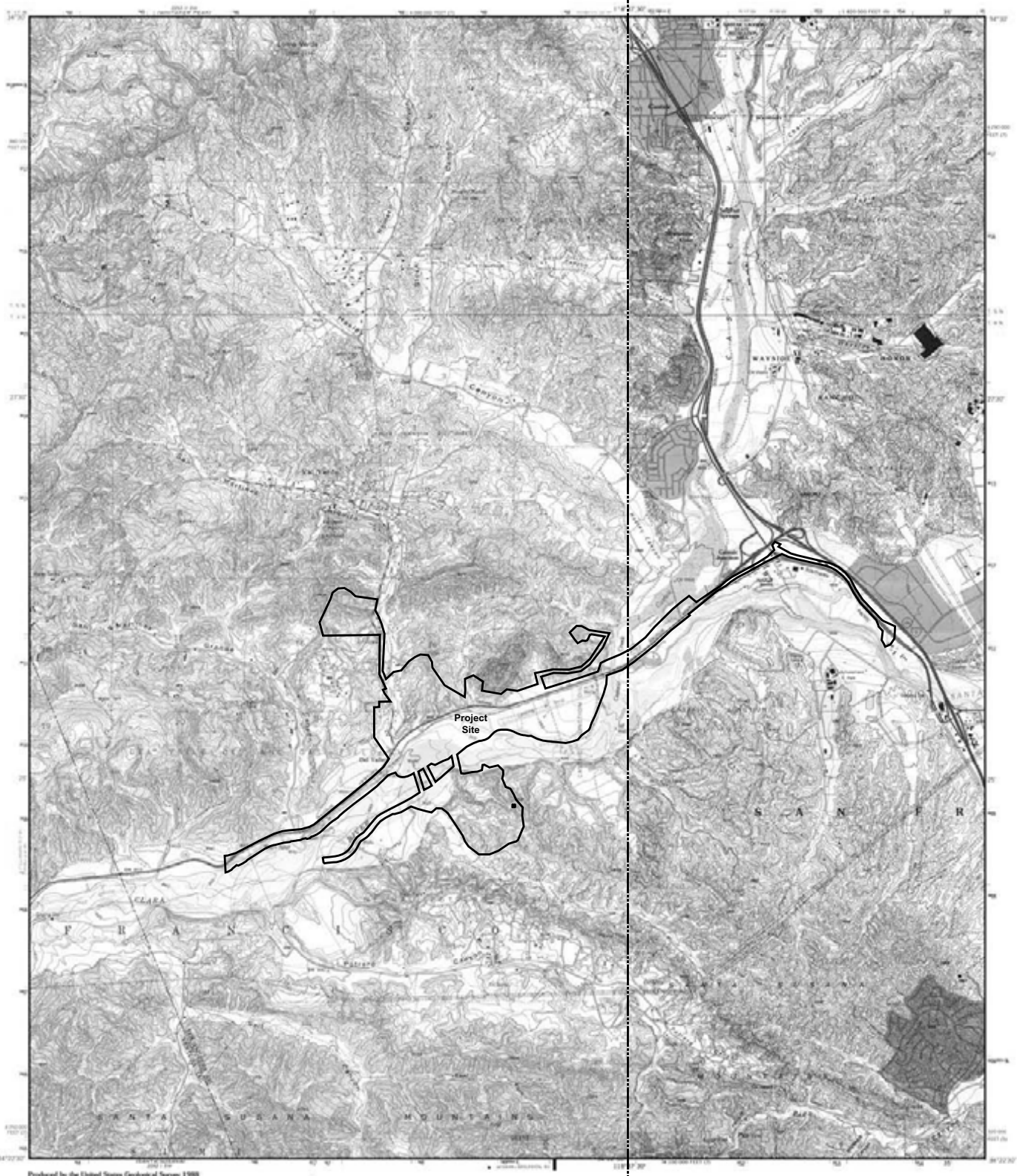
4.1.3 Drainage Patterns

The project site is located within the Santa Clara River basin and its watershed. The river borders the south side of the tract map site and flows from east to west through the Specific Plan area. The Chiquito Canyon drainage area borders the tract map site to the west, and the Castaic Creek drainage area borders the site to the east; both of these drainages are tributaries of the Santa Clara River. The drainages on and bordering the project site are discussed in more detail in **Section 9.3**.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

VAL VERDE QUADRANGLE (PARTIAL)
CALIFORNIA-LOS ANGELES CO.

NEWHALL QUADRANGLE (PARTIAL)
CALIFORNIA-LOS ANGELES CO.



Produced by the United States Geological Survey 1988
Revision by USDA Forest Service 1995

Topography compiled 1967. Photo-revised from imagery taken 1988 and other sources. Public Land Survey System and survey control current as of 1995.

North American Datum of 1927 (NAD 27). Projection and 10,000-foot tick California coordinate system, zone 7 and 5 (Lambert conformal conic) Blue 1000-meter Universal Transverse Mercator ticks, zone 11

North American Datum of 1983 (NAD 83) is shown by dashed corner ticks The values of the shift between NAD 27 and NAD 83 for 7.5-minute intersections are obtainable from National Geodetic Survey NADCON software

Non-National Forest System lands within the National Forest boundaries may exist in other National or State reservations

This map is not a legal land line or ownership document. Public lands are subject to change and landing, and may have access restrictions; check with local offices. Obtain permission before entering private lands. Where marked, land lines have not been established

UTM GRID AND 1998 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

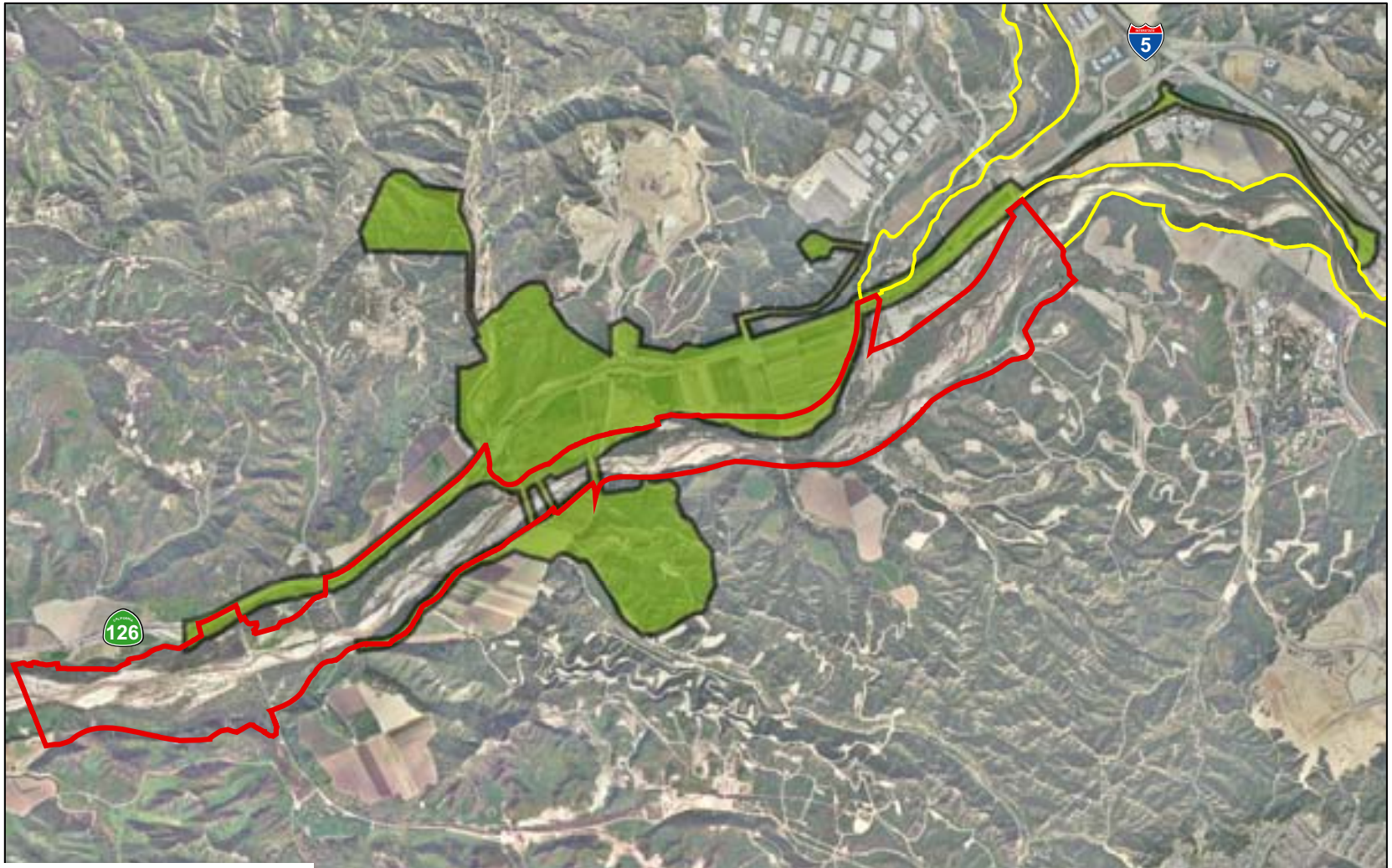
SCALE 1:24 000

CONTOUR INTERVAL 25 FEET
DATUM LINES REPRESENT 5-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO - 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

ROAD CLASSIFICATION
Primary highway hard surface — Light-duty road, hard or improved surface
Secondary highway hard surface — Unimproved road
Interstate Route — U. S. Route — State Route

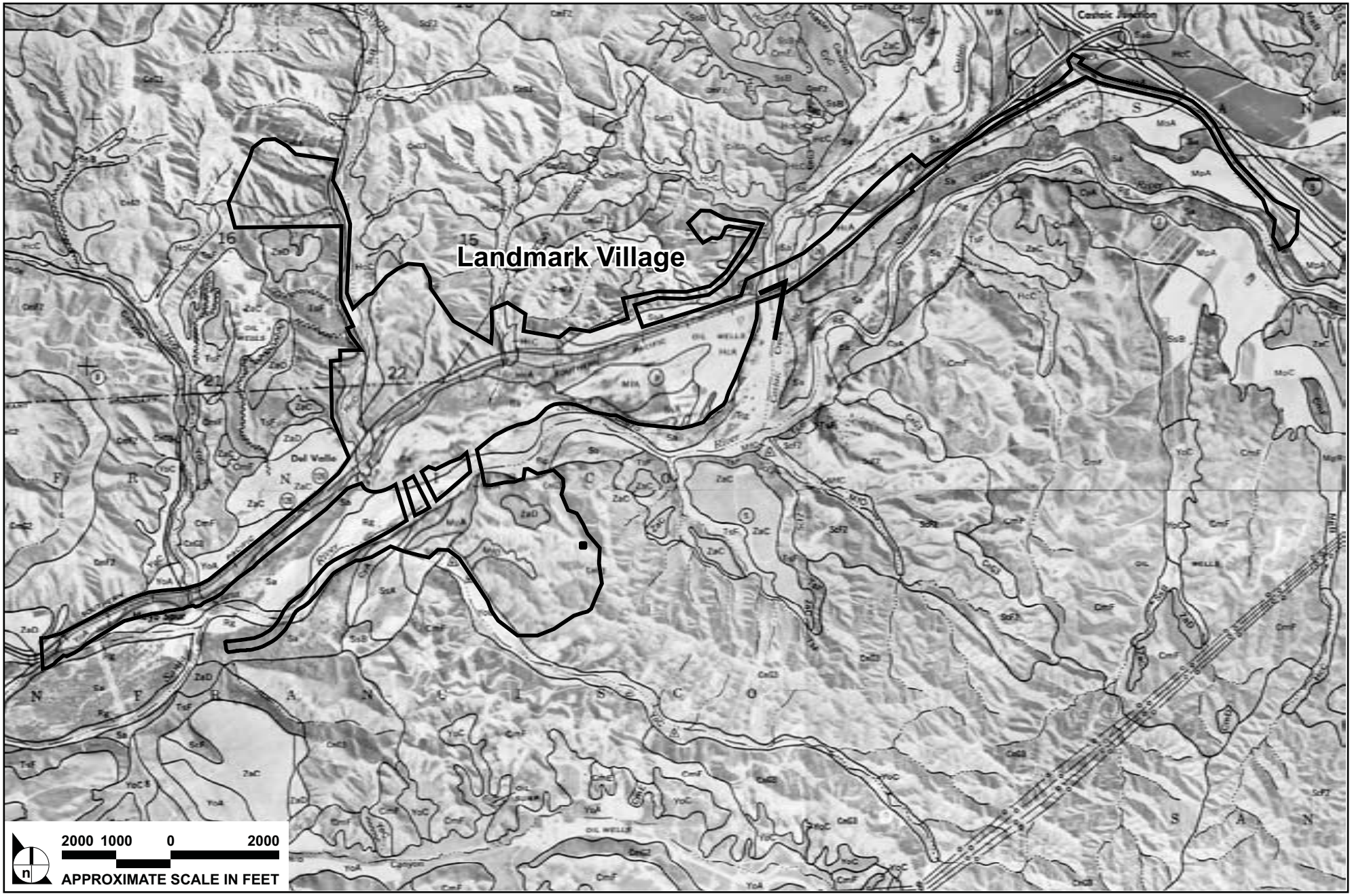


SOURCE: FORMA Systems – 2002, 2004, PSOMAS – 2005

FIGURE 9

River Corridor SMA/SEA 23 Boundaries

32-92•06/05



SOURCE: USDA Soil Conservation Service – January 1970, Impact Sciences, Inc. – May 2005

FIGURE **10**

Project Site Soils

32-92•07/05

Table 4
On-Site Soils

Mapped Soil	SOIL CHARACTERISTICS (Descriptive terms are defined as standard terms in SCS soil surveys.)	Associated Project-Site Plant Communities
Cortina Sandy Loam, 0 to 2 percent (CYA)	• Runoff is very slow; • Hazard of erosion is slight.	Agricultural, mulefat scrub
Sandy Alluvial Land (Sa)	• Mostly on floodplains along the Santa Clara River and its larger tributaries; • Consists of unconsolidated alluvium; • Ranges from sand to loamy sand in texture; • Hazard of soil blowing is moderate.	Agricultural, mulefat scrub, southern cottonwood willow riparian forest, arrow weed scrub
Metz Sandy Loam, 0 to 2% (MfA)	• Permeability is rapid; • Runoff is very slow; • Hazard of erosion is slight.	Agricultural
Metz Loamy Sand, 2 to 9% (MfC)	• Runoff is slow; • Hazard of erosion is slight.	Coastal sage scrub, coast live oak woodland
Mocho Loam, 0 to 2% (MpA)	• Moderately permeable; • Runoff is very slow; • Hazard of erosion is none to slight.	Agricultural, southern willow scrub
Hanford Sandy Loam, 0 to 2% (HcA)	• Runoff is slow; • Hazard of erosion is slight.	Agricultural, southern cottonwood willow riparian forest, annual grassland, southern willow scrub, elderberry scrub
Hanford Sandy Loam, 2 to 9% (HcC)	• Runoff is slow to medium; • Hazard of erosion is slight to moderate.	Agricultural, coastal sage scrub, great basin scrub, scalebroom scrub, non-native grassland
Sorrento Loam, 0 to 2% (SsA)	• On alluvial fans along the Santa Clara River and its major tributaries; • Runoff is very slow; • Hazard of erosion is slight.	Agricultural, cottonwood willow riparian forest
River Wash (Rg)	• Consists of sandy material in the beds of intermittent streams; • Hazard of soil blowing is slight to moderate.	River wash
Castaic and Saugus Soils, 30 to 65% (CnG3)	• Runoff is very rapid; • Hazard of erosion is very high.	Coastal sage scrub, coastal sage chaparral scrub
Zamora Loam, 9 to 15% (ZaD)	• Runoff is medium; • Hazard of erosion is moderate.	Coastal sage scrub
Yolo Loam, 0 to 2% (YoA)	• Permeability is moderate; • Runoff is very slow; • Hazard of erosion is none to slight.	Agricultural, cottonwood willow riparian woodland, freshwater marsh

5.0 METHODS

5.1 LITERATURE/DATABASE REVIEW

To evaluate the natural resources found or potentially occurring on the Landmark Village project site, literature searches and database reviews were conducted by Impact Sciences. Specifically, reports reviewed included the Biota chapter of the Newhall Ranch Program EIR as revised (March 1999), the Newhall Ranch Biota Report (July 1996), the Newhall Ranch Revised Additional Analysis (May 2003), Section 2.2, Salt Creek Corridor, Section 2.3, Floodplain Modifications, and Section 2.6, Spineflower and Other Sensitive Plant Species, and various technical reports documenting the biological surveys conducted on the project site and greater Newhall Ranch (**Table 5**). Literature sources specific to descriptions of the common plants and animals, plant communities and special-status species occurring in the County were also reviewed (**Section 14.0, References**).

In addition, the most recent versions of the California Natural Diversity Data Base (CNDDB) and the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants were reviewed for the USGS 7.5-minute quadrangle on which the project site is located (i.e., Val Verde) and the eight surrounding quadrangles (i.e., Newhall, Warm Springs Mountain, Whitaker Peak, Cobblestone Mountain, Piru, Simi Valley West, Simi Valley East and Oat Mountain) (**Appendix G**).

5.2 FIELD SURVEYS

All surveys were conducted by biologists qualified and/or permitted to conduct such surveys. Habitat and species observations were noted on data sheets, aerial photographs and maps. Specific information concerning a special-status species observed on site was recorded on appropriate data sheets. All surveys were conducted in accordance with published resource agency survey protocols, where they exist, or consistent with accepted survey methodologies for the particular species when published protocols did not exist. A summary of surveys dates, surveyors and methodologies are provided in **Table 5, Biological Surveys Conducted on the Landmark Village Site and Technical Reports Incorporated Into Biota Report**. The survey reports referenced in **Table 5**, which include additional information on specific methods used during the course of field surveys, are included in **Appendix E**. Resumes for biologists involved in the fieldwork and preparation of this report are included in **Appendix H**.

Table 5
Biological Surveys Conducted on the Landmark Village Site and Technical Reports Incorporated Into Biota Report

TAXONOMIC GROUP/TECHNICAL REPORT	SURVEYORS	SURVEY DATES/ SEASON	METHODS
Plant Surveys	**FLx**	May 5-27, 2001; October 16–17, 2002; May 31–June 3, June 15–17, and September 13–16, 2004	Focused plant surveys were conducted throughout the Newhall Ranch Specific Plan area by FLx in 2001 and 2002. The survey area included the project site (inclusive of the tract map). The 2004 surveys focused on the Santa Clara River Corridor. In addition, vegetation types and plant species associations were noted and their dominant species recorded. The surveys were floristic in nature and were conducted according to accepted scientific protocol.
	Dudek & Associates	May–August, 2002; May–August, 2003 April–July, 2004, and ongoing	Focused plant surveys were conducted throughout the Newhall Ranch Specific Plan area for special-status species. The survey area included portions of the Landmark Village site that provide suitable habitat for special-status plants, but did not include the portions of the tract map site currently used for agricultural activities. The surveys were floristic in nature and were conducted according to accepted scientific protocol.
Oak Tree Surveys	**Impact Sciences, Hendrickson**	2003–2004	Biologists conducted on-site surveys and evaluations of the oak trees pursuant to the Los Angels County Oak Tree Ordinance throughout the 2003 and 2004 year. The project site was traversed on foot through areas where oak trees occur. Oak trees were surveyed from the base of each tree. Only oak trees subject to the Los Angeles County Oak Tree Ordinance were surveyed.
Jurisdictional Delineation of Waters and Streambeds	**URS**	1992–2003	The focus of the delineation was the Santa Clara River and its tributaries within the Newhall Ranch Specific Plan area. Published ACOE/CDFG delineation protocols were utilized in the field.
Invertebrates	**Compliance Biology, Guy Bruyea**	April 10, 21, 25, 29, 30, May 2, 5, 6, 9, 16, 19, 20, 2004	The Newhall Ranch Specific Plan area was surveyed for a total 32-person days. The survey area included the project site (inclusive of the tract map). The primary focus of the surveys was to determine the presence or absence of San Emigdio blue butterfly, quino checkerspot butterfly and their associated host plants. A general butterfly inventory was also conducted.
Herpetofauna	**RECON**	March 15–May 30, 1999	Surveys for arroyo toads were conduced along portions of the Santa Clara River and Castaic Creek on the Newhall Ranch Specific Plan area. The surveys were conducted pursuant to U.S. Fish and Wildlife Service (USFWS) survey protocol.
	Ecological Sciences	April–June, 2001	Surveys for arroyo toad were conducted along portions of the Santa Clara River, Castaic Creek, San Francisquito Creek, Santa Clara River south fork and Bouquet Creek; the Landmark Village site is within survey "Zone 3." The surveys were conducted pursuant to USFWS survey protocol.
	Compliance Biology	March 19–June 25, 2004	Protocol surveys were conducted for arroyo toad that included the Landmark Village project site (inclusive of the tract map) reach. Surveys for southwestern pond turtle and two-striped garter snake were conducted concurrently with the arroyo toad surveys.
	Compliance Biology	March 9 and 23, 2004	All areas on the project site providing suitable breeding habitat for western spadefoot were identified. These areas were surveyed during the known breeding season of western spadefoot to determine their use by the species.
	ENTRIX	March 31, April 1, November 8, 10, 2004 February 1, 2005	Reconnaissance-level field surveys were conducted focusing on arroyo toad, California red-legged frog, southwestern pond turtle, two-striped garter snake and their associated habitat within the Santa Clara River floodplain. The purpose of the field surveys was to identify suitable habitat and to analyze potential effects of the Landmark Village project on these species and their habitat. Limited seining and dipnetting was also conducted.
	Impact Sciences	April–June, 2001	Protocol surveys were conducted for arroyo toad that included the Landmark Village project reach. Surveys for southwestern pond turtle and two-striped garter snake were conducted concurrently with the arroyo toad surveys.
Reptiles	**Impact Sciences**	September 2004; ongoing	NOTE: As reptile surveys are ongoing, a survey report has not been prepared (or included in Appendix E). Due to the absence of a survey report, a more detailed discussion of the survey methodologies has been provided.

TAXONOMIC GROUP/TECHNICAL REPORT	SURVEYORS	SURVEY DATES/ SEASON	METHODS
			Pitfall trap lines were located throughout Specific Plan area in representative habitat types, including one pitfall line on the Landmark Village project site. Five-gallon buckets were placed at 20- to 30-foot intervals along transects made of 2 foot high silt fencing. There were 9–10 buckets along each of the 25 transects. Buckets were filled with 3–4 inches of soil, rocks, and leafs to provide cover for trapped animals. An elevated lid was placed over the opening of the buckets to provide shade. Fall season trapping was conducted from 29 September – 6 October 2004. All pitfall traps were active (open) for 5 consecutive days and nights, and were checked once per day (in the morning). All captured animals were identified and released. Hand raking was conducted to survey for silvery legless lizards (*Anniella pulchra pulchra*). Raking was conducted in areas with sandy or loose soil within scrub, chaparral, sycamore, cottonwood, and oak communities. Raking was conducted on portions of the Landmark Village project site containing suitable habitat (including the Chiquito Canyon grading site). Hand raking was conducted in the late afternoons on 3, 4, 5, 6, and 7 of October 2004. A total of 40 hours of raking surveys were conducted. ~~Raking surveys for silvery legless lizards were performed in areas where lizards were most likely to occur within the project site (sandy soils with leaf litter within oak woodlands). In addition, one pitfall trap line was installed for detection of common and special status reptile species.~~
Birds	**Daniel Guthrie**	1993–2004; ongoing	Annual bird surveys, including protocol surveys for California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher, have been conducted annually that include the Landmark Village project site (inclusive of the tract map).
Mammals	**Impact Sciences**	March–September, 2004; ongoing	NOTE: As mammal surveys are ongoing, a survey report has not been prepared (or included in Appendix E). Due to the absence of a survey report, a more detailed discussion of the survey methodologies has been provided. Field surveys were conducted to sample mammal species in dominant plant communities throughout the Newhall Ranch Specific Plan area (NRSPA) during 2004. Survey locations were in representative dominant plant communities within the NRSPA~~Specific Plan area~~, including locations within the Landmark Village project site (inclusive of the tract map, Chiquito Canyon grading site and water tank sites, and borrow site). Five different survey methods were utilized: small mammal trapping, scent/track stations, spotlighting, cameras, and ANABAT recording. Within the Landmark Village project site boundaries, two small mammal trapping grids and 14 scent/track sent stations were utilized. Trapping grids were used to survey for small mammals. Trapping data was collected between July 28 and September 30, 2004, during and immediately after the breeding season when populations are generally at their annual maximum. Sherman Live Traps were used to capture and release small mammal species. A total of 34 live trapping areas (grids) were placed strategically throughout the NRSPA to ensure all habitat types were covered. Each grid consisted of four trap lines and each trap line consisted of 20 Sherman traps, spaced at approximately 20 feet apart, in a relatively straight line (80 traps per grid). Traps were set at dusk and checked at dawn. Grids were checked each morning for five consecutive days. On average, two to three grids were set a week. As of August 2004, 10 remote motion-activated cameras have been in operation on the Newhall property located near Highway 126 and Castaic Creek. The cameras are located at various canyons that converge into the Santa Clara River. The cameras were checked every other week during the months of April to November and once every three weeks between November and March. A total of 104-scent/track stations were distributed throughout the NRSPA to capture mammal distribution data in varying elevations and within most habitats. Scent/track stations consisted of a thin layer of flour, baited with a food attractant (usually a can of tuna cat food). Approximately 4 square feet of flour was

TAXONOMIC GROUP/TECHNICAL REPORT	SURVEYORS	SURVEY DATES/ SEASON	METHODS
			spread on the ground (which had been previously smoothed over) for track detection. The food attractant was then placed in the center of the scent/track station to bait animals. Scent/track stations were set up at dusk and checked at dawn the next morning for five consecutive days between 1 March and 30 September 2004. Spotlight surveys were conducted five days a week throughout the duration of the small mammal live trapping surveys (summer and fall). The AnaBat II Bat Detector was utilized to detect bats. Its function is to convert the ultrasonic echolocation signals of bats into audible electronic signals, which can be recorded and processed to assist in identification of the species.
Fish	**Impact Sciences**	March–June, 2002	Focused surveys were conducted for unarmored threespine stickleback and other special-status fish species in the portion of the Santa Clara River from near its confluence with Castaic Creek, east (upstream) approximately 7.2 miles. (Note: the project site is adjacent to, but not within, the survey area.)
Water Quality	**GeoSyntec Consultants**	June 2005; ongoing	The Landmark Village Water Quality Technical Report addresses the potential impacts of the proposed project on water quality in the Santa Clara River. Potential changes in water quality are addressed for pollutants of concern based on runoff water quality modeling, literature information, and professional judgment.
Flood Technical Report	**PACE**	June~~April~~ 2005~~; ongoing~~	The Landmark Village Flood Technical Report assesses the hydrology and hydraulics of the Santa Clara River corridor as a result of proposed floodplain modifications associated with the Landmark Village project/tract map. The report analyzes impacts to aquatic and riparian habitats downstream of the project/tract map site.

4. **Table 5: the discussion of survey methods for fish suggests that on-site surveys have not been conducted; assume that unarmored three-spine stickleback is present in the Santa Clara River above Piru Creek any time surface water is flowing.**

   Table 5, Biological Surveys Conducted on the Landmark Village Project Site and Technical Reports Incorporated into Biota Report, includes studies that were conducted specifically for the project site or the greater Newhall Ranch Specific Plan Area. The table is intended to list the studies that are referenced in the Draft Biota Report and is not intended to provide a comprehensive list of all the biological studies that have been conducted along the Santa Clara River. The table includes a fish survey, the *Results of Focused Surveys for Unarmored Threespine Stickleback and Other Special-Status Fish Species* prepared by Impact Sciences in 2002. For purposes of the Draft Biota Report, this study is sufficient to provide information regarding the presence of special-status fish species within and bordering the project site. Based on the results of the 2002 surveys, the mobility of fish species, and the presence of suitable habitat, the Draft Biota Report (page 67) correctly concludes that unarmored threespine stickleback, Santa Ana sucker, and arroyo chub occur, when flows are sufficient, in portions of the river within and bordering the project site. Given the above, conducting additional surveys in riverine habitats on and bordering the tract map site, or referencing biological studies conducted in other portions of the Santa Clara River, would not provide additional information that would alter the conclusions of the Draft Biota Report.

9. **Provide a discussion of the trapping methodologies used for rodent surveys.**

Field surveys for mammal species were conducted throughout the Newhall Ranch Specific Plant Area (NRSPA) during 2004. Because this survey effort will not be completed until fall of 2006, a technical report of the methods and results has not yet been prepared. The survey locations were chosen to sample mammal species in dominant plant communities containing suitable habitat within those portions of the NRSPA proposed for development. Five different survey methods were utilized: small mammal trapping, scent/track stations, spotlighting, cameras, and AnaBat recording. Survey locations for each survey method utilized are depicted in **Attachment 1** (which has been included in **Appendix C**). As shown, track stations and trapping grids were deployed at locations on the Landmark Village project site, including the track map site, the Chiquito Canyon grading site and water tank sites, and the borrow site.

Small mammal populations generally fluctuate annually with low populations occurring late in winter and high populations occurring after the breeding season (spring to summer). For presence/absence surveys, Impact Sciences performed sampling during and immediately after the breeding season (summer to early fall) when populations are generally at their annual maximum.

Sherman Live Traps were used to capture and release small mammal species. These traps are made of aluminum with collapsible sides and are 13 x 13 x 38 cm in size. A total of 34 live trapping areas (grids) were placed strategically throughout the NRSPA to ensure all habitat types were covered. Each grid consisted of four trap lines and each trap line consisted of 20 Sherman traps, spaced at approximately 20 feet apart, in a relatively straight line (80 traps per grid). The location of all 34 grids can be viewed on **Attachment 1, Appendix C**. Of these grids, two were located on the Landmark Village project site.

Trapping data was collected between July 28 and September 30, 2004. Due to the high temperatures in the area during the summer months, traps were set at dusk and checked at dawn to avoid mortality of small mammals captured inside the traps. Grids were checked each morning for five consecutive days. On average, two to three grids were set a week.

Table 5, Biological Surveys Conducted on the Landmark Village Project Site and Technical Reports Incorporated into Biota Report, has been revised to include an expanded discussion of the mammal survey methodology.

6.0 BIOLOGICAL RESOURCES

6.1 PLANT COMMUNITIES AND LAND USES

A total of 15 plant communities and two existing land use (active agriculture and developed areas) were identified and characterized as occurring on the project site during the field investigations. Twelve of these plant communities, including non-native grassland, southern cottonwood-willow riparian forest, coast live oak woodland, coastal sage scrub, coastal sage chaparral scrub, elderberry scrub, arrow weed scrub, mulefat scrub, southern willow scrub, freshwater marsh, great basin scrub, and scalebroom scrub correspond with the *Vegetation Classification and Mapping Program, List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database* (CDFG 2003). The remaining three described communities, ruderal, river wash and alluvial scrub, do not fit a defined plant community classification and, therefore, are defined by their dominant plant species. The plant communities and the land uses occurring on the project site are discussed below. The plant communities and land uses have been mapped on the project site as shown on **Figure 11, Plant Communities and Land Uses on the Landmark Village Project Site** and on **Figure 11A, Plant Communities and Land Uses on the Landmark Village Project Site with Conceptual Grading Plan.** A list of all plant species observed on the project site is included in **Appendix D.**

6.1.1 Agricultural

There are 373.60 acres of land on the project site actively used for agricultural purposes. The majority of the tract map site is used for agricultural purposes. At the time of the 2004 surveys that mapped to map the plant communities on the project site, the agricultural fields on the tract map site were fallow and contained non-native grasses and other ruderal vegetation. The agricultural fields are disked regularly.

6.1.2 Non-Native Grassland

There are 123.58 acres of disturbed non-native grasslands on the project site. These grasslands occur along the northwestern portion of the tract map site, and within the borrow site in Long Canyon and the Chiquito Canyon grading site. These areas are dominated by non-native grasses such as brome grasses (*Bromus diandrus, B. madritensis* ssp. *rubens, B. hordeaceus*), wild oats (*Avena fatua, A. barbata*) and rat-tail fescue (*Vulpia myuros* ssp. *myuros*), but also include herbaceous ruderal species such as red-stemmed filaree (*Erodium cicutarium*), dead nettle (*Lamium amplexicaule*), black mustard (*Brassica nigra*), milk thistle (*Silybum marianum*) and star-thistle (*Centaurea* spp.), as well as native grass species (less than ten percent) such as purple needlegrass (*Nasella pulchra*), valley needlegrass (*Nasella lepida*), one-sided bluegrass (*Poa segunda*), and few-flowered fescue (*Vulpia microstachys*).

6.1.3 Southern Cottonwood-Willow Riparian Forest

There are 18.61 acres of southern cottonwood-willow riparian forest on the project site. This community occurs on low terraces above the main channel of the Santa Clara River and along Castaic Creek. It consists of tall, open, broadleaved, winter-deciduous trees and is dominated by Fremont cottonwood (*Populus fremontii* ssp. *fremontii)* and willows (*Salix laevigata, S. exigua, S. lasiolepis).* Understory plants include mulefat (*Baccharis salicifolia),* arrow weed (*Pluchea sericea*), blue elderberry (*Sambucus mexicana*), mugwort (*Artemesia douglasiana),* hoary nettle (*Urtica dioica* ssp. *holosericea),* ripgut grass (*Bromus diandrus),* and alkali rye (*Leymus triticoides).* Two invasive plant species, giant reed (*Arundo donax*) and tamarix (*Tamarix ramosissima*), are common throughout this plant community.

6.1.4 Coast Live Oak Woodland

There are 9.05 acres of coast live oak woodland on the project site. This community occurs at the base of north-facing slopes in Chiquito Canyon and Long Canyon and is dominated by coast live oak (*Quercus agrifolia*). The understory is characterized by annual grasses, spiny redberry (*Rhamnus crocea*), skunkbrush (*Rhus trilobata*), blue elderberry, holly-leaf cherry (*Prunus ilicifolia* ssp. *ilicifolia*), wild cucumber (*Marah macrocarpus* var. *macrocarpus*), eucrypta (*Eucrypta chrysanthemifolia*), clarkias (*Clarkia* spp.) and bedstraw (*Galium* spp.).

6.1.5 Coastal Sage Scrub

There are 305.13 acres of coastal sage scrub on the project site. This community predominantly occurs on gentle to steep hill slopes within the Chiquito Canyon grading site and the borrow site, as well as in an isolated area in the northwest portion of the tract map site and within the utility corridor. Dominant native species found in this plant community include California buckwheat (*Eriogonum fasciculatum* var. *foliolosum*) and California sagebrush (*Artemisia californica*). Other common plants include various sages (*Salvia leucophylla, S. mellifera, S. apiana*), California broom (*Lotus scoparius*), California aster (*Lessingia filaginifolia* var. *filaginifolia*), California encelia (*Encelia californica*), giant wild-rye (*Leymus condensatus*) and chaparral mallow (*Malacothamnus fasciculatus*). The understory generally is sparse and contains native grasses, including foothill needlegrass (*Nassella lepida*) and native herbs such as wishbone bush (*Mirabilis californica*) and morning-glory (*Calystegia macrostegia*). Both Venturan and Riversidean coastal sage scrub communities occur on the project site, with the Venturan community occurring more commonly on northerly facing slopes and the Riversidean community being more common on southerly facing slopes. Neither of these sage scrub communities are considered of special status by CDFG as of the most recent *List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database* (CDFG 2003).

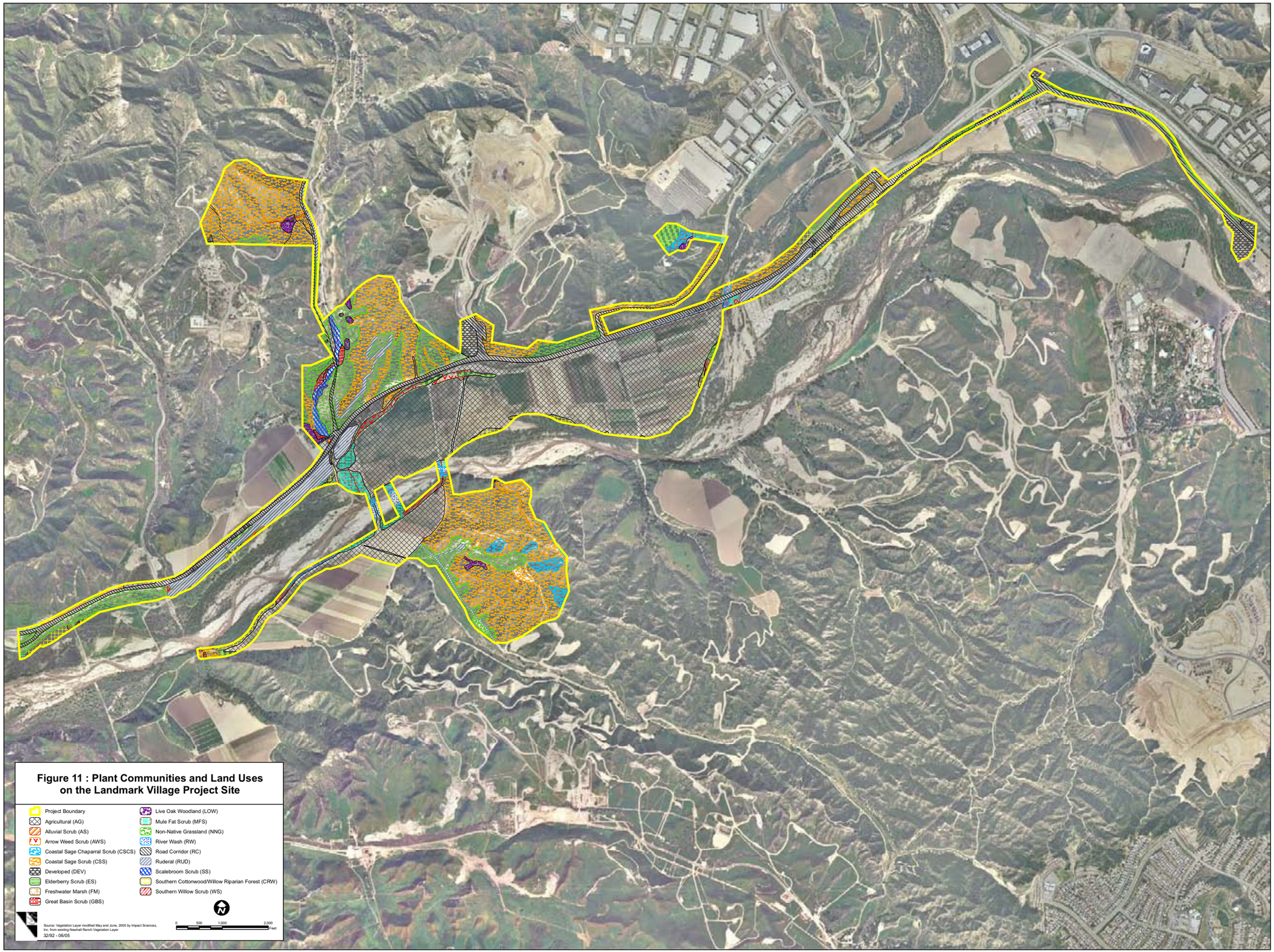


Figure 11 : Plant Communities and Land Uses on the Landmark Village Project Site

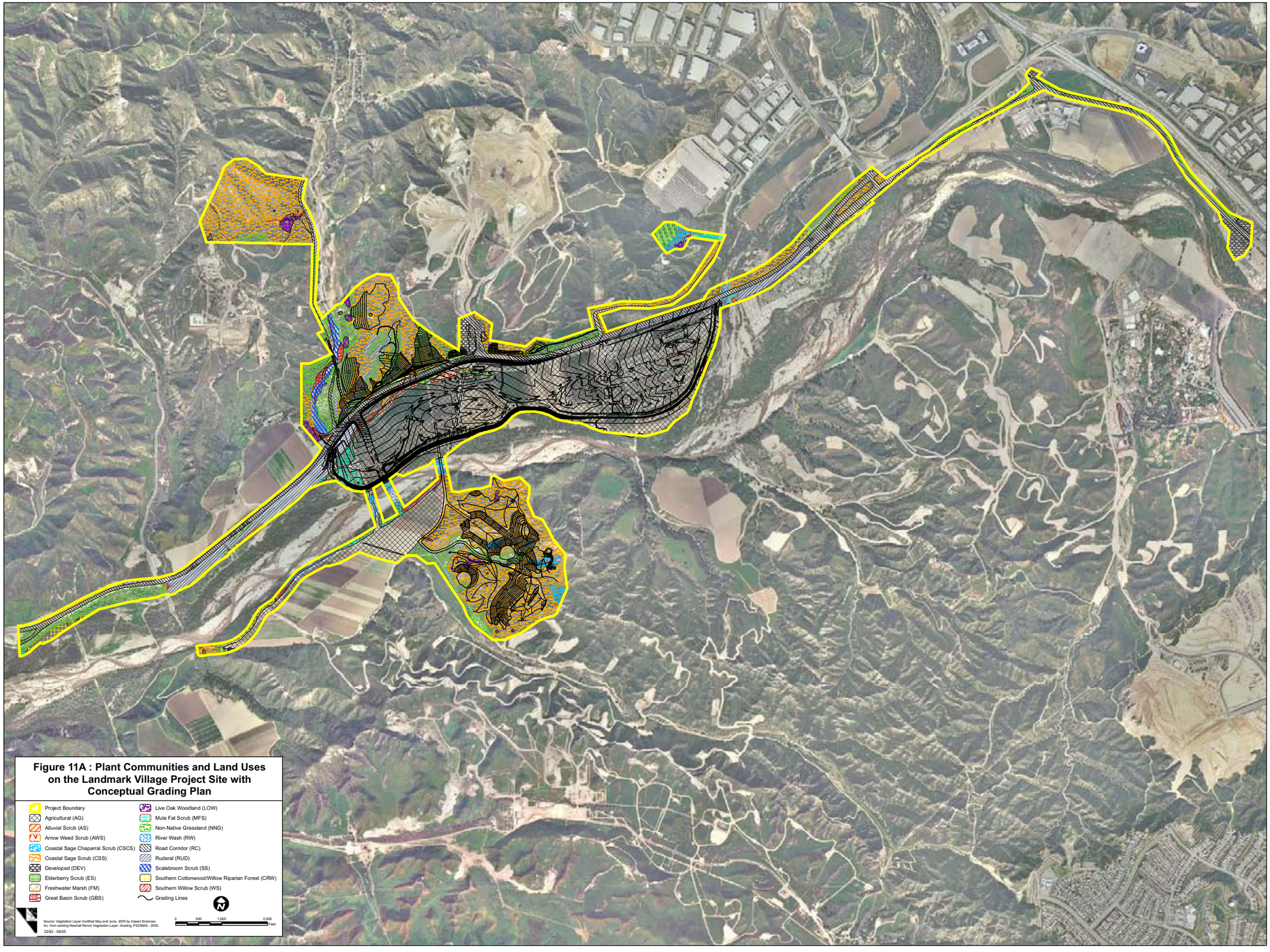


Figure 11A : Plant Communities and Land Uses on the Landmark Village Project Site with Conceptual Grading Plan

6.1.6 Coastal Sage Chaparral Scrub

There are approximately 12.50 acres of coastal sage chaparral scrub on the project site. The steepest north-facing slopes in Long Canyon support a mixed association of coastal sage scrub and chaparral species. Species found in this plant community include chamise (*Adenostoma fasciculatum*), hoary leaf ceanothus (*Ceanothus crassifolius*), black sage (*Salvia mellifera*), toyon (*Heteromeles arbutifolia*), California buckwheat, California encelia (*Encelia californica*), bush monkey flower (*Mimulus aurantiacus*), mountain mahogany (*Cercocarpus betuloides* var. *betuloides*), blue elderberry and heart-leaved penstemon (*Keckiella cordifolia*). The understory is poorly developed due to the dense vegetation cover. This plant community corresponds to the mixed chaparral community described in the Newhall Ranch Program EIR.

6.1.7 Elderberry Scrub

There are 8.22 acres of elderberry scrub on the project site. This plant community occurs in two locations in the northeast portion of the tract map site, as well as at the Commerce Center water tank site, within the utility corridor, and along the southern banks of the Santa Clara River. This community is characterized by thickets of blue elderberry, but also contains annual grasses and arrow weed. A row of large eucalyptus trees (*Eucalyptus globulus*) occurs adjacent to this plant community within the tract map site.

6.1.8 Arrow Weed Scrub

There are six stands of arrow weed scrub on the project site totaling 6.45 acres, located to the south of SR-126 (**Figure 11**). This plant community occurs in two locations in the northeast portion of the tract map site, as well as within the utility corridor. This community is characterized by a dense growth of arrow weed, but also contains scattered elderberry shrubs and annual grasses.

6.1.9 Mulefat Scrub

There are 19.31 acres of ~~mule fat~~mulefat scrub on the project site. Several stands of this community occur in the western portion of the tract map site, adjacent to the river floodplain, near the water tank area, as well as within the utility corridor in locations within the floodplain of Castaic Creek and the Santa Clara River. The dominant species in this community are mulefat and arrow weed; tree tobacco (*Nicotiana glauca*), tamarisk and giant reed also are common. The understory is sparse or absent, but when present can include such species as Mexican rush (*Juncus mexicanus*), salt heliotrope (*Heliotropum curassavicum*) and annual grasses.

6.1.10 Southern Willow Scrub

There are 5.19 acres of southern willow scrub vegetation on the project site. This plant community is present in locations within the floodplain of Castaic Creek and the Santa Clara River. This community is dominated by willow shrubs (*Salix exigua, S. lasiolepis, S. laevigata*), but also includes ~~mule fat~~mulefat and blue elderberry. The understory is sparse, with species such as mugwort, shrubby phacelia (*Phacelia ramosissima*) and annual grasses present.

6.1.11 River Wash

There are 8.61 acres of river wash within the project boundaries. The stretch of the Santa Clara River occurring within and bordering the location of the proposed bridge and haul routes, as well as areas within Chiquito Canyon Creek, are sparsely vegetated and subject to scouring by seasonal storm flows. Soils are sandy riverwash and gravel, and in places form sand bars and low terraces within the channels. Shrub species occurring in and adjacent to the channel include mulefat, sandbar willow, tamarisk, scale-broom, sandwash groundsel (*Senecio flaccidus* var. *douglasii*), big saltbush (*Atriplex lentiformis* ssp. *lentiformis*) and Great Basin sagebrush (*Artemisia tridentata*). Smaller species growing in the riverbed include white sweetclover (*Melilotus albus*), buckwheat (*Eriogonum baileyi*), cocklebur (*Xanthium strumarium*), California croton (*Croton californicus*), California evening primrose (*Oenothera californica* ssp. *californica*), Mediterranean schismus (*Schismus barbata*), foxtail chess and annual bur-sage (*Ambrosia acanthicarpa*).

6.1.12 Freshwater Marsh

There are three small stands of freshwater marsh on the project site within the main and secondary channels of the Santa Clara River, totaling 1.03 acres. This community typically is dominated by emergent perennial monocots, often up to 5 meters tall and forming closed canopies. Species found in the wettest parts of the channels include cattail (*Typha latifolia, T. domingensis*), smartweed (*Polygonum hydropiperoides, P. punctatum*), bulrush (*Schoenoplectus acutus* var. *occidentalis, S. pungens*), nutsedge (*Cyperus odoratus*), water primrose (*Ludwigia peploides* ssp. *peploides*), watercress (*Nasturtium officinale*), sticky willow-weed (*Epilobium ciliatum* ssp. *ciliatum*) and water speedwell (*Veronica anagallis-aquatica*).

6.1.13 Alluvial Scrub

There is 0.60 acre of alluvial scrub on the project site. This plant community occurs within the Chiquito Canyon water tank site, and in small pockets at the base of Chiquito Canyon and within the utility corridor. This plant community is characterized as a mixture of shrubs that colonize alluvial materials within intermittent creeks, arroyos and the drier terraces within large washes. Plant species observed in this plant community include big sagebrush, scalebroom (*Lepidospartum squamatum*), blue elderberry, big saltbush (*Atriplex lentiformis*) and squaw bush (*Rhus trilobata*), with some areas having high densities of big sagebrush.

6.1.14 Great Basin Scrub

There are 3.05 acres of great basin scrub on the project site. This plant community occurs along the outer margins of the floodplains of Chiquito Creek and the Santa Clara River. Great basin scrub is characterized by an almost pure stand of Great Basin sagebrush.

6.1.15 Scalebroom Scrub

There are 8.82 acres of scalebroom scrub on the project site. This plant community occurs along portions of Chiquito Creek. Similar to alluvial scrub, scalebroom scrub is characterized by homogeneous stands of scalebroom that grow in arroyos and washes.

6.1.16 Other Developed Land Uses

There are 20.15~~67~~ acres of developed lands with the project area. These areas primarily include parking lots and commercial areas along the eastern utility corridor and various impermeable surfaces throughout the project site.

6.1.17 Ruderal Vegetation

A total of 47.90 areas on the project site comprise of ruderal areas. These areas mostly include portions of the site that are mostly void of vegetation located immediately adjacent to SR-126 and Chiquito Canyon Road.

6.2 COMMON WILDLIFE

Discussed below are representative common wildlife species (those not provided a sensitivity status by regulatory agencies) that were observed on the project site during the field surveys. A complete list of wildlife species observed or potentially occurring on the Landmark Village project site is provided in **Appendix D**. Special-status wildlife species observed or potentially occurring on the project site are discussed in **Section 9.0, Sensitive Biological Resources**.

6.2.1 Amphibians and Reptiles

The Santa Clara River is perennial in the vicinity of the Landmark Village site and provides habitat for amphibians. Western toad (*Bufo boreas)*, Pacific chorus frog (*Pseudacris regilla*) and California chorus frog (*Pseudaris cadaverina*), all of which are common in the project area, have been observed in the portion of the river bordering the project site. Additionally, numerous tadpoles, juveniles and adult forms of the invasive African clawed frog (*Xenopus laevis*) were observed throughout backwater areas of the Santa Clara River along and adjacent to the project site (Compliance Biology 2004). No other amphibian species have been observed or detected during the site surveys. Amphibian populations on the project site are expected to be largely restricted to the riverine and riparian habitats.

Common reptile species observed on the project site include western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), red coachwhip (*Masticophis flagellum piceus*), San Diego alligator lizard (*Elgaria malticarinata webbii*), western skink (*Eumeces skiltonianus*), San Diego gopher snake (*Pituophis catenifer annectens*), common kingsnake (*Lampropeltis getulus*) and southwestern rattlesnake (*Crotalus viridis helleri*). Reptile populations on the tract map site are limited by ongoing agricultural activities. Common reptile species are expected to be more abundant within the riparian, coastal sage scrub, and chaparral habitats on the project site.

6.2.2 Birds

The agricultural and scattered grassland areas on the tract map site provide foraging habitat for a number of raptor species, including turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*) and American kestrel (*Falco sparverius*). The eucalyptus trees along the northern portion of the tract map site provide nesting habitat for raptors. Other bird species observed within the agricultural and grassland portions of the project site include American robin (*Turdus migratorius*), house finch (*Carpodacus mexicanus*), savannah sparrow (*Passerculus sandwichensis*), Brewer's blackbird (*Euphagus cyanocephalus*), house sparrow (*Passer domesticus*), northern mockingbird (*Mimus*

5. **Section 6.1.14 and elsewhere, as appropriate: the variety of Great Basin Sagebrush present on the site is likely to be *Artemisia tridentata* var. *parishii*. Revise the identification accordingly throughout the document. The presence of this taxon is noteworthy and SEATAC recommends mitigation for losses of this taxon.**

   Currently, it is unknown if *Artemisia tridentata* var. *parishii* occurs on the project site. This subspecies is identified by drooping or spreading inflorescence branches and hairy or glandular fruit. Dudek & Associates will determine if *A. t. parishii* occurs on the site when the fruits are identifiable (generally November). Should it be found that *A. T. parishii* is the dominant component of the Great Basin scrub community found on the project site, the significance of impacts to this plant community will be evaluated based on the extent of this community to be developed, the extent of this plant community on the greater Newhall Ranch Specific Plan Area, and the regional rarity of the plant community.

polyglottos), mourning dove (*Zenaida macroura*), European starling (*Sturnus vulgaris*) and white-throated swift (*Aeronautes saxatalis*).

The riparian habitats on and bordering the project site provide nesting and foraging habitat for numerous bird species. Bird species observed within the riparian plant communities include bushtit (*Psaltriparus minimus*), Wilson's warbler (*Wilsonia pusilla*), orange-crowned warbler (*Vermivora celata*), black phoebe (*Sayornis nigricans*), Bewick's wren (*Thryomanes bewickii*), brown-headed cowbird (*Molothrus ater*), wrentit (*Chamaea fasciata*) and numerous other species. In addition, cliff swallow (*Petrochelidon pyrrhonota*) has been observed nesting under the SR-126/Castaic Creek Bridge.-

Bird species observed within the coastal sage scrub and chaparral habitats on the two off-site grading sites include California towhee (*Pipilo crissalis*), canyon wren (*Catherpes mexicanus*), rock wren (*Salpinctes obsoletus*), western scrub-jay (*Aphelocoma californica*), California thrasher (*Toxostoma redivivum*) and hermit thrush (*Catharus guttatus*).

~~In addition, cliff swallow (*Petrochelidon pyrrhonota*) has been observed nesting under the SR-126/Castaic Creek Bridge.~~

6.2.3 Mammals

A variety of common mammal species occur in the vicinity of the project site. During mammal surveys (which included small mammal trapping for rodents) conducted at the two off-site grading sites in 2004, the following common species were observed or identified by tracks, scat, or other sign: mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), desert cottontail (*Sylvilagus auduboni*), California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), raccoon (*Procyon lotor*), gray fox (*Urocyon cinereoargenteus*), striped skunk (*Mephitis mephitis*), western harvest mouse (*Reithrodontomys megalotis*), deer mouse (*Peromyscus maniculatus*), dusky-footed woodrat (*Neotoma fuscipes*), California mouse (*Peromyscus californicus*), California pocket mouse (*Chaetodipus californicus*), California vole (*Microtus californicus*) and Pacific kangaroo rat (*Dipodomys agilis*). The medium to larger mammals observed on the site (i.e., mule deer, coyote, bobcat, desert cottontail, raccoon, fox, striped skunk) do not typically rely on a specific single habitat and are presumed to utilize all of the habitat types on the project site. However, based on the results of the 2004 mammal surveys, medium to larger mammals were found to be most abundant in coastal sage scrub, agricultural, riparian woodland, and grassland habitats. Similarly, based on the results of the 2004 surveys, small mammals were found to utilize all the habitat types on the project site, but were most abundant in coastal sage scrub, agricultural, coast live oak woodland, and dry wash habitats.

12. **Expand section 6.2; discuss habitats used by various wildlife species.**

    The Draft Biota Report's discussion of common wildlife species has been expanded; see page 49.

7.0 CHARACTERISTICS OF SURROUNDING AREA

7.1 EXISTING LAND USES

Land use types surrounding the site include the following: to the north, scattered rural and urban residential uses (the communities of Val Verde and San Martinez Grande), landfill uses (Chiquito Canyon Landfill), oil and natural gas production uses, high-intensity business park uses (Valencia Commerce Center), urban single-family homes and low-intensity commercial uses (Castaic corridor) and undeveloped areas; to the east, an existing WRP (Valencia WRP 32), a California Highway Patrol station, high-intensity commercial/recreational uses (Magic Mountain Theme Park), hotels, restaurants and service stations adjacent to I-5, urban density residential uses (to the southeast) and undeveloped areas; to the south and to the west, agricultural fields, citrus orchards, oil and natural gas production sites and undeveloped areas.

7.2 REGIONAL PLANT COMMUNITIES

Plant communities in the immediate vicinity of the Landmark Village project site consist of coastal sage scrub, live oak woodland, coastal sage chaparral scrub, chamise chaparral, non-native grassland, willow woodland, willow scrub, cottonwood/willow forest, mulefat scrub and freshwater marsh. Essentially all of these plant communities are represented to some degree on or bordering the project site.

7.3 REGIONAL OPEN SPACE AREAS

Figure 12, Regional Open Space Areas, illustrates the location and distribution of major public and private open space in the vicinity of the project site. Provided below is a listing of these areas as shown in **Figure 12**, separated as *existing* public areas and *proposed* public areas.

<u>Public (existing)</u>

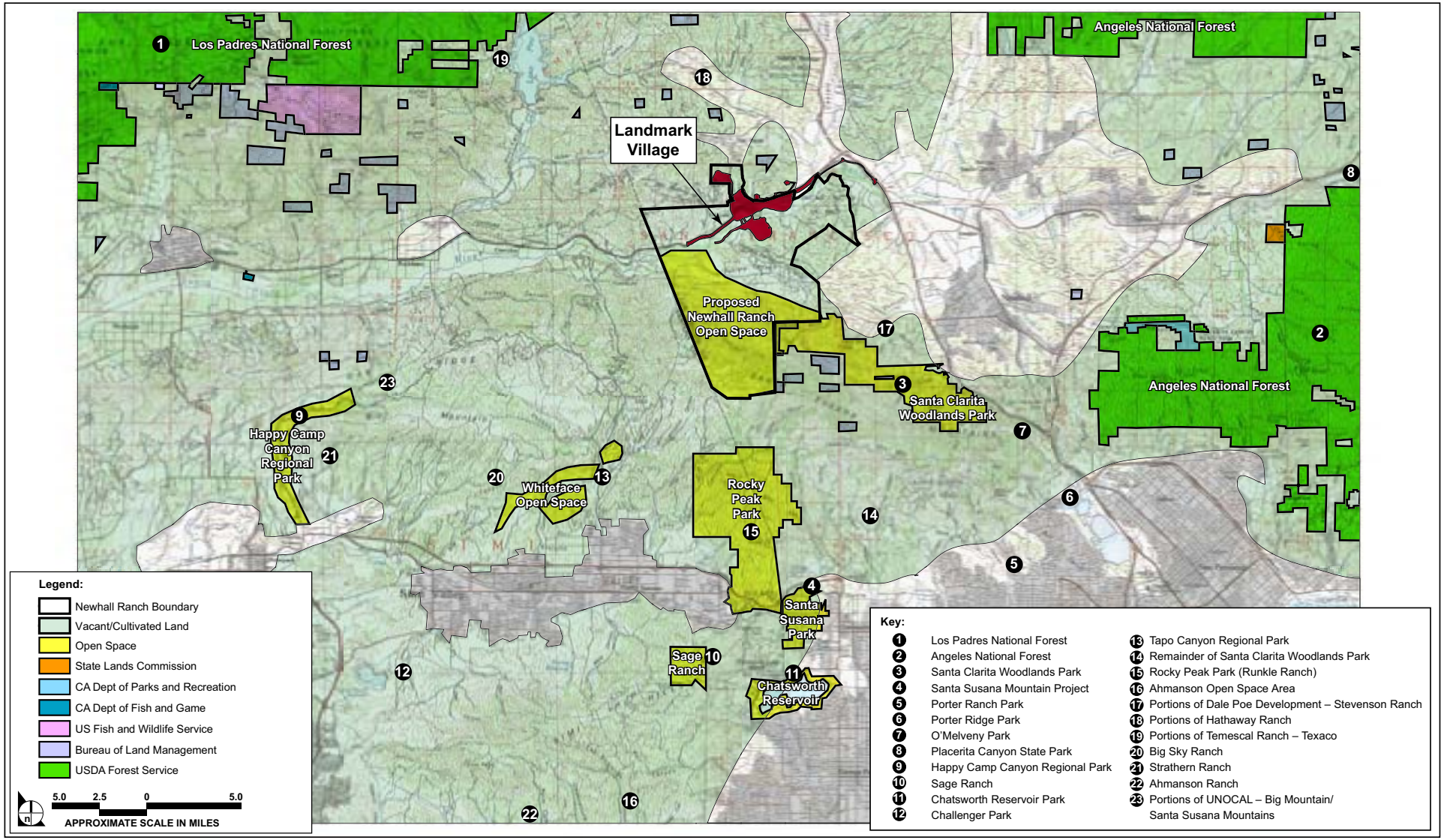
1. Los Padres National Forest, including the Sespe Condor Sanctuary;
2. Angeles National Forest;
3. Santa Clarita Woodlands Park;
4. Santa Susana Mountain Project;
5. Porter Ranch Park;
6. Porter Ridge Park;
7. O'Melveny Park;

8. Placerita Canyon Regional Park;
9. Happy Camp Canyon Regional Park;
10. Sage Ranch;
11. Chatsworth Reservoir Park;
12. Challenger Park;
13. Tapo Canyon Regional Park; and
16. Ahmanson Ranch Open Space Area.

<u>Public (proposed)</u>

14. Remainder of Santa Clarita Woodlands Park;
15. Rocky Peak Park (Runkle Ranch);
17. Portions of Dale Poe Development – Stevenson Ranch;
18. Portions of Hathway Ranch;
19. Portions of Temescal Ranch-Texaco;
20. Big Sky Ranch;
21. Strathern Ranch;
22. Ahmanson Ranch; and
23. Portions of UNOCAL - Big Mountain/Santa Susana Mountains.

NOTE: Numbering of this list corresponds with the numbering presented on **Figure 12**.



SOURCE: USGS 1:250,000 Scale Map, Los Angeles Quadrangle, Impact Sciences, Inc. – November 2005

FIGURE **12**

Regional Open Space Areas

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6. **Figure 12: provide polygons for relevant open space areas.**

   Figure 12 has been revised and polygons are provided for larger open space areas (i.e., National Forests, BLM Lands, etc.). Reliable boundary data is not available for some of the smaller identified open space areas. Additionally, given the scale of the figure, the smaller open space areas are better identified by point features.

8.0 WILDLIFE HABITAT LINKAGES

Wildlife corridors are described as pathways or habitat linkages that connect discrete areas of natural open space otherwise separated or fragmented by topography, changes in vegetation and other natural or human induced factors such as urbanization. The fragmentation of natural habitat creates isolated "islands" of vegetation that may not provide sufficient area or resources to accommodate sustainable populations for a number of species. ~~This isolation, which may adversely affect both genetic and species diversity, often can be partially or largely mitigated by wildlife movement corridors.~~ These corridors (1) allow animals to move between remaining habitats to replenish depleted populations and increase the available gene pool; (2) provide escape routes from fire, predators and human disturbances, thus reducing the risk that catastrophic events (such as fire or disease) will result in population or species extinction; and (3) serve as travel paths for individual animals moving throughout their home range in search of food, water, mates and other needs, or for dispersing juveniles in search of new home ranges.

The following discussion of wildlife movement and habitat linkages with respect to the project site and surrounding open space areas is based on extensive field visits of these areas that have occurred during varying seasons over the past decade by numerous biologists surveying and studying the Newhall Ranch Specific Plan area, particularly in association with the Newhall Ranch Program EIR, the Final Additional Analysis and the related BCA and Biota Report for the Specific Plan. It is also based on (i) a review of available aerial photography and mapping of the Specific Plan and adjacent watersheds in both Los Angeles County and Ventura County; (ii) an evaluation of habitat types and distribution associated with the Landmark Village project site and surrounding areas; and (iii) a review of the animal species known to use or expected to utilize these habitats. While numerous observations have been made over the past decade of a variety of wildlife species within and adjacent to the Specific Plan area (including the Landmark Village site), the focus of this discussion is from a watershed and habitat perspective as the preservation of habitats within watersheds that link remaining open space areas is critical to providing movement corridors for the variety of wildlife species that occur in the Specific Plan area, inclusive of the Landmark Village project site.

The Landmark Village project site, indeed the Newhall Ranch Specific Plan area, is part of a larger regional wildlife movement interface that exists between the Los Padres/Angeles National Forest, the Santa Clara River, and the Santa Susana Mountains. This interface spans a distance of approximately 35 miles, from approximately Saticoy on the west in Ventura County to Castaic Junction on the east in Los Angeles County. The Santa Clara River forms the central east-west corridor of this interface, extending throughout the Newhall Ranch Specific Plan area and west into Ventura County. As shown on **Figure 13**,

Potential Wildlife Movement Corridors, the Newhall Ranch Specific Plan site represents an approximately 2- to 5-mile-wide portion (6 to 14 percent) of this 35-mile-wide interface.

The Santa Clara River flows from its origins in the San Gabriel Mountains to where it eventually empties into the Pacific Ocean approximately 50 miles to the west. The river is an important migration and genetic dispersion corridor for many wildlife species, including aquatic taxa, riparian obligate species (resident and migratory) and larger, more mobile terrestrial animals.

Within the Newhall Ranch Specific Plan area, south of the Santa Clara River, several watersheds, including Long Canyon, Potrero Creek, and Salt Creek, are directly connected to the Santa Clara River through their own drainage systems, providing potential wildlife movement routes between the river and the Santa Susana Mountains to the south. These watersheds serve to provide habitat linkages between the High Country areas (to be preserved) within the Newhall Ranch Specific Plan to the Santa Clara River. Other watersheds, including Chiquito Canyon, San Martinez Grande, and Castaic Creek, connect the river to open space areas to the north and eventually the Angeles/Los Padres National Forests.

Chiquito Canyon borders the project site to the west and the Castaic Creek drainage borders the site to the east. Both of these drainages are tributaries of the Santa Clara River and serve as suitable habitat/movement corridors for wildlife route from the river to the north towards the Angeles and Los Padres National Forests. Given the presence of a tunnel underneath SR-126 (located at the northern end of the agricultural drainage on the project site), wildlife could cross under SR-126 and continue to move north through the northern portion of Chiquito Canyon.

As previously stated, the majority of the tract map site is actively used for agricultural purposes and is disked regularly. These activities, and the lack of native vegetation cover, limit the use of the main portion of the site as a movement corridor for most species of wildlife. While several species are expected to occasionally forage over and within these agricultural areas, most species, with respect to local and regional movement patterns, are expected to use Chiquito Canyon to the west and/or Castaic Creek to the east when moving to or from the Angeles/Los Padres National Forest areas, or when generally moving out of the river corridor into adjacent upland areas. Consequently, the Landmark Village project site itself is not expected to serve as a locally or regionally important wildlife movement corridor.

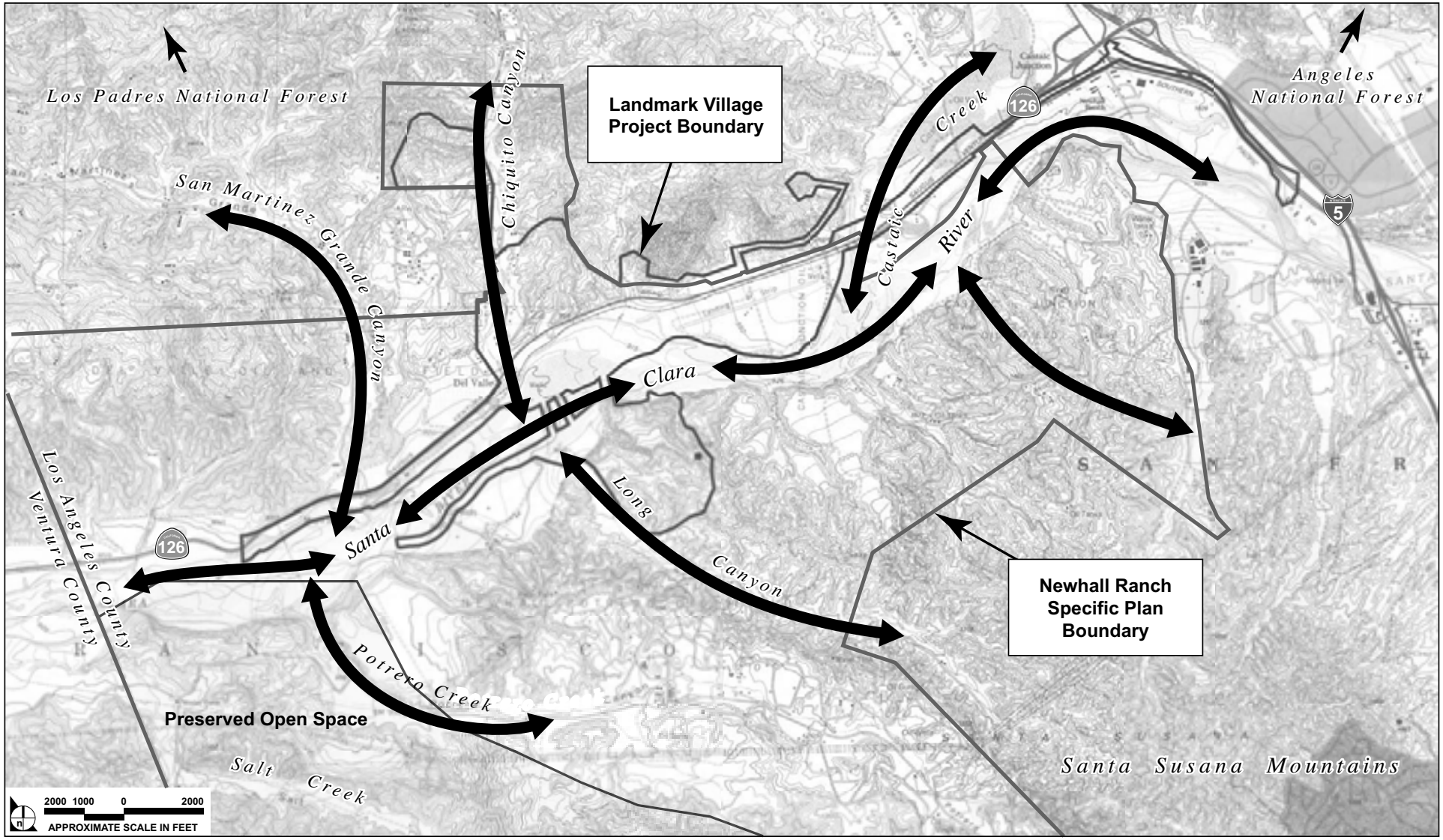
7. **Page 53, first paragraph: the discussion of mitigation is inappropriate in this section; avoid indecisive language (e.g., "…often can be partially or largely mitigated…").**

   The following sentence has been deleted from the Draft Biota Report (page 54): "This isolation, which may adversely affect both genetic and species diversity, often can be partially or largely mitigated by wildlife movement corridors."

13. **Section 8 – provide references to movement studies for known wildlife movement.**

As stated in Section 8.0 of the Biota Report, the discussion of wildlife movement and habitat linkages with respect to the project site and surrounding open space areas is based on extensive field visits of these areas over the past decade by numerous biologists surveying and studying the Newhall Ranch Specific Plan area; a review of available aerial photography and mapping of the Specific Plan and adjacent watersheds in both Los Angeles County and Ventura County; an evaluation of habitat types and distribution associated with the Landmark Village project site and surrounding areas; and a review of the animal species known to use or expected to utilize these habitats. In addition, the focus of the discussion is from a watershed and habitat perspective under the assumption that open space habitat (e.g., the Santa Clara River, drainages and tributaries to the river, and upland habitat) that link remaining large open space areas is critical to providing movement corridors for the variety of wildlife species that occur in the region.

Based on the above, and on various presence/absence studies for riparian/aquatic obligate species, we concluded that the Santa Clara River likely serves as a movement corridor for a variety of aquatic, riparian, and terrestrial wildlife species. In particular, a number of aquatic species (including the unarmored threespine stickleback) have been documented as using the river as a migratory/movement corridor when water flows are adequate. However, while some studies have been conducted in western Los Angeles County that have documented the use of various highway underpasses as movement corridors or "chokepoints", we are not aware of any published studies that have specifically focused on the use of the river or other open space areas for wildlife movement. Therefore, no references were given in the Biota Report regarding movement studies associated with the Santa Clara River or adjacent habitat linkages.



SOURCE: Newhall Ranch Specific Plan – May 2003

FIGURE 13

Potential Wildlife Movement Corridors

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8. **Figure 13 is very conceptual and lacks practical information; revise the base map to provide a better context for potential movement pathways.**

   Figure 13 has been revised per SEATAC's comment.

~~Nevertheless, as stated in the certified Newhall Ranch Program EIR, p. 4.6-49, implementation of the Specific Plan over the long-term would still significantly and unavoidably impact the movement of resident wildlife species on the Specific Plan site due to the reduction of open land available for wildlife movement between the river and upland areas within Los Angeles County. In response to this significant unavoidable impact, the County's Board of Supervisors adopted mitigation and an off-site condition that minimized such impacts, but also found that the remaining unavoidable effects were acceptable based on overriding considerations set forth in the adopted Statement of Overriding Considerations.~~[5]

5 See, Section 10, Statement of Overriding Considerations, contained in the "Additional CEQA Findings and Statement of Overriding Considerations Regarding the Newhall Ranch Final Additional Analysis to the Partially Certified Final EIR for the Newhall Ranch Specific Plan and Water Reclamation Plant," dated May 2003, at pp. 78–85.

9.0 SENSITIVE BIOLOGICAL RESOURCES

The following discussion focuses on those species and plant communities considered by state and/or federal resource agencies, and by recognized conservation organizations, to be of special status, that are known to occur, or could potentially occur, on the project site. A list of all plant and wildlife species, both common and special status, observed or expected to potentially occur on the project site is found in **Appendix D**.

9.1 SPECIAL-STATUS PLANTS

Special-status plants include those species that are state or federally listed as Rare, Threatened or Endangered; federal candidates for listing; proposed for state or federal listing; or included on Lists 1, 2, 3 or 4 of the CNPS Inventory of Rare and Endangered Plants of California (CNPS Inventory). Plants included on the CNPS Inventory are classified as follows: List 1A: plants presumed extinct in California; List 1B: plants Rare, Threatened, or Endangered in California and elsewhere; List 2: plants Rare, Threatened or Endangered in California, but more common elsewhere; List 3: plants about which more information is needed-a review list; and List 4: plants of limited distribution-a watch list.

Based on a review of the CNDDB and CNPS databases and the survey reports prepared for the Newhall Ranch Specific Plan area and the project site, a total of 41 special-status plant species were identified as occurring in the region. This list formed the basis of the following analysis, wherein each of the identified species is addressed in one of the following two sections: **Section 9.1.1** addresses the special-status plant species observed on or near the site during focused surveys; and **Section 9.1.2** addresses the special-status plant species that are known to occur in the project area, but were not observed on or adjacent to the project site during focused surveys. **Table 5**, above, details the specificity of the focused surveys.

9.1.1 Special-Status Plant Species Observed on or Adjacent to the Project Site

Special-status plant species that were observed on the project site during focused surveys include slender mariposa lily (*Calochortus clavatus* var. *gracilis*), Peirson's morning-glory (*Calystegia peirsonii*) and California walnut (*Juglans californica* var. *californica*). In addition, a potentially undescribed species of everlasting (*Gnaphalium* sp. *Nova)* was observed. While this plant currently has no sensitivity status, it is described in this report because of its unique nature and potential to be assigned a sensitivity status in the future. San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*) was observed in areas bordering the borrow site. These five species are discussed in more detail below, and their locations with

respect to on the project site are shown in **Figure 14, Special-Status Plant Species** Locations. ~~On and Bordering the Project Site~~. ~~Known locations of special-status plant species adjacent to the project site were only mapped if they occurred within 200 feet of the project site boundary.~~

Slender mariposa lily is a CNPS List 1B plant, but has no state or federal status. This species is typically found in chaparral, coastal sage scrub and grasslands, often on clay and/or rocky soils. Populations of this species have been documented on the project's borrow site, the Chiquito Canyon grading site, the Valencia Commerce Center water tank site, and the reclaimed water tank sites in Chiquito Canyon. These populations contain an estimated total of 887 plants (Dudek & Associates 2004). Approximately 68,888 slender mariposa lily plants were observed in the greater Newhall Ranch Specific Plan area during the 2004 plant surveys (Dudek & Associates 2004).

Peirson's morning-glory is a CNPS List 4 plant, but has no state or federal status. This species has been documented within the project's borrow site and the Chiquito Canyon grading site (FLx 2002). While not abundant, Peirson's morning-glory occurs throughout the Newhall Ranch Specific Plan area on virtually all ridges and slopes, weakly climbing over mixed chaparral, California sagebrush, California buckwheat and in annual grasslands (Dudek & Associates 2002). Given its widespread occurrence, individual populations of this species have not been mapped.

Southern California black walnut is a CNPS List 4 plant, but has no state or federal status. The only stand of this species within the project site occurs along Chiquito Canyon, which includes a total of 10 trees.

A potentially undescribed species of **everlasting** (*Gnaphalium* sp. *n*~~*N*~~*ova*) was documented within the study area during the 2003 and 2004 field seasons. Two main populations of this undescribed species, totaling about 600 individuals, were documented in 2003 in the Santa Clara River and in Castaic Creek south of SR-126 (Dudek & Associates 2004). During the 2004 surveys conducted by FLx, these two occurrences were noted again with about 700 plants. In addition, a population of about 250 individuals was observed in the portion of Castaic Creek west of the I-5 bridge and east of Commerce Center Drive. One of these populations was documented as partially occurring within the proposed utility corridor (to the east of the tract map site) while the other population was documented within the proposed haul route across the Santa Clara River. On May 27, 2005, Dudek & Associates surveyed the project site to evaluate the current condition of these populations of everlasting. No populations of everlasting were observed on or near the project footprint during these surveys. The large storm events of 2005 and associated large flows within Castaic Creek and the Santa Clara River resulted in extensive scouring and the removal of the terraces and benches on which the plants previously occurred.

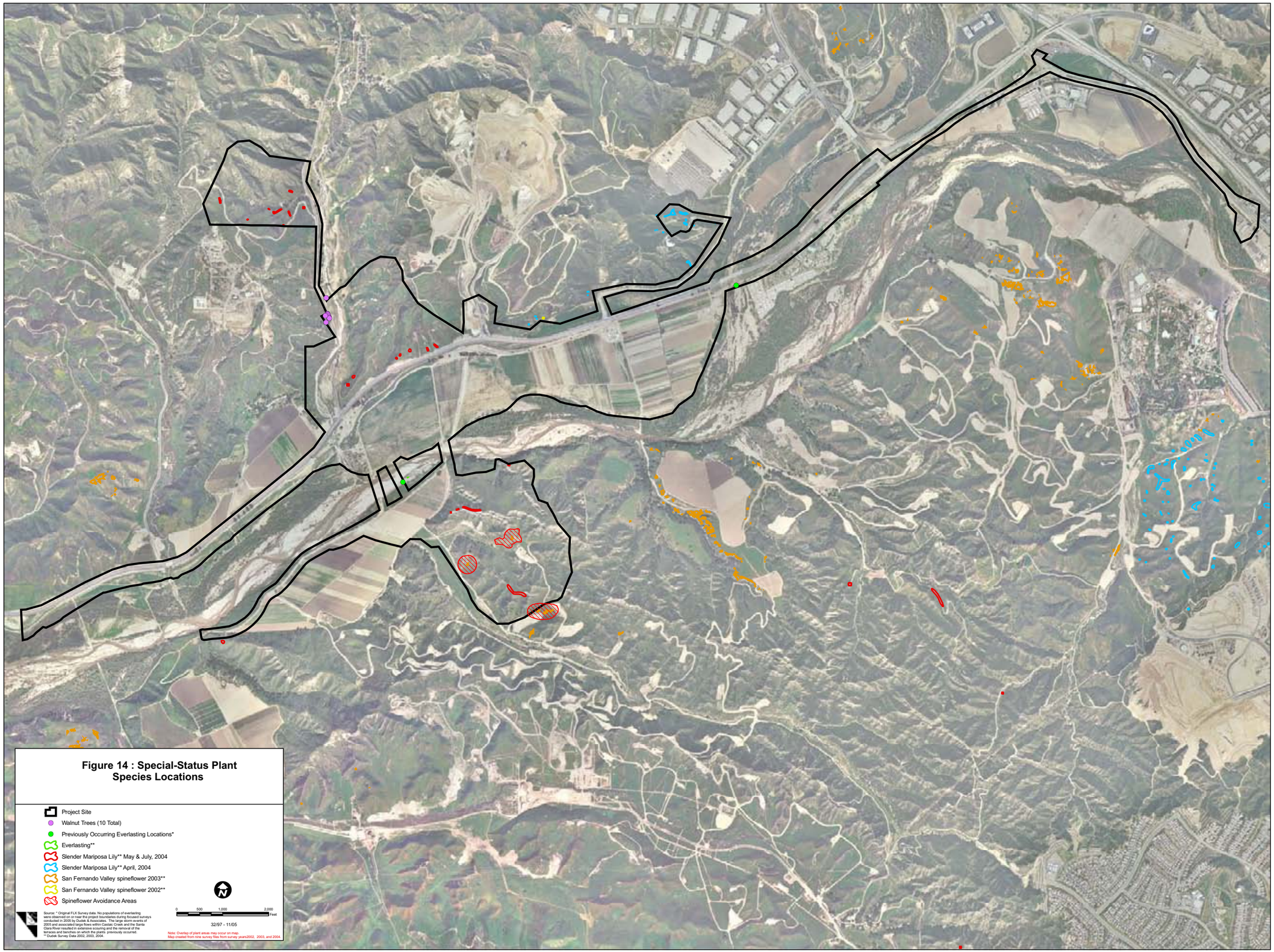

Figure 14 : Special-Status Plant Species Locations

On June 7, 2005, Dudek & Associates and County biologists observed five everlasting seedlings on a bench within Castaic Creek within the Valencia Commerce Center north of SR-126, and on a bench within the Creek south of SR-126, outside of the project footprint but within the project study area.

Plants of this undescribed everlasting were previously ascribed to the species *Gnaphalium leucocephalum*, which is now believed not to occur west of the Peninsular and Transverse Ranges in California. It appears that the western California specimens identified as *Gnaphalium leucocephalum* are actually this undescribed taxon. Based on a review of three herbaria (UC Riverside, Rancho Santa Ana Botanic Garden and San Diego Natural History Museum), 14 collections of this plant have been made in Ventura, Orange, Riverside, Los Angeles, and San Diego counties. The *Gnaphalium* plants on the Newhall Ranch Specific Plan site differ from *Gnaphalium leucocephalum* in stature, pubescence, and phyllary characters. The western California *Gnaphalium* plants have been collected relatively few times most collections are old. Of the 14 collections, eight date from 1901 to 1987 (1901, 1918, 1922, 1928, 1931, 1959, 1985 and 1987). There are six more recent collections dating from 1994 to 2003 (1994, two from 1995, 1997 and two from 2003). Many are from somewhat vague localities, such as "San Fernando Valley" and "Pasadena," but which are in areas that have now been substantially urbanized. Modern collections, outside of the Castaic Mesas and Santa Clara River plants, have come mostly from the Santa Ana Mountains region and especially Temescal Wash, in western Riverside County with several collections from adjacent San Diego County. The western California plants are almost always associated with alluvial soils, often being found on the benches along major washes.

San Fernando Valley spineflower is a federal candidate plant species, is state listed as Endangered and is a CNPS List 1B species. This species has been observed in five general areas within the Newhall Ranch Specific Plan area, including Airport Mesa, Grapevine Mesa, Long Canyon, Potrero Canyon and San Martinez Grande Canyon. A total of 275 polygons were mapped during the 2004 growing season, and included an estimated 478,184 individuals. Most of the plants were found on slopes with a south-facing component in habitat that was characterized as open California sagebrush, California buckwheat, ecotonal California sagebrush/California buckwheat and California annual grassland series, or at the edge of agricultural fields on mesas. This species has not been documented on the tract map site or other areas where grading would occur. However, several of the populations in Long Canyon occur in proximity to the project site's disturbance boundary. Specifically, populations occur to the south of the project site at distances between 100 feet and 340 feet. Populations of this species also occur approximately 100 feet west of the borrow site's disturbance boundary, and at a location enclosed by the borrow site (but that maintains an approximately 100-foot buffer from areas that would be disturbed). Additionally, a population of this species was identified in proximity to the northern project site boundary (north of SR 126, west of the access road to the Valencia Commerce Center business park)

during surveys conducted in 2002; this population has not be observed during subsequent surveys conducted in 2003, 2004, and 2005.[6]-

9.1.2 Special-Status Plant Species Known to Occur in the Project Area but Not Observed on or Adjacent to the Project Site

The special-status plant species identified in **Table 6** are known to occur in the project area and were target species of the focused plant surveys conducted on, and in the vicinity of, the project site. None of these species were observed on or adjacent to the project site. Given the thoroughness of the survey efforts (**Table 5**), it is unlikely that any of the species identified below are present on the project site, though the potential of some of these species to occur on the site in future seasons cannot be entirely ruled out.

Table 6
Special-Status Plant Species Documented in the Project Area but Not Observed on or Adjacent to the Project Site

Common Name *Scientific Name*	Sensitivity Status			Habitat	Growth Form (Blooming)
	Federal	State	CNPS		
Marsh sandwort *Arenaria paludicola*	FE	CE	1B	Bogs and fens, marshes and swamps (freshwater).	PH (May–August)
Braunton's milk-vetch *Astragalus brauntonii*	FE	--	1B	Closed-cone coniferous forest, chaparral, coastal scrub, valley and foothill grassland/recently burned or disturbed areas, carbonate soils.	PH-b (March–July)
Coulter's saltbrush *Atriplex coulteri*	--	--	1B	Coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland/alkaline or clay.	PH (March–October)
Davidson's saltscale *Atriplex serenana* var. *davidsonii*	--	--	1B	Coastal bluff scrub, coastal scrub/alkaline.	AH (April–October)
Malibu baccharis *Baccharis malibuensis*	--	--	1B	Chaparral, cismontane woodland, coastal scrub.	Sh-d (August)
Nevin's barberry *Berberis nevinii*	FE	CE	1B	Chaparral, coastal scrub, cismontane woodland, riparian scrub.	Sh-e (March–April)
Thread-leaved brodiaea *Brodiaea filifolia*	--	--	1B	Chaparral (openings), cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools/often associated with clay soils.	PH-b (March–June)
Plummer's mariposa lily *Calochortus plummerae*	--	--	1B	Chaparral, cismontane woodland, coastal scrub, lower coniferous forests, grasslands, valley granitic soils.	PH-b (May–July)
Late-flowering mariposa lily *Calochortus weedii* var. *vestus*	--	--	1B	Chaparral, cismontane woodland, riparian woodland/often associated with serpentinite soils.	PH-b (May–July)

6 Miller, Sherri. 2005. Senior Project Manager, Dudek & Associates. August 22-Personal Communication.

Common Name *Scientific Name*	Sensitivity Status			Habitat	Growth Form (Blooming)
	Federal	State	CNPS		
Southern tarplant *Centromadia parryi* ssp. *Australis*	--	--	1B	Chaparral, coastal scrub, sandstone rocky outcrops.	Sh-d (July–November)
Island mountain-mahogony *Cercoparpus betuloides* var. *blancheae*	--	--	--	Closed-cone coniferous forest, chaparral.	Sh-e (February–May)
Santa Susana tarplant *Deinandra minthornii*	--	CR	1B	Chaparral, coastal scrub; sandstone rocky outcrops.	Sh-d (July–November)
Slender-horned spineflower *Dodecahema leptoceras*	FE	CE	1B	Chaparral, coastal scrub (alluvial fan), cismontane woodland, sandy soils.	AH (April–June)
Blochman's dudleya *Dudleya blochmaniae* ssp. *Blochmaniae*	--	--	1B	Coastal bluff scrub, coastal scrub, rocky, often associated with clay or serpentinite soils.	PH (April–June)
Marcescent dudleya *Dudleya cymosa* ssp. *marcescens*	FT	CR	1B	Chaparral, volcanic.	PH (April–June)
Santa Monica Mountains dudleya *Dudleya cymosa* ssp. *ovatifolia*	FT	--	1B	Chaparral, coastal scrub/volcanic.	PH (March–June)
Many-stemmed dudleya *Dudleya multicaulis*	--	--	1B	Chaparral, coastal scrub, grasslands, often associated with clay soils.	PH (May–July)
Conejo dudleya *Dudleya parva*	FT	--	1B	Chaparral, coastal scrub, often associated with clay soils.	PH (May–July)
Palmer's grappling hook *Harpagonella palmeri* var. *palmeri*	--	--	4	Chaparral, coastal scrub, valley and foothill grasslands.	AH (March–April)
Round-leaved filaree *Erodium macrophyllum*	--	--	2	Cismontane woodland, valley and foothill grassland, clay soils.	AH (March–May)
Los Angeles sunflower *Helianthus nuttallii* ssp. *Parishii*	--	--	1A	Coastal salt, freshwater marshes and swamps.	PH
Mesa horkelia *Horkelia cuneata* var. *puberula*	--	--	1B	Chaparral, cismontane woodland, coastal scrub/sandy or gravelly.	PH (February–September)
Southwestern spiny rush *Juncus acutus* sp. *leopoldii*	--	--	4	Coastal dunes (mesic), meadows and seeps (alkaline seeps), marshes and swamps (coastal salt).	PH (May–June)
Davidson's bush mallow *Malacothamnus davidsonii*	--	--	1B	Chaparral, cismontane woodland, coastal sage scrub, riparian woodland.	Sh-d (June–January)
California Muhly *Muhlenbergia californica*	--	--	4	Chaparral, coastal scrub, lower mountain coniferous forest, meadows and seeps/mesic, seeps and streambanks.	PH-r (July–September)

Common Name *Scientific Name*	Sensitivity Status			Habitat	Growth Form (Blooming)
	Federal	State	CNPS		
Mud nama *Nama strenocarpum*	--	--	2	Marshes and swamps (lake margins, river banks).	A/PH (January–July)
Spreading navarretia *Navarretia fossalis*	FT	--	1B	Chenopod scrub, marshes and swamps, playas, vernal pools.	AH (April–June)
Chaparral nolina *Nolina cismontana*	--	--	1B	Chaparral, coastal scrub, sandstone gabbro soils.	SH-e (April–June)
Short-joint beavertail cactus *Opuntia basilaris* var. *brachyclada*	--	--	1B	Chaparral, Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland.	Sh-ss (April–June)
California Orcutt grass *Orcuttia californica*	FE	CE	1B	Vernal pools.	AH (April–August)
Lyon's pentachaeta *Pentachaeta lyonii*	FE	CE	1B	Chaparral, coastal scrub, valley and foothill grassland, volcanic endemic soils.	AH (March–August)
Pringle's yampah *Perideridia pringlei*	--	--	4	Chaparral, cismontane woodland, coastal scrub, pinyon and juniper woodlands, serpentinite, clay soils.	PH (April–August)
Gambel's watercress *Rorippa gambelii*	FE	CT	1B	Marshes and swamps (freshwater or brackish).	PH-r (April–September)
Rayless ragwort *Senecio aphanactis*	--	--	2	Cismontane woodland, coastal scrub/alkaline.	AH (January–April)
Salt spring checkerbloom *Sidalcea neomexicana*	--	--	2	Chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, playas/alkaline, mesic	PH (March–June)
Sonoran maiden fern *Thelypteris puberula* var. *sonorensis*	--	--	2	Meadows and seeps (seeps and streams).	PH-r (January–September)

Key:
Status:
Federal: FE = Federal Endangered; FC = Federal Candidate

State: CE = California Endangered; CT = California Threatened; CR = California Rare

CNPS: List 1A = Presumed extinct
List 1B = Plants Rare and Endangered in California and elsewhere
List 2 = Plants Rare, Threatened, or Endangered in California, but more common elsewhere
List 4 = Plants of limited distribution (watch list)

Growth Form:

AH =	Annual Herb	Sh = Shrub	r = rhizommatous
PH =	Perennial Herb	b = bulb	e = evergreen
		d = deciduous	ss = stem succulent

9.1.3 Oaks

The County of Los Angeles Oak Tree Ordinance (CLATO), Sections 22.56.2050-22.56.2260, protects oak trees that are at least 8 inches in diameter, as well as trees that have two trunks totaling at least 12 inches in diameter, as measured 4.5 feet above natural ground. A heritage oak, as defined by CLATO, is any species in the genus *Quercus* that measures 36 inches or more in diameter as measured 4.5 feet above

natural ground, or any oak of 36 inches or less in diameter having a significant historical or cultural importance to the community. CLATO requires that all potential impacts to oak trees regulated by this ordinance be preceded by an application to the County that includes a detailed oak tree report. Mitigation for impacts to oak trees is usually required as a condition of an Oak Tree Permit issued by the County.

In addition, Senate Bill 1334, Kuehl, Oak Woodlands Conservations, contains the following three elements: (A) counties must determine whether a project may result in the conversion of oak woodlands ("oak" is defined as 5 inches or more in diameter at breast height); (B) if so, the county must determine if the conversion will have a significant impact on the environment; and (C) if there is a conversion, and it has a significant impact, the county must impose one or more of the following mitigation measures:

(1) Conserve oak woodlands, through the use of conservation easements.

(2) Plant an appropriate number of trees, including maintaining plantings and replacing dead trees.

   (A) Maintain planted oak trees for seven years.

   (B) The planting of oak trees shall not fulfill more than one-half of the mitigation requirement for the project.

(3) Contribute funds to the Oak Woodlands Conservation fund.

(4) Other mitigation measures developed by the County.

An oak tree survey was conducted of the on-site oak woodlands (see **Figure 11A**) occurring within 200 feet of the proposed grading limits. The survey identified~~estimated 140~~ 209 oaks potentially regulated by CLATO and Senate Bill 1334. The vast majority of the oaks on the site are coast live oak, but five valley oaks (*Quercus lobata*) also occur.~~s (approximately four valley oak trees).~~ Of the ~~estimated 140~~ 209 identified oaks, 21~~15~~ are~~ estimated to be~~ heritage oaks as defined by CLATO.

9.1.4 Sensitive Plant Communities

CDFG Wildlife and Habitat Data Analysis Branch has developed a *List of California Terrestrial Natural Communities*. The most recent version of this list, dated September 2003, is derived from the CNDDB and is intended to supersede all other lists developed from the CNDDB. It is based on the detailed classification put forth in *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995). It is also structured to be compatible with previous CNDDB lists (e.g., Holland 1986).

The primary purpose of the CNDDB classification is to assist in the characterization and rarity of various vegetation types. For the purposes of this Biota Report, plant communities denoted on the list as "high

priority for inventory in CNDDB" in the September 2003 version, or that are otherwise regulated by local, state, and/or federal resource agencies, are considered of "special status."

Of the 14 plant communities occurring on the Landmark Village project site, southern willow scrub, southern cottonwood willow riparian forest, valley freshwater marsh, and scalebroom scrub are currently considered of "high priority" and, therefore, are considered of special-status. Please see **Section 6.1**, above, for a more detailed discussion of these plant communities and their distribution on the project site.

It should be noted that the Newhall Ranch Program EIR, Section 4.6, Biota, and the associated Biota Report, dated July 1996, identified coastal sage scrub and elderberry scrub as sensitive plant communities. The identification of these two plant communities as sensitive was based on a previous CDFG list of terrestrial natural communities, which has been superseded by the current *List of California Terrestrial Natural Communities*, dated September 2003. Consequently, these two communities, as labeled, are not considered of special status in this Biota Report.

9.2 SPECIAL-STATUS WILDLIFE

Special-status wildlife species include those that are state or federally listed as Threatened or Endangered, proposed for listing as Threatened or Endangered, designated as state or federal candidates for listing, considered state Species of Special Concern, or that are considered a state Fully Protected Animal.

Based on a review of the CNDDB and the biological documentation prepared for the project site and the greater Newhall Ranch Specific Plan area, a total of 49 special-status wildlife species were identified that are known to occur in the project region. This list formed the basis of the following analysis, wherein each of the identified species is addressed in one of the following three sections: **Section 9.2.1** addresses the special-status wildlife species that were observed on or adjacent to the project site during the course of various field surveys; **Section 9.2.2** addresses the special-status wildlife species that have not been observed on the site, but based on the presence of suitable habitat and known occurrences in the area, have the potential to occur on the site as a resident, overwintering or nesting species, and **Section 9.2.3** addresses the special-status wildlife species known to occur in the project area, but for which the project site does not provide suitable habitat to support the species as a resident or nesting species.

9.2.1 Special-Status Wildlife Species Observed on the Project Site

During the course of various field surveys conducted for the proposed project or greater Newhall Ranch Specific Plan area (**Table 5**), 16 special-status wildlife species were observed on or bordering the project site. **Table 7** identifies these species and provides the species' listing status, habitat requirements and observation information.

Table 7
Special-Status Wildlife Species Observed on or Adjacent to the Project Site

Common Name *Scientific Name*	Status		Habitat Requirements	On-Site Status
	Federal	State		
FISH				
Santa Ana sucker *Catastomus santaanae*	--	CSC	Occupies small-to medium-sized perennial streams with water ranging in depth from a few centimeters to a meter or more.	This species is known to occur in the Santa Clara River and has been observed during focused fish surveys (CNDDB, Impact Sciences 2002); and it is expected to occur in the portion of the river bordering the project site. Population in the Santa Clara River system is not considered to be of Threatened status because it is introduced to the area.
Unarmored threespine stickleback *Gasterosteus aculeatus williamsoni*	FE	CE, CFP	Slow-moving and backwater areas.	This species is known to occur in the Santa Clara River and has been observed in the portion of the river bordering the Landmark Village tract map site (ENTRIX 2005).
Arroyo chub *Gila orcutti*	--	CSC	Slow-moving or backwater sections of warm to cool streams with mud or sand substrates.	This species is known to occur in the Santa Clara River and has been observed in the portion of the river bordering the Landmark Village tract map site (ENTRIX 2005).
REPTILES				
Silvery legless lizard *Anniella pulchra pulchra*	--	CSC	Stabilized dunes, beaches, dry washes, chaparral, pine, oak, and riparian woodlands; associated with sparse vegetation and sandy or loose, loamy soils.	This species has been observed on the project site in Chiquito Canyon (Impact Sciences 2004); suitable habitat occurs on the project site in association with coastal sage scrub, chaparral, oak woodland, and riverbank habitats.
Southwestern pond turtle *Clemmys marmorata pallida*	--	CSC	Streams, ponds, freshwater marshes and lakes with growth of aquatic vegetation.	This species was observed in the reach of the Santa Clara River bordering the project site (Compliance Biology 2004); river and riparian habitats on and bordering the project site provide suitable habitat.
Two-striped garter snake *Thamnophis hammondii*	--	CSC	Perennial and intermittent streams with rocky or sandy beds and artificially-created aquatic habitats (man-made lakes and stock ponds);	This species was observed in the reach of the Santa Clara River bordering the project site (Compliance Biology 2004); river and riparian habitats on and bordering the project site provide

Common Name *Scientific Name*	Status Federal	 State	Habitat Requirements	On-Site Status
			requires dense riparian vegetation.	suitable habitat.
BIRDS				
Cooper's hawk (nesting) *Accipiter cooperi*	--	CSC	Dense stands of live oak, riparian woodlands or other woodland habitats near water.	This species was observed adjacent to the Santa Clara River on the Landmark Village site (Guthrie 2004); the site provides foraging and nesting habitat for the species.
Southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	--	CSC	Coastal sage scrub.	This species was observed to be a fairly common resident at the off-site grading sites (Guthrie 2004); suitable nesting and foraging habitat is present at these locations.
Lawrence's goldfinch *Carduelis lawrencei*	BCC	--	Valley foothill hardwood, valley foothill hardwood-conifer; and, in S. CA., desert riparian, palm oasis, pinyon-juniper and lower montane habitats.	Observed within the riparian habitats on the site during bird surveys (Guthrie 2004); suitable nesting and foraging habitat present on site.
Northern harrier (nesting) *Circus cyaneus*	--	CSC	Coastal salt marsh, freshwater marsh, grasslands and agricultural fields.	This species has been observed foraging on the site (Impact Sciences 2004); suitable foraging and nesting habitat is present on site.
Yellow warbler (nesting) *Dendroica petechia brewsteri*	--	CSC	Riparian thickets and woodlands.	Observed on several occasions during the 2004 bird surveys; likely nests in the riparian areas on the site (Guthrie 2004).
White-tailed kite (nesting) *Elanus leucurus*	--	CFP	Inhabits herbaceous and open stages of most habitats, common in cismontane in California. Nests are placed near top of dense oak, willow or other tree stand; usually 6-20 m (20-100 ft) above ground. Nest located near open foraging area.	Species was observed on the site adjacent to the Santa Clara River during surveys in 2004 (Guthrie 2004); the site provides foraging and nesting habitat for the species.
California horned lark *Eremophila alpestris actia*	--	CSC	Grasslands, disturbed areas, agriculture fields and beach areas.	This species has been observed foraging on the site (Impact Sciences 2004); suitable nesting and foraging habitat is present on site.
Yellow-breasted chat (nesting) *Icteria virens*	--	CSC	Riparian thickets and riparian woodlands with a dense understory.	Observed on several occasions during the 2004 bird surveys; likely nests in the riparian areas on the site (Guthrie 2004).
Least Bell's vireo (nesting) *Vireo bellii pusillus*	FE	CE	Riparian vegetation with extensive willows below 2,000 ft.	No individuals have been observed nesting within the project boundaries, but individuals have been observed nesting a short distance to the west and east of the project site (Guthrie 2004); suitable nesting habitat is present on the project site.

Common Name *Scientific Name*	Status Federal	State	Habitat Requirements	On-Site Status
MAMMALS				
Pallid bat *Antrozous pallidus*	--	CSC	Arid habitats, including grasslands, shrublands, woodlands and forests; prefers rocky outcrops, cliffs and crevices with access to open habitats for foraging.	This species was detected on the project site during ANABAT surveys (Impact Sciences 2004); the project site lacks the preferred roosting habitat of this species, but does provide suitable foraging habitat.
San Diego desert woodrat *Neotoma lepida intermedia*	--	CSC	Chaparral, coastal sage scrub and the understory of tree thickets.	A species of desert woodrat was observed on both off-site grading locations during 2004 surveys (Impact Sciences 2004); it is assumed that the animals observed were the San Diego (*intermedia*) subspecies.

STATUS KEY:

Federal:
FE: Federally Endangered
BCC: Bird of Conservation Concern

State:
CE: California Endangered
CFP: California Fully Protected
CSC: California Species of Special Concern

9.2.2 Special-Status Wildlife Species With Potential to Occur on the Project Site

Twenty-three special-status wildlife species have been identified as having the potential to occur on the site, based on the presence of suitable habitat and known occurrences in the area, despite the fact that they have not been observed during general or focused surveys of the project site. **Table 8** identifies these species and provides the species' listing status, habitat requirements and an explanation of why the species has the potential to occur on the site as a resident, overwintering, nesting or roosting species.

Table 8
Special-Status Wildlife Species with Potential to Occur on the Project Site

Common Name *Scientific Name*	Status Federal	State	Habitat Requirements	Habitat Suitability
INVERTEBRATES				
Insecta Order Lepidoptera (butterflies and moths)				
Monarch butterfly *Danaus plexippus*	--	**	Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, Monterey cypress), with nectar and water sources nearby.	The eucalyptus trees on the site provide potential winter roosting habitat, but are considered of limited roosting value as they occur within an agricultural field and are not wind protected; no winter roosts have been observed on the site.

Common Name *Scientific Name*	Status Federal	 State	Habitat Requirements	Habitat Suitability
AMPHIBIANS				
Arroyo toad *Bufo californicus*	FE	CSC	Restricted to rivers with shallow, gravely pools adjacent to sandy terraces that have a nearly complete closure of cottonwoods, oaks or willows, and almost no herbaceous cover. Requires shallow pools with minimal current, little to no emergent vegetation and a sand or pea gravel substrate overlain with flocculent silt for egg deposition.	Based on the result of protocol surveys, it appears that arroyo toads are not breeding or otherwise utilizing habitats on or adjacent to the project site (Compliance Biology 2004). Given the presence of some suitable habitat and that this species has been recorded in low numbers upstream of the project site, the species could occupy habitats on or bordering the site.
Western spadefoot ~~*Scaphiopus*~~ *Spea hammondii*	--	CSC	Open areas in lowland grasslands, chaparral and pine-oak woodlands; requires temporary rain pools that last approximately three weeks and lack exotic predators.	Seasonal backwater areas associated with the drainages on and bordering the site, as well as depressions within existing dirt roads, provide breeding habitat; no spadefoot were observed in these areas during appropriately timed surveys (Compliance Biology 2004). Given documented occurrences of the species in the project area, and the presence of some suitable breeding habitat, the species could occupy habitats on the site.
REPTILES				
Coastal western whiptail *Aspidoscelis tigris stejnegeri*	--	***	Open areas in semiarid grasslands, scrublands and woodlands.	Suitable habitat occurs on site in association with grassland, scrub, oak woodland and riverbank habitats; species is known to occur in the project region.
Rosy boa *Charina trivirgata*	--	***	Inhabits desert and chaparral habitats with rocky soils in coastal canyons and hillsides, desert canyons, washes and mountains.	Suitable habitat occurs on site in association with scrub, chaparral, oak woodland and riverbank habitats; species is known to occur in the project region.
San Bernardino ringneck snake *Diadophis punctatus modestus*	--	***	Inhabits open, relatively rocky areas, often in somewhat moist microhabitats near intermittent streams. Avoids moving through open or barren areas by restricting movements to areas of surface litter or herbaceous vegetation.	Suitable habitat occurs on site in association with oak woodland and riverbank habitats; species is known to occur in the project region.
Coast horned lizard *Phrynosoma coronatum*	--	CSC	Exposed gravelly-sandy soils with minimal shrubs, riparian woodland clearings, dry chamise chaparral and annual grasslands with scattered seepweed or saltbush.	Suitable habitat occurs on site in association with scrub, chaparral and riverbank habitats; species is known to occur in the project region.

3. **Arroyo toad habitat is present, and populations may have been blown out by large releases from Castaic Lake. Proper management of flows from Castaic may permit reintroduction of arroyo toad.**

   The Draft Biota Report states that suitable habitat for arroyo toad is present on the project site (page 70). Water releases from Castaic Lake are controlled by the United Water Conservation District. Accordingly, the management of water flows to benefit arroyo toad should be discussed with the United Water Conservation District.

Common Name *Scientific Name*	Status Federal	 State	Habitat Requirements	Habitat Suitability
REPTILES (continued)				
Coast patch-nosed snake *Salvadora hexalepis virgultea*	--	CSC	Inhabits brushy or shrubby vegetation. Requires small mammal burrows for refuge and overwintering sites.	Suitable habitat occurs on site in association with shrub habitats.
BIRDS				
Tricolored blackbird (nesting colony) *Agelaius tricolor*	BCC	CSC	Freshwater marshes and riparian scrub.	Suitable nesting and foraging habitat present on and bordering the project site.
Bell's sage sparrow (nesting) *Amphispiza belli belli*	BCC	CSC	Saltbush scrub and chaparral.	Suitable nesting and foraging habitat present.
Long-eared owl (nesting) *Asio otus*	--	CSC	Dense, riparian and live oak thickets near meadow edges, nearby woodland and forest habitats. Also found in dense conifer stands at higher elevations.	Suitable nesting and foraging habitat is present on the project site.
Western burrowing owl (burrow sites) *Athene cunicularia*	BCC	CSC	Grasslands and open scrub, particularly with ground squirrel burrows.	Site provides suitable foraging and nesting habitat for the species; California ground squirrels occur on the project site.
Western yellow-billed cuckoo (nesting) *Coccyzus americanus occidentalis*	FC BCC	CE	Nests along the broad, lower flood-bottoms of larger river systems. Also nests in riparian forests and riparian jungles of willow often mixed with cottonwoods, with an understory of blackberry, nettles or wild grape.	Suitable nesting and foraging habitat occurs on the project site; this species has not been observed nesting on or near the project site during focused surveys; however, one individual (thought to be a migrant) was observed during surveys in the project area (Guthrie 1997).
Southwestern willow flycatcher (nesting) *Empidonax traillii extimus*	FE	--	Riparian woodlands that contain water and low willow thickets.	Suitable nesting and foraging habitat is present on the project site. A single willow flycatcher was observed foraging along the Santa Clara River east of the project site; however given the timing of this observation (May 31), and lacking any subsequent evidence of nesting, the observed willow flycatcher cannot be positively identified as belonging to the southwestern form of willow flycatcher (Guthrie 2004).
Merlin (wintering) *Falco columbarius*	--	CSC	Coastlines, wetlands, woodlands, agricultural fields and grasslands.	Although this species does not nest in California, the CDFG considers wintering birds to be of Special Concern; could occur on the site as a winter migrant.
Loggerhead shrike *Lanius ludovicianus*	--	CSC	Grasslands with scattered shrubs, trees, fences or other perches.	Suitable nesting and foraging habitat present on site.
Summer tanager (nesting) *Piranga rubra*	--	CSC	Cottonwood-willow riparian habitats, especially older, dense stands along rivers and streams.	Suitable nesting and foraging habitat present on and bordering the site.

Common Name *Scientific Name*	Status Federal	 State	Habitat Requirements	Habitat Suitability
Coastal California gnatcatcher *Polioptila californica californica*	FT	CSC	Various sage scrub communities, often dominated by California sage and buckwheat; generally avoids nesting in areas with a slope of great than 40 percent.	Suitable nesting and foraging habitat present within the borrow site, the Chiquito Canyon grading site, and the Chiquito Canyon water tank site; the species was not observed in these areas during USFWS protocol surveys conducted between March 15 and June 30, 2004 (Guthrie 2004).
MAMMALS				
Pale big-eared bat *Corynorhinus townsendii pallescens*	--	CSC	Utilizes a variety of communities, including conifer and oak woodlands and forests, arid grasslands and deserts and high-elevation forests and meadows. Requires appropriate roosting, maternity and hibernacula sites free from human disturbance.	This species was not detected on the project site during ANABAT surveys (Impact Sciences 2004). Suitable roosting and foraging habitat is present on the site.
Western mastiff bat *Eumops perotis californicus*	--	CSC	Occurs in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub and urban.	This species was not detected on the project site during ANABAT surveys (Impact Sciences 2004); suitable roosting and foraging habitat is present on the site.
Mountain lion *Felis concolor browni*	--	CFP	Occurs in a variety of scrub and forested habitats.	This species is known to occur in the project region and has been observed on the Newhall Ranch Specific Plan area (outside of the project site); project site could host transient individuals and be part of a local lion's home range.
San Diego black-tailed jackrabbit *Lepus californicus bennettii*	--	CSC	Chaparral and coastal sage scrub.	Suitable habitat is present within on-site coastal sage scrub and chaparral habitats.
Fringed myotis *Myotis thysanodes*	--	***	Occurs in a wide variety of habitats. Optimal habitats include pinyon-juniper, valley foothill hardwood and hardwood-conifer woodlands. Forms maternity colonies and roosts in caves, mines, buildings and crevices.	This species was not detected on the project site during ANABAT surveys (Impact Sciences 2004); suitable roosting and foraging habitat is present on site.
Yuma myotis *Myotis yumanensis*	--	***	Inhabits open forests and woodlands with sources of water. Species is closely tied to bodies of water, over which it feeds. Forms maternity colonies in caves, mines, buildings or crevices.	This species was not detected on the project site during ANABAT surveys (Impact Sciences 2004); suitable roosting and foraging habitat is present on the site.
American badger *Taxidea taxus*	--	CSC	Drier open stages of shrub, forest and herbaceous habitats with	Suitable habitat is present.

Common Name *Scientific Name*	Status Federal	State	Habitat Requirements	Habitat Suitability
			friable soils.	

STATUS KEY:

Federal
FE: Federally Endangered
FT: Federally Threatened
FC: Federal Candidate for listing as Threatened or Endangered
BCC: Bird of Conservation Concern

State
CE: California Endangered
CT: California Threatened
CFP: California Fully Protected
CSC: California Species of Special Concern
**: Over wintering (or roosting) sites should be protected, butterfly probably not at risk currently
***: Special Animal

9.2.3 Special-Status Wildlife Species Not Expected or Rarely Occurring on the Project Site

The project site lacks suitable habitat to support the species addressed in **Table 9, Special-Status Wildlife Species Not Expected ~~or Rarely Occurring~~ on the Project Site,** as a resident or nesting species. **Table 9** provides the species' regulatory status, habitat requirements and an explanation of why the species is not expected to reside or substantially utilize the project site. As these species are not expected to breed, nest, or otherwise reside on or substantially utilize the project site, they are not discussed further in this document.

Table 9
Special-Status Wildlife Species Not Expected ~~or Rarely Occurring~~ on the Project Site

Common Name *Scientific Name*	Status Federal	State	Habitat Requirements	Habitat Suitability
INVERTEBRATES				
Crustacea Order Anostraca (fairy shrimp)				
San Diego fairy shrimp *Branchinecta sandiegoensis*	FE	--	Vernal pools.	No indication of vernal or other seasonal pools were detected during site surveys. Soils present on site are not suitable to support vernal/seasonal pools.
Crustacea Order Anostraca (fairy shrimp) (continued)				
Riverside fairy shrimp *Streptocephalus woottoni*	FE	--	Vernal pools.	No indication of vernal or other seasonal pools were detected during site surveys. Soils present on site are not suitable to support vernal/seasonal pools.
Insecta Order Lepidoptera (butterflies and moths)				
San Emigdio blue butterfly *Plebulina emigdionis*	--	--	Often near streambeds, washes or alkaline areas. Associated with four-wing saltbrush (*Atriplex canescens).*	No individuals or suitable habitat (i.e., stands of four-winged saltbrush) were observed during focused surveys (Compliance Biology 2004).
Quino checkerspot butterfly (Wright's *Euphydryas)* *Euphydryas editha quino*	FE	--	Occurs in localized colonies, always closely associated with the larval foodplant dot-seed plantain *(Plantago erecta)* and clay or cryptobiotic soils.	The main larval food plant does not occur on the site (Compliance Biology 2004). This butterfly was last documented in Los Angeles County in 1954.

Common Name *Scientific Name*	Status Federal	 State	Habitat Requirements	Habitat Suitability
FISH				
Steelhead rainbow trout (Southern California ESU) *Oncorhynchus mykiss*	FE	CSC	Clean, clear, cool well-oxygenated streams. Needs relatively deep pools in migration and gravelly substrate in which to spawn.	Known to occur in the Santa Clara River west of Piru Creek, but not documented in the portion of the creek in the project area; not observed during numerous surveys near the project site.
AMPHIBIANS				
California red-legged frog *Rana aurora draytonii*	FT	CSC	Permanent water sources such as ponds, lakes, reservoirs, streams and adjacent riparian woodlands.	Field investigations indicate that potential breeding or summer habitat is absent from the portion of the Santa Clara River bordering the project site (ENTRIX 2005); generally avoids large river channels with widely fluctuating flows because such habitat does not permit successful reproductive activity (Hays and Jennings 1989). Not documented in the Santa Clara River (CNDDB), but documented within the Piru Creek and San Francisquito Creek tributaries to the river.
BIRDS				
Sharp-shinned hawk (nesting) *Accipiter striatus*	--	CSC	Nests in woodlands and forages over dense chaparral and scrublands.	The project area is outside the known breeding range for this species. However, because this species forages in woodlands, chaparral, scrublands and edge/ecotone areas between habitats, it could occasionally forage at the site during winter months or during migration periods.
Great egret (rookery) *Ardea alba*	--	***	Nests colonially in large trees. Rookery sites are typically located near marshes, tide-flats, irrigated pastures and margins of rivers and lakes.	No rookery sites have been observed on or near the project site during annual bird surveys.
Great blue heron (rookery) *Ardea herodias*	--	***	Nests colonially in tall trees, cliffsides and sequestered spots on marshes. Rookery sites are usually in close proximity to foraging areas such as marshes, lake margins, tide-flats, wet meadows, rivers and streams.	No rookery sites have been observed on or near the project site during annual bird surveys.
Ferruginous hawk (wintering) *Buteo regalis*	--	CSC	Grasslands, agricultural fields and open scrublands.	This species is an infrequent seasonal migrant. Although suitable foraging habitat is present on the site, this species does not nest in California and is only expected to rarely forage or otherwise occur on the site.

Common Name *Scientific Name*	Status Federal	State	Habitat Requirements	Habitat Suitability
BIRDS (continued)				
Prairie falcon (nesting) *Falco mexicanus*	--	CSC	Grasslands, savannas, rangeland, agricultural fields and desert scrub; requires sheltered cliff faces for shelter and nesting.	No suitable nesting habitat on or bordering the project site. Could forage on the site.
Least bittern (nesting) *Ixobrychus exilis*	--	CSC	Dense emergent wetlands of cattails and tules are essential.	Cattails and tules occur within the Santa Clara River corridor; however, these areas do not contain the dense emergent vegetation characteristic of nesting habitat of this species.
Bank swallow (nesting) *Riparia riparia*	--	CT	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes or the ocean to dig a nesting hole.	No suitable nesting habitat on or bordering the project site and no recent records of nesting in the area.
MAMMALS				
Spotted bat *Euderma maculata*	--	CSC	Occupies a wide variety of habitats from arid deserts and grasslands, to mixed conifer forests. Feeds over water and along washes. Needs rock crevices in cliffs or caves for roosting.	This species was not detected on the project site during ANABAT surveys conducted in 2004 (Impact Sciences 2004). No suitable roosting habitat on or bordering the project site. Only rare to occasional spotted bat sightings have been recorded in the project vicinity.
Southern grasshopper mouse *Onychomys torridus ramona*	--	CSC	Inhabits desert areas, especially scrub habitats with friable soils for digging. Prefers low to moderate shrub cover.	This species has not been detected on the project site or the greater Newhall Ranch Specific Plan area during small mammal trapping (Impact Sciences 2004).
Los Angeles pocket mouse *Perognathus longimembris brevinasus*	--	CSC	Inhabits lower elevation grasslands and coastal sage communities on open ground with fine sandy soils. May not dig extensive burrows, hiding instead under weeds and dead leaves.	This species has not been detected on the project site or the greater Newhall Ranch Specific Plan area during small mammal trapping (Impact Sciences 2004).

STATUS KEY:

Federal
FE: Federally Endangered
FT: Federally Threatened

State
CT: California Threatened
CFP: California Fully Protected
CSC: California Species of Special Concern
***: Special Animal

9.3 JURISDICTIONAL WETLANDS AND DRAINAGES

~~Wetlands, creeks, streams and permanent and intermittent drainages are generally subject to the jurisdiction of the ACOE under Section 404 of the Federal Clean Water Act. By ACOE definition, all aquatic or riverine habitats between the water's edge and the "ordinary high water mark" of rivers, creeks and streams are considered "waters of the U.S." and may fall under ACOE jurisdiction. If adjacent wetlands occur, the limits of jurisdiction extend beyond the ordinary high water mark to the outer edge of the wetlands. Wetlands are defined by ACOE as "those areas that are inundated or saturated by surface or groundwater at a frequency or duration to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." (ACOE 1987) The presence and extent of wetland areas are normally determined by examination of the vegetation, soils and hydrology of a site. The ACOE definition of wetlands requires that all three wetland identification parameters be met.~~

~~Streambeds within the project site are subject to regulation by CDFG under Section 1602 of the California Fish and Game Code. A stream is defined under these regulations as a body of water that flows at least periodically or intermittently through a bed or channel having banks, and that supports fish or other aquatic life.~~

9.3.1 ACOE Jurisdiction

Wetlands, creeks, streams and permanent and intermittent drainages are generally subject to the jurisdiction of the ACOE under Section 404 of the Federal Clean Water Act. The ACOE has jurisdiction up to the "ordinary high water mark" of rivers, creeks, and streams that are considered "Waters of the U.S." as defined by the Clean Water Act. If adjacent wetlands occur, the limits of jurisdiction extend beyond the ordinary high water mark to the outer edge of the wetlands. Wetlands are defined by ACOE as "those areas that are inundated or saturated by surface or groundwater at a frequency or duration to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." (ACOE 1987) The presence and extent of wetland areas are normally determined by examination of the vegetation, soils and hydrology of a site. The ACOE definition of wetlands requires that all three wetland identification parameters be met.

The tract map site is generally bordered to the east by Castaic Creek, to the south by the Santa Clara River and to the west by Chiquito Canyon Creek. As shown in **Figure 15, Jurisdictional Resources**, portions of Chiquito Canyon Creek and the Santa Clara River are within the project boundaries, as well as portions of Castaic Creek. A jurisdictional delineation of "waters of the U.S." (including tributaries) associated

with the Santa Clara River and Chiquito Canyon Creek within the Specific Plan was conducted by URS in 2003 in accordance with ACOE protocol. Castaic Creek was not delineated at that time. All of these drainages are considered to be under ACOE jurisdiction. Additionally, the following features on the project site have also been determined to be under the jurisdiction of the ACOE: portions of four seasonal tributaries of the Santa Clara River, two seasonal tributaries of Chiquito Canyon Creek, and two agricultural drains. The delineation conducted by URS indicated a total of 13.19 acres on the project site under the jurisdiction of the ACOE. Based on an interpretation of an aerial photograph of the site, it is estimated that approximately 3.84 acres of Castaic Creek occur within the project boundary, just north and south of SR-126, which is also expected to be under ACOE jurisdiction, for a total estimated 17.03 acres of ACOE jurisdiction within the project site boundary. There are no other features within the proposed project boundaries that are under the jurisdiction of the ACOE.

9.3.2 CDFG Jurisdiction

Streambeds within the project site are subject to regulation by CDFG under Section 1602 of the California Fish and Game Code. A stream is defined under these regulations as a body of water that flows at least periodically or intermittently through a bed or channel having banks, and that supports fish or other aquatic life.

The jurisdictional delineation conducted by URS (2003) also identified areas under the jurisdiction of CDFG (see **Figure 15**). CDFG jurisdiction on the project site encompasses the 17.03 acres under ACOE jurisdiction (as discussed above), but because CDFG also takes jurisdiction over all riparian vegetation associated with creeks, drainages, and rivers, there is an additional 44.43 acres of riparian vegetation on the site under CDFG jurisdiction. The Landmark Village applicant is seeking approval of a Master 404 Permit from the ACOE and a Master 1600 Agreement from the CDFG for the Newhall Ranch Specific Plan area, including the Landmark Village site. The environmental document is in process at this time and a draft of the EIR/EIS is expected to be released for public review late 2005.

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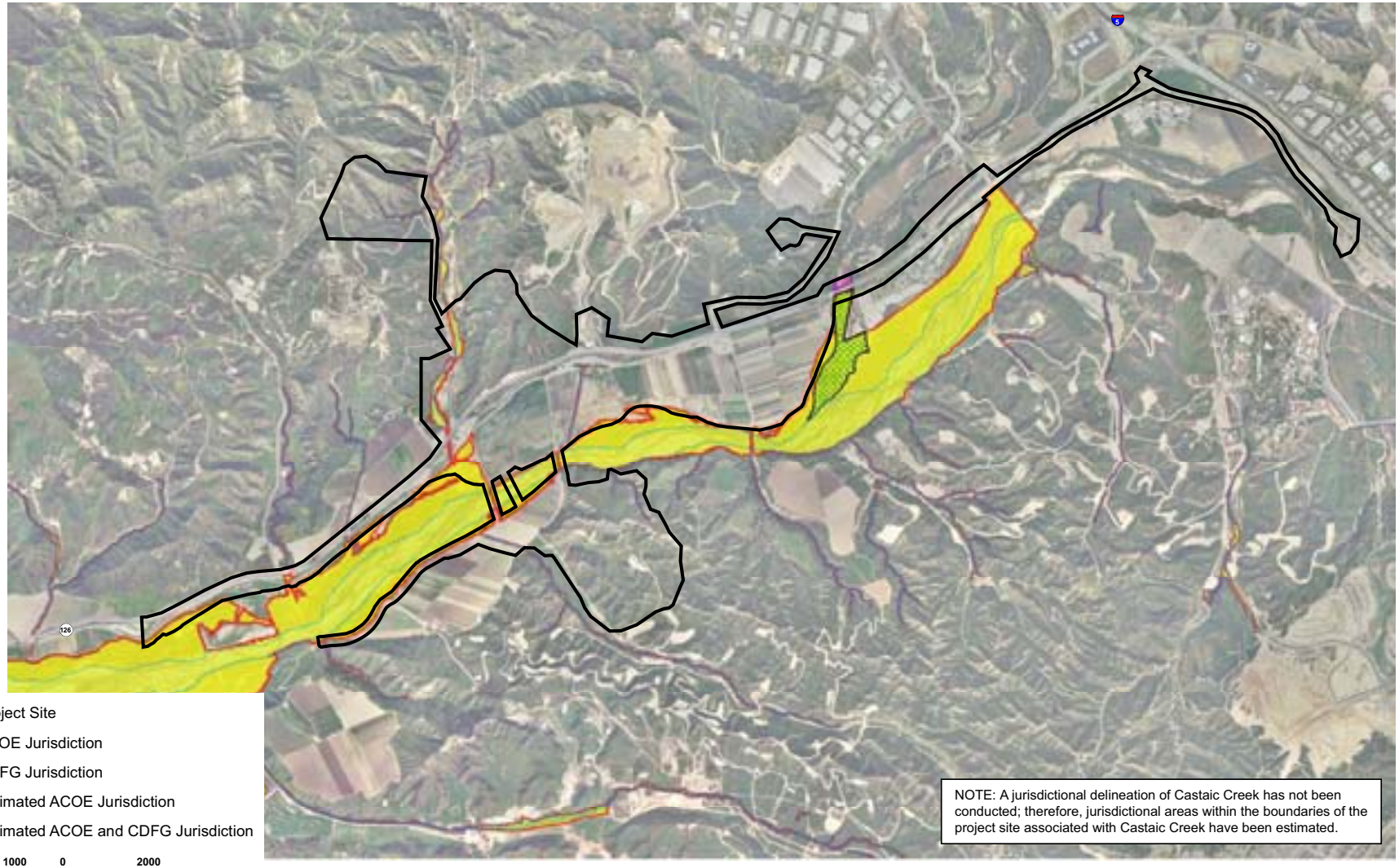
11. **There are many steep canyons within the project area that may support jurisdictional areas not present on the jurisdictional areas map; confirm the completeness of the jurisdictional delineation.**

    The jurisdictional delineation conducted by URS (December 2003) for the proposed project (as well as the greater Newhall Ranch Specific Plan Area) was verified by the ACOE on February 4, 2004. The ACOE verification was based on the review of the Jurisdictional Delineation Permit Package submitted by URS (December 15, 2003), as well as site visits conducted on August 7, August 19, and October 27, 2003. Although CDFG has not provided a jurisdictional concurrence letter, they have given verbal assurance to Newhall Land that such a letter is forthcoming.[1]

[1] URS Corporation. October 26, 2005. Pers. Comm. with Christopher Julian, Assistant Project Manager.



Project Site
ACOE Jurisdiction
CDFG Jurisdiction
Estimated ACOE Jurisdiction
Estimated ACOE and CDFG Jurisdiction

2000 1000 0 2000
APPROXIMATE SCALE IN FEET

SOURCE: AirPhoto USA - 2004, Impact Sciences, Inc. – November 2005

FIGURE **15**

Jurisdictional Resources

32-92•11/05

10.0 OVERALL BIOLOGICAL VALUE OF PROPERTY

A total of 373.6 acres is actively used for agricultural purposes. This area is disked regularly and has little continuous vegetative cover; however, it provides foraging habitat for raptors and other bird species. The Long Canyon borrow site and the reclaimed water tank site contain large expanses (approximately 146.55 and 69.75 acres, respectively) of coastal sage scrub and/or coastal sage chaparral scrub habitat. These areas provide suitable habitat for numerous wildlife species (including nesting special-status birds and special-status reptiles). The Chiquito Canyon grading site is in a more disturbed condition and contains a more fragmented and smaller quantity (57.85 acres) of coastal sage scrub habitat.

The riparian habitats on the Landmark Village site are considered of high biological value. The riparian forest and riparian scrub communities on the project site provide suitable habitat for numerous common and special-status wildlife species, as discussed above (**Tables 7** and **8**). The portion of the Santa Clara River on and bordering the project site is an important migration and genetic dispersion corridor for many wildlife species, including aquatic taxa, riparian obligate species (resident and migratory) and larger, more mobile terrestrial animals. Additionally, Chiquito Canyon borders the project site to the west and the Castaic Creek drainage borders the site to the east. Both of these drainages are tributaries of the Santa Clara River and serve as suitable habitat/movement corridors for wildlife route from the river to the north towards the Angeles and Los Padres National Forests.

Constraints to development posed by these resources include the following:

- Significant impacts as defined by CEQA and SEATAC would occur with respect to the loss of mulefat scrub, coast live oak woodland, coastal sage scrub, elderberry scrub, southern willow scrub, southern cottonwood willow riparian forest, scalebroom scrub, valley freshwater marsh, wildlife habitat, special-status bird nests, special-status plant species, protected oaks, special-status wildlife species, and CDFG and ACOE jurisdictional resources. Mitigation will be required to avoid, reduce, or compensate impacts on these resources.

- Significant indirect impacts would occur with respect to increased light and glare, increased non-native plant species and increased human and domestic animal presence.

- The loss or destruction of active bird nests, including eggs, young, and/or adult birds would be considered a violation of the Migratory Bird Treaty Act and the California Fish and Game Code.

- Impacts and/or fill of streambeds, drainages, and associated riparian/wetland vegetation under the jurisdiction of the CDFG and/or ACOE would require appropriate permits from these agencies.

- The loss of or damage to oak trees under the jurisdiction of the CLATO would require a permit from the County.

- Unavoidable significant impacts would occur with respect to the loss of many sensitive animal species, loss of coastal sage scrub, the overall loss of wildlife habitat and increased human and domestic animal presence. The project would also contribute to an unavoidable significant cumulative impact related to the ongoing loss of biological resources in the project region.

Minutes - September 12, 2005

1. **Page 79, second paragraph: include a linkages map, incorporating the corridors discussed in this paragraph.**

   The discussion now includes a reference to **Figure 13, Potential Wildlife Movement Corridors**. The figure has been revised to provide a better context for potential movement pathways, including potential movement pathways occurring on and adjacent to the project site.

11.0 IMPACT ASSESSMENT

This section identifies the applicable significance criteria from CEQA that is used in this report. It also focuses on the assessment of the direct, indirect and cumulative impacts associated with implementation of the Landmark Village project. Applicable mitigation measures from the RMP of the Newhall Ranch Specific Plan and the Newhall Ranch Program EIR (May 2003) are also identified.

11.1 SIGNIFICANCE THRESHOLD CRITERIA

Significant impacts of proposed development on the project site were determined from criteria included in the *CEQA Guidelines* (14 Cal.Code Regs. §§15000, et seq.). As stated in Appendix G (Environmental Checklist) of the *CEQA Guidelines* (2005), a project could have a significant impact on the environment if it would

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS;
- have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Section 15065(a) of the *CEQA Guidelines* also states that a project may have a significant effect on the environment when the project has the potential to

- substantially degrade the quality of the environment;
- substantially reduce the habitat of a fish or wildlife species;
- cause a fish or wildlife population to drop below self-sustaining levels;
- threaten to eliminate a plant or animal community; or
- substantially reduce the number or restrict the range of an Endangered, Rare or Threatened species.

11.1.1 Impact Assessment Approach and Methodology

Direct impacts~~ typically~~ represent the physical alteration (typically~~i.e.,~~ habitat degradation or loss) of biological resources that occur on site as a result of project implementation. Indirect impacts are those reasonably foreseeable effects caused by project implementation on remaining or adjacent biological resources. ~~However, physical alteration of habitat is not in and of itself a "significant" impact under CEQA; rather,~~ The significance of this alteration, with respect to CEQA, is determined ~~when the physical alteration of habitat is~~ by evaluating~~ed~~ in terms of each of the significance threshold criteria defined above. For example, if habitat alteration results in a direct or indirect loss or causes an otherwise substantial adverse effect on a species identified as a "candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the CDFG or USFWS," impacts would be considered significant, assuming appropriate compensatory or other mitigation is not available or feasible. Similarly, if the alteration of habitat results in a substantial adverse effect on a natural community identified as sensitive "…in local or regional plans, policies, or regulations, or by the CDFG or USFWS", then this alteration would be considered a significant impact.

An evaluation of whether an impact on biological resources would be "substantial," and, therefore, a significant impact, must consider both the resource itself and the significance threshold criteria being evaluated. For example, because most plant and animal species are dependent on native habitats to satisfy various life cycle requirements, a habitat-based approach that addresses the overall biological value of a particular vegetation community or habitat area is appropriate when determining whether or not alteration of that habitat will "substantially" affect special-status species, sensitive habitats, wetlands or movement corridors. The relative biological value of a particular habitat area—its functions and values—can be determined by such factors as disturbance history, biological diversity, its importance to particular plant and wildlife species, its uniqueness or sensitivity status, the surrounding environment and the presence or absence of special-status resources.

However, direct impacts to specific plant and wildlife resources (e.g., active nests and individual plants and animals) are also evaluated and discussed when impacts to these resources, in and of themselves, could be considered significant or conflict with local, state and federal statutes or regulations. The significance of direct impacts on individuals or populations of plant and animal species takes into consideration the number of individual plants or animals potentially affected, how common or uncommon the species is both on the project site and from a regional perspective and the species' sensitivity status according to resource agencies. These factors are evaluated based on the results of on-site biological surveys and studies, results of literature and database reviews, discussions with biological experts, and established and recognized ecological and biodiversity theory and assumptions.

11.2 DIRECT IMPACTS

The following section focuses on the direct effects of proposed project implementation on plant communities, common and special-status plant and wildlife species, special-status habitats, and wildlife movement corridors. To more directly address impacts to biological resources within the Newhall Ranch Specific Plan's River Corridor SMA/SEA 23, and where a clear distinction can be made, the following discussion has been structured to include an analysis of impacts to biological resources within the SMA/SEA boundary and an analysis of impacts to biological resources outside of the SMA/SEA boundary. Where appropriate, biological resources are generally included as part of the impact discussion of biological resources within the SMA/SEA boundary if any of the on-site biological resource occurs or is expected to occur within the SMA/SEA. **Figure 11A**, above, depicts the relationship between on-site plant communities and proposed land alteration.

The calculation of impacts to plant communities includes fire setback areas, except in those cases where grading occurs that isn't associated with a building footprint (such as for trails, bank stabilization, borrow sites, buried utility corridors, etc.). **Table 10, Plant Community/Land Use Impact Summary**, below, shows the acreage of each plant community/land use that would be developed and/or temporary disturbed during construction of the proposed project.

An analysis of the "significance" of project impacts on biological resources is provided below. In addition, each impact discussion, notes whether the findings of this report are consistent with the findings of the previously certified Newhall Ranch Program EIR. If approved, the Landmark Village project would be subject to the mitigation measures/conditions of approval contained in the RMP of the Newhall Ranch Specific Plan and the Newhall Ranch Program EIR. These mitigation measures and conditions were adopted by the County Board of Supervisors in association with approval of the Newhall Ranch Specific Plan and WRP (May 27, 2003). The Newhall Ranch Specific Plan and WRP revised Mitigation Monitoring Plans are contained in **Appendix C**. Additional mitigation measures proposed to further mitigate significant impacts are included in **Section 13.0**.

Table 10

Plant Community/Land Use Impact Summary

Plant Community/Land Use	Total Acres Present	Acres Developed	Acres Temporarily Disturbed[7]	Total Acres Developed/Disturbed
Agricultural	373.60	335.66	37.92	373.58
Non-Native Grassland	123.58	118.30	2.89	121.19
Southern Cottonwood Willow Riparian Forest	18.61	8.53	10.08	18.61
Coast Live Oak Woodland	9.05	7.82	0.00	7.82
Coastal Sage Scrub	305.13	300.84	3.48	304.32
Coastal Sage Chaparral Scrub (Mixed Chaparral)	12.50	12.50	0.00	12.50
Elderberry Scrub	8.22	8.22	0.00	8.22
Arrow Weed Scrub	6.45	5.72	0.73	6.45
Mulefat Scrub	19.31	11.05	8.26	19.31
Southern Willow Scrub	5.19	0.57	4.62	5.19
River Wash	8.61	1.71	6.90	8.61
Freshwater Marsh	1.03	0.12	0.91	1.03
Alluvial Scrub	0.60	0.53	0.07	0.60
Great Basin Scrub	3.05	2.52	0.53	3.05
Scalebroom Scrub	8.82	5.69	3.13	8.82
Other Developed Land Uses (e.g., parking lots)	20.15	20.15	0.00	20.15
Ruderal	47.90	47.24	0.66	47.90
TOTAL:	**971.80**	**887.17**	**80.18**	**967.35**

[7] Temporarily disturbed by bank stabilization and/or haul roads, but would be revegetated to native vegetation following completion of construction.

11.2.1 Bio-1, Common Plant Communities

(i) Common Plant Communities Within the SMA/SEA 23

(a) Agricultural

The proposed project would result in the permanent conversion of 335.66 acres of land currently used for agricultural purposes. An additional 37.92 acres would be temporarily disturbed by bank stabilization and/or haul roads, but would be revegetated to native vegetation following completion of construction. Of the total 373.60 acres of agricultural/developed land on the project site, 57.56 acres are within the boundaries of the SMA/SEA 23 (of which 24.04 acres would be developed and 33.51 acres would be temporarily disturbed). Given the disturbed condition of the area, and that this habitat type is not considered a natural community by resource agencies, the loss of agricultural land would be a less than significant impact. The Newhall Ranch Program EIR included the loss of this plant community as part of the analysis of the overall loss of wildlife habitat (**Bio-2, Wildlife Habitat Loss**, below).

(b) Non-Native Grassland

The proposed project would result in the permanent conversion of 118.30 acres of non-native grasslands. An additional 2.89 acres would be temporarily disturbed by bank stabilization and/or haul roads, but would be revegetated following completion of construction. Of the total 123.58 acres of non-native grassland on the project site, 4.03 acres is within the boundaries of the SMA/SEA 23 (of which 2.77 acres would be developed, and 1.26 acres would be temporarily disturbed). Small pockets of grassland occur in scattered locations along the eastern portion of the project site and within both off-site grading locations. Given the altered condition of these areas, and that this habitat type is not considered a sensitive natural community by resource agencies, the loss of non-native grassland would be a less than significant impact. The Newhall Ranch Program EIR included the loss of this plant community as part of the analysis of the overall loss of wildlife habitat (**Bio-2, Wildlife Habitat Loss**, below).

(c) Mulefat Scrub

The proposed project would result in the permanent conversion of 11.05 acres of mulefat scrub. An additional 8.26 acres would be temporarily disturbed by bank stabilization and/or haul roads, but would be revegetated following completion of construction. Of the total 19.31~~11.05~~ acres of mulefat scrub on the project site, 8.59 acres are within the boundaries of the SMA/SEA 23 (of which 2.14 acres would be developed and 6.45 acres would be temporarily disturbed). Although mulefat scrub is not recognized as

a sensitive natural community by resource agencies, given the extent of this plant community on the project site, and the on-going loss of riparian plant communities in the project area, without mitigation, the loss of mulefat scrub is considered to be a significant impact. Implementation of RMP Mitigation Measures 4.6-1 through 4.6-26, as well as the Newhall Ranch Program EIR Mitigation Measure 4.6-63 would, however, reduce impacts to this plant community to a less than significant level. The Newhall Ranch Program EIR included the loss of this plant community as part of the analysis of the overall loss of wildlife habitat (**Bio-2, Wildlife Habitat Loss**, below).

(d) Coastal Sage Scrub

The proposed project would result in the permanent conversion of 300.84 acres of coastal sage scrub. An additional 3.48 acres would be temporarily disturbed by bank stabilization and/or haul roads, but would be revegetated as coastal sage scrub following completion of construction. Of the total 305.13 acres of coastal sage scrub on the project site, 0.85 acre is within the boundaries of the SMA/SEA 23 (and ~~of which 1.32 acres~~ would be permanently developed~~ and 0.16 acre would be temporarily disturbed~~). Given the acreage that would be removed in the off-site grading sites and the reclaimed water tank site, and because of the habitat value this plant community provides for common and special-status plant and wildlife species, the loss of coastal sage scrub vegetation would be a significant impact. The Specific Plan RMP requires that a conservation agreement be established over the High Country SMA/SEA 20 and that a detailed program be developed for its long-term management and ownership. Virtually all of the existing High Country SMA/SEA 20 is retained in a natural state, including approximately 2,929 acres~~large expanses~~ of coastal sage scrub habitat. Although implementation of RMP Mitigation Measures 4.6-37 through 4.6-43 would reduce impacts to coastal sage scrub, the net loss of this sensitive habitat type is still considered a significant impact. This finding is consistent with the findings of the Newhall Ranch Program EIR that identified the loss of coastal sage scrub habitat as a significant unavoidable impact.

(e) Elderberry Scrub

The proposed project would result in the permanent conversion of 8.22 acres of elderberry scrub. Of this area, 0.90 acre is within the boundaries of the SMA/SEA 23. Given that this plant community is relatively uncommon in the project area, without mitigation, the loss of elderberry scrub would be a significant impact. Implementation of RMP Mitigation Measure 4.6-43, as well as proposed Mitigation Measure 4.6-96, would reduce impacts to elderberry scrub to a less than significant level. This finding is consistent with the finding of the Newhall Ranch Specific Plan that impacts to elderberry scrub could be mitigated to below a level of significance.

2. **Provide details on the quantity, type and quality of coastal sage scrub to be retained in the High Country SMA. Adequacy of mitigation for losses of habitats within the project site will be based on functional similarity of preserved and impacted habitats.**

   The Draft Biota Report (page 86) has been revised to state " Virtually all of the existing High Country SMA/SEA 20 is retained in a natural state, including approximately 2,929 acres of coastal sage scrub habitat."

   The preservation of coastal sage scrub within the High Country SMA is not presumed to fully mitigate for the project-related loss of 300.84 acres of coastal sage scrub habitat on an acre-for-acre basis. While the preservation of coastal sage scrub would lessen the magnitude of the impact, there are no feasible measures that could replace the net loss of this habitat type that would occur as a result of the proposed project (and build out of the remainder of the Specific Plan). Consistent with this conclusion, the Draft Biota Report (page 84) states, "Although implementation of RMP Mitigation Measures 4.6-37 through 4.6-43 would reduce impacts to coastal sage scrub, the net loss of this sensitive habitat type is still considered a significant impact." This finding is consistent with the findings of the Newhall Ranch Program EIR that identified the loss of coastal sage scrub habitat as a significant, unavoidable impact.

   The applicant has committed to conducting an updated functional assessment of the habitat types to be preserved in the High Country SMA.

(f) Arrow ~~(SP)~~ Weed Scrub

The proposed project would result in the permanent conversion of 5.72 acres of arrow weed scrub from the project site. An additional 0.73 acre would be temporarily disturbed by bank stabilization and/or haul roads, but would be revegetated following completion of construction. Of the total 6.45 acres of arrow weed scrub on the project site, 0.85 acre is within the boundaries of the SMA/SEA 23 (of which 0.15~~6~~ acre would be developed and 0.70 acre would be temporarily disturbed). Given the disturbance nature of this plant community, and that this habitat type is not considered a sensitive natural community by resource agencies, the loss of arrow weed scrub would be a less than significant impact. The Newhall Ranch Program EIR included the loss of this plant community as part of the analysis of the overall loss of wildlife habitat (**Bio-2, Wildlife Habitat Loss**, below).

(ii) Common Plant Communities Outside of the SMA/SEA 23

(a) Alluvial Scrub

The proposed project would result in the loss of 0.53 acre of alluvial scrub and the temporary disturbance to an additional 0.07~~8~~ acre. Given the small area to be impacted and that this habitat type is not considered a sensitive natural community by resource agencies, the loss of alluvial scrub would be a less than significant impact. The Newhall Ranch Program EIR included the loss of this plant community as part of the analysis of the overall loss of wildlife habitat (**Bio-2, Wildlife Habitat Loss**, below).

(b) Great Basin Scrub

The proposed project would result in the development of 2.52 acres of great basin scrub and the temporary disturbance to an additional 0.53 acre. Given the small amount of acreage that would be impacted and that this habitat type is not considered a sensitive natural community by resource agencies, the loss of great basin scrub would be a less than significant impact. The Newhall Ranch Program EIR included the loss of this plant community as part of the analysis of the overall loss of wildlife habitat (**Bio-2, Wildlife Habitat Loss**, below).

(c) Coastal Sage Chaparral Scrub

The proposed project would result in the development of 12.50 acres of coastal sage chaparral scrub. This plant community is a dominant natural vegetation type in the region and is not considered a sensitive natural community in Southern California by resource agencies. Given the small amount of acreage that

would be removed, and the common nature of this plant community in the project region, the loss of this plant community would be a less than significant impact. The Newhall Ranch Program EIR included the loss of this plant community as part of the analysis of the overall loss of wildlife habitat (**Bio-2, Wildlife Habitat Loss**, below).

11.2.2 Bio-2, Wildlife Habitat Loss

(i) Wildlife Habitat Loss Within the SMA/SEA 23

The proposed project would result in the permanent conversion of 59.59 acres of wildlife habitat within the SMA/SEA 23 boundary, of which 24.04 acres are agricultural land, 1.32 acres are coastal sage scrub, 0.16 acre is arrow weed scrub, 0.02 acre is live oak woodland, 2.77 acres is non-native grassland, 0.99 acre is river wash, and 23.80 acres are ruderal. A total of 6.48 acres to be developed consists of riparian-associated plant communities, including southern willow scrub, southern cottonwood willow riparian forest, mulefat scrub, freshwater marsh, and elderberry scrub. Developed uses within this area include Long Canyon Bridge Road, portions of the Regional River Trail, a scenic vista path, and portions of the utility corridor. An additional 64.98 acres of habitat within the SMA/SEA 23 would be temporarily disturbed by bank stabilization and/or haul roads, but would be planted with native vegetation following completion of construction. Given that the majority of land to be developed consists of agricultural areas and upland plant communities, the limited amount of riparian habitat that would be permanently altered, the amount of riparian habitat protected within the River Corridor SMA, and that the Specific Plan RMP includes measures (Mitigation Measures 4.6-1 to 4.6-26) that would replace any native vegetation temporarily or permanently removed, the loss of wildlife habitat within the SMA/SEA 23 is considered to be a less than significant impact. This finding is consistent with the findings of the Newhall Ranch Final Additional Analysis (May 2003).

(ii) Wildlife Habitat Loss Outside of the SMA/SEA 23

The proposed project would result in the permanent loss of 867.72 acres of wildlife habitat outside of the boundaries of the SMA/SEA 23, including large areas of coastal sage scrub habitat and agricultural land. An additional 80.72 acres will be temporarily impacted. While the plant communities occurring on the site are of varying botanical value, each of these plant communities provides habitat for a variety of wildlife species. When viewed individually, the loss of an individual plant community on the project site may not represent a substantial loss of wildlife habitat. However, as most wildlife species depend on a variety of habitat types to meet various ecological and life history requirements (i.e., food, shelter, nesting), when considered together, the loss of habitat provided by the on-site plant communities is substantial. Consistent with the findings of the Newhall Ranch Program EIR, the loss wildlife habitat would adversely affect numerous common and special-status wildlife species, including silvery legless lizard, rosy boa, San Bernardino ringneck snake, coast horned lizard, coast patch-nosed snake, northern harrier, white-tailed kite, southern rufous-crowned sparrow, Bell's sage sparrow, western burrowing owl, San Diego desert woodrat, mountain lion, and San Diego black-tailed jackrabbit (see **Bio-8, Special-Status Wildlife Species**, for a discussion of direct impacts to these species). Therefore, despite the fact

that this habitat is outside the SMA/SEA, the permanent net loss of 867.72 acres of currently undeveloped land represents a substantial loss of habitat for wildlife species and is considered a significant impact.

The Newhall Ranch Specific Plan designates a total of approximately 6,170 acres (51 percent of the total Newhall Ranch Specific Plan area) as open area and includes measures to enhance the biological value of the protected areas (RMP Mitigation Measures 4.6-27 through 4.6-43). While these measures would reduce the magnitude of impacts related to the loss of wildlife habitat, the net loss of 831.15 acres would remain unavoidably significant. This finding is consistent with the findings of the Newhall Ranch Program EIR that identified the loss of wildlife habitat as a significant unavoidable impact.

11.2.3 Bio-3, Setbacks From Riparian Resources Within SEA 23

The structural diversity of the various riparian and aquatic vegetation communities in the Santa Clara River drainage provides habitat for a large variety of wildlife species, including a number of special-status bird species. Each of these species has differing home range and natural history requirements. While some species are riparian-obligate (i.e., satisfy their forage, cover, and breeding habitat needs almost entirely within riparian vegetation communities), other species utilize both the riparian habitat as well as adjacent upland vegetation as part of their home range. A number of studies have found that even the more riparian-dependent wildlife species also require adjacent upland habitats to meet home range foraging and breeding requirements (Doyle 1990; Schaefer and Brown 1992), indicating that the overall viability of riparian associated wildlife species extends beyond the riparian canopy and includes adjacent upland habitat.

However, the characteristics, quality, and extent of upland habitat that is necessary to protect the diversity of wildlife species dependent upon riparian habitat may differ depending on the geographic region and the particular requirements of the riparian species to be protected. A ~~P~~previous study conducted along the Santa Clara River~~ies~~ ~~have~~ recommended preserving (and restoring, if necessary) a minimum of at least 100 feet of high quality upland habitat (upland preserve zone), as measured from the outer edge of the riparian habitat associated with the Santa Clara River ("resource line"), to adequately provide for the foraging and breeding habitat requirements of riparian-associated bird and small mammal species~~wildlife~~ and to maintain species diversity within the riparian ecosystem, inclusive of the riparian/upland ecotone (Impact Sciences 1997). The conclusions of this study were partially based on focused bird surveys (1,100 man-hours over a 62-calendar day period) and small mammal trapping (a total of 1,210 cumulative trap-nights were conducted).

No focused studies were conducted to determine the extent of upland habitat that is necessary to protect the diversity of amphibian species associated with the Santa Clara River. Of particular concern are the two special-status amphibian species (i.e, arroyo toad and western spadefoot) that could utilize riparian

5. **Page 86, first paragraph: vegetation rehabilitation/replacement is unlikely to provide full mitigation for losses of wildlife habitat.**

   While vegetation rehabilitation/replacement is a component of the RMP, it is not the only measure proposed to mitigate for the loss of wildlife habitat within the River Corridor SMA/SEA 23. As discussed in the Draft Biota Report (page 89), riparian habitat would also be protected in perpetuity within the River Corridor SMA. Specifically, mitigation measures 4.6-21 through 4.6-26 direct that a permanent, non-revocable *conservation and public assess easement* over the River Corridor SMA be offered to the County of Los Angeles.

   Given the limited amount of riparian habitat that would be permanently altered, the amount of riparian habitat protected within the River Corridor SMA, and that the Specific Plan RMP includes measures that would replace any native riparian vegetation temporarily or permanently removed, the Draft Biota Report (page 89) concludes that loss of wildlife habitat within the River Corridor SMA/SEA 23 is considered a less than significant impact. This finding is consistent with the findings of the Newhall Ranch Final Additional Analysis (May 2003).

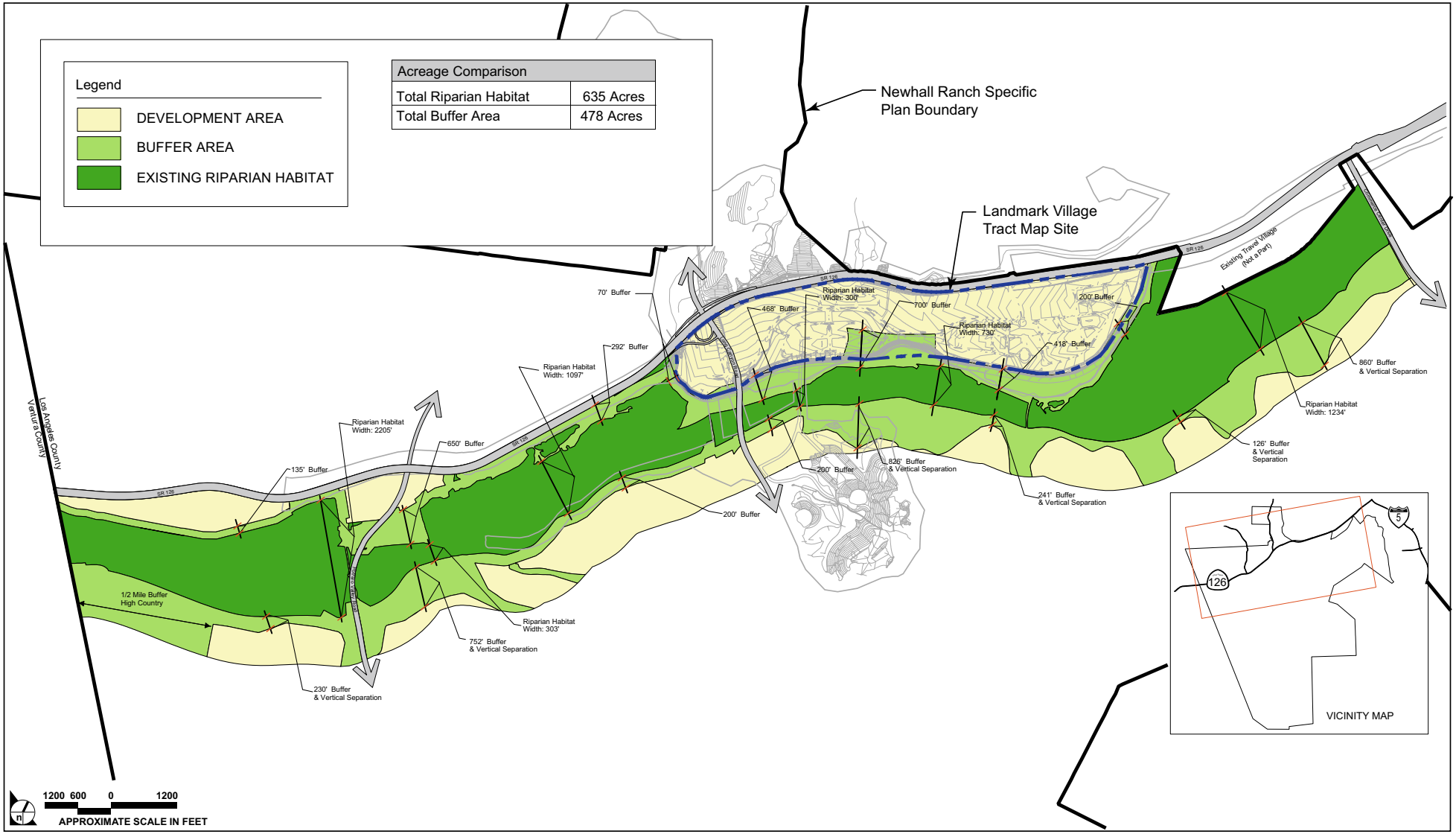
habitats on the site. Arroyo toad generally burrow within sand or loam substrates with no associated canopy cover, within mule fat scrub, willow patches, or under woody debris left by fallen, dead willows or woodrat nests (Ramirez 2003). Accordingly, should arroyo toad occur on the project site, most would be expected to burrow within the riparian habitats to be preserved. Arroyo toads have been found in agricultural fields (Griffin 1999) and could occur within portions of the site outside of the proposed riparian setback zone. However, agricultural fields may constitute sinks (areas where mortality rates are higher than reproduction rates) over the long-term, due to tilling, pesticide and fertilizer applications, and heavy equipment use (Griffin and Case 2001); consequently, the agricultural portions of the project site are not expected to be essential to the species' persistence on the site. In regards to western spadefoot, movements by the species to and from breeding ponds are rarely extensive (California Wildlife Habitat Relationships System). Accordingly, should western spadefoot breed in seasonal pools located within the riparian zone, the proposed riparian setbacks would be expected to preserve associated burrow habitat.

As shown in **Figure 16, Riparian Habitat Buffers**, the proposed project maintains a buffer between the edge of existing riparian resources and proposed development on the tract map site ranging in width from 700 feet to 70 feet. This buffer is measured from the top of riverside bank stabilization to the lot line

6. **Page 87, third and fourth paragraphs: provide more specificity in the discussion of setbacks from riparian resources. Details are needed as to the requirements of species likely to occur on the project site. A minimum buffer of 100 ft. may not be suitable for some species. Provide a reference for the "previous studies" noted in the fourth paragraph.**

   The analysis of setbacks from riparian resources (page 90) has been revised to provide additional discussion of the adequacy of the proposed setbacks for species likely to occur on the project site.

   The reference to "previous studies" (page 90) has been revised to "a previous study". The study referenced is: Impact Sciences. 1997. *North Valencia Annexation Buffer Study*. Prepared for Newhall Land and Farming. 35pp.



SOURCE: FORMA – August 2001

FIGURE **16**

Riparian Habitat Buffers

32-92•11/05

7. **Figure 16: include a grading overlay to provide context.**

   Figure 16 has been revised to include a grading overlay.

of proposed residential, mixed-use, and commercial development. While the buffer is generally greater than 100 feet, the buffer is reduced to 70 feet for approximately 100 feet along the western boundary of the tract map (just to the south of SR-126). This area is located adjacent to Chiquito Canyon Creek in an area that has been disturbed by the construction and operation of SR-126, as well as by agricultural-related activities. The vegetation within the reduced buffer area is characterized by disturbed sandy soils and areas of sparse, disturbed riparian vegetation. This area is located to the north of the well-developed cottonwood willow riparian forest associated with the confluence of Chiquito Canyon Creek and the Santa Clara River. Given the proximity of the reduced buffer area to SR-126, and the disturbed condition and limited extent of riparian habitat present, use of the area by special-status bird or other wildlife species is expected to be limited. A minimum of a 100-foot buffer is present along all other portions of the tract map site and in all areas bordering mature cottonwood willow riparian forest and willow scrub habitats. Furthermore, the vegetation within portions of the setback or buffer area will be restored and/or enhanced to increase habitat values when compared to existing conditions. Given the above, the proposed riparian buffers are sufficient to maintain the function and values of the adjacent riparian habitat and to protect the diversity of riparian-associated wildlife species occurring within these areas. This finding is consistent with the findings of the Newhall Ranch Final Additional Analysis (May 2003) that concluded the proposed land use plan and other design features were sufficient to maintain the function and values of the riparian habitat within the SMA/SEA 23.

11.2.4 Bio-4, Common Wildlife Within and Outside of the SMA/SEA 23

In addition to the loss of vegetation and wildlife habitat, construction and grading activities associated with the proposed project would directly disturb common wildlife species on the project site. In particular, species of low mobility (particularly small mammals, amphibians and reptiles) would be eliminated during site preparation and construction. During the construction period, some wildlife species may emigrate from the project site and become vulnerable to mortality by predation, auto collisions and unsuccessful competition for food and territory.

Because of the common nature of wildlife species that would be displaced or inadvertently lost by construction activities, project implementation is not expected to reduce regional populations to below self-sustaining levels or otherwise substantially affect common fish, mammal or reptile species populations on or adjacent to the project site. Consequently, impacts to common fish, mammal and reptile species would be less than significant. The Newhall Ranch Program EIR did not address the construction-related loss of common wildlife as an individual topic, but did include an analysis of the overall loss of wildlife habitat (**Bio-2, Wildlife Habitat Loss**, above).

Construction activities could result in the direct loss or abandonment of active nests by adult birds of common bird species. The Migratory Bird Treaty Act and the California Fish and Game Code protect active nests of native bird species. (See 16 USC §§703-712; see also California Fish and Game Code §§3503, 3513.) Therefore, any construction-related loss of active nests of common bird species would conflict with these federal and state laws.

Implementation of Mitigation Measure 4.6-88 would ensure compliance with state and federal laws protecting active bird nests.

11.2.5 Bio-5, Wildlife Habitat Linkages Within and Outside of the SMA/SEA 23

The proposed project design would preserve the integrity of the Santa Clara River as a wildlife movement corridor and minimize impacts on local and regional wildlife movement by maintaining nearly all of the Santa Clara River as open space. The Specific Plan RMP includes measures (Mitigation Measures 4.6-1 to 4.6-26) that will minimize impacts to riparian vegetation and replace any vegetation temporarily or permanently removed. Therefore, the riparian vegetation that will be removed as a result of project implementation will not substantially affect the long-term ability of resident and non-resident species to use the river as a movement corridor.

The Long Canyon Road Bridge is proposed to be approximately 1,000 feet in length and a maximum of 100 feet in width. It will range from approximately 11–22 feet in height above the riverbed with an estimated 11 vertical support columns or piers extending into the riverbed. The piers will be approximately 100 feet apart from one another. When confronted with bridges or overpasses along a preferred movement corridor, wildlife, particularly larger mammals, will generally move under these structures as long as there is adequate vertical and horizontal spacing, a natural (dirt, sand, vegetation) substrate on which to travel while under the structure, and an "openness" effect that allows the animal to detect light, open space and habitat at the exiting end of the structure. The proposed bridge will adequately meet these requirements and is not expected to significantly alter wildlife movement along the river corridor.

Consistent with the findings of the Newhall Ranch Program EIR, development of the proposed project would limit northern access to or disbursement from the Santa Clara River for wildlife. However, given that the tract map site is currently used for agriculture and is frequently devoid of cover, the tract map site is not expected to be a substantial part of a regional north-south wildlife movement corridor. In light of the above, impacts to regional wildlife movement would be less than significant. The Newhall Ranch Program EIR found that, with implementation of the Newhall Ranch Specific Plan, impacts to the

movement of wildlife species would be significant due to the reduction in open land available for wildlife movement between the Santa Clara River and upland areas.

11.2.6 Bio-6, Special-Status Plant Species

As shown in **Table 9**, above, the following special-status plant species were eliminated from further consideration because they were not observed on or adjacent to the project site during focused plant surveys conducted on the site in 2001, 2002 and 2004: marsh sandwort, Braunton's milk-vetch, Coulter's saltbrush, Davidson's saltscale, Malibu baccharis, Nevin's barberry, thread-leaved brodiaea, Plummer's mariposa lily, late-flowering mariposa lily, southern tarplant, island mountain-mahogany, Santa Susana tarplant, slender-horned spineflower, Blochman's dudleya, marcescent dudleya, Santa Monica Mountains dudleya, many-stemmed dudleya, Conejo dudleya, Palmer's grappling hook, round-leaved filaree, Los Angeles sunflower, mesa horkelia, southwestern spiny rush, Davidson's bush mallow, California muhly, mud nama, spreading navarretia, chaparral nolina, short-joint beavertail cactus, California orcutt grass, Lyon's pentachaeta, Pringle's yampah, Gambel's watercress, rayless ragwort, Salt Spring checkerbloom and Sonoran maiden fern. Given the thoroughness of the previous survey efforts (**Table 5**), it is unlikely that any of these species are present on the site and, therefore, no significant impacts to these plant species are expected to occur.

Special-status plant species that were observed on the project site during the focused special-status plant surveys include slender mariposa lily, Peirson's morning-glory and Southern California black walnut. In addition, as stated above, a previously undescribed species of everlasting was observed and several populations of San Fernando Valley spineflower have been documented near the disturbance boundary of the borrow site south of the Santa Clara River. Impacts to these species are discussed below.

(i) Special-Status Plants within the SMA/SEA 23

While the undescribed species of **everlasting** that was observed on the project site currently has no sensitivity status, because of its apparent rarity, it is expected to be assigned a sensitivity status by CNPS or state/federal resource agencies in the future. The County has been informed of the presence of this undescribed species on the Newhall Ranch Specific Plan area and work is being conducted by UC Riverside herbarium staff to describe this species and to learn more about its distribution in California. This species has been collected relatively few times and most collections are old. Of the 14 collections, eight date from 1901 to 1987 and six more recent collections date from 1994 to 2003. Many are from somewhat vague localities, such as "San Fernando Valley" and "Pasadena," but are in areas that have now been substantially urbanized. Modern collections, outside of the Newhall Ranch Specific Plan area, have

come mostly from the Santa Ana Mountains region and especially Temescal Wash, in western Riverside County with several collections from adjacent San Diego County.

As previously discussed, two populations of this undescribed species were observed on the project site (within the Santa Clara River and Castaic Creek) during surveys conducted in 2003 and 2004. One of these populations was documented as partially occurring within the proposed utility corridor (to the east of the tract map site) while the other population was documented within the proposed haul route across the Santa Clara River. On May 27, 2005, Dudek & Associates surveyed the project site to evaluate the current condition of these populations of everlasting. No populations of everlasting were observed on or near the project footprint during these surveys. The large storm events of 2005 and associated large flows within Castaic Creek and the Santa Clara River resulted in extensive scouring and the removal of the terraces and benches on which the plants previously occurred. As several feet of channel bottom was washed away, the existing seedbank within these locations was also presumably washed downstream. On June 7, 2005, Dudek & Associates and County biologists observed many everlasting plants and seedlings within Castaic Creek north of SR-126 and five everlasting seedlings on a bench within Castaic Creek, south of SR-126, outside of the project footprint but within the project study area. Based on current conditions, the proposed project would not result in the loss of any extant populations of this undescribed species of everlasting. However, given the potential of seeds from plant populations upstream of the project site to be washed onto the site, there is potential that this species could occur within the project boundaries in the future. Should this occur, the loss of individual plants of this undescribed species would be considered a potentially significant impact. Implementation of proposed Mitigation Measure 4.6-100 would reduce impacts to below a level of significance. Impacts to this species were not previously analyzed as part of the Newhall Ranch Program EIR and Additional Analysis because the plant was identified after that environmental documentation was certified.

(ii) Special-Status Plants Outside of the SMA/SEA 23

Slender mariposa lily has no state or federal status, but is a CNPS List 1B plant. Los Angeles County considers it a "species of special concern" as this species appears to be endemic to Los Angeles County and is threatened by urban development. The proposed project would result in the loss of an estimated 887 individual above-ground plants, representing an unknown percentage of the total population (including seed banks) present at that location (see, **Figure 14**). Given the sensitivity of this species, and that Los Angeles County considers it a "species of special concern," impacts to this species would be significant. Implementation of proposed Mitigation Measure 4.6-99 (see **Section 13.2** below) would reduce impacts to this species to below a level of significance. The finding that impacts to this species can

8. **Page 92, third paragraph: include a statement that impacts to 887 individual slender mariposa lilies is likely to be an underestimate.**

   The Draft Biota Report (page 96) has been revised to state; "The proposed project would result in the loss of an estimated 887 individual above ground plants, representing an unknown percentage of the total population (including seed banks) present at that location.

be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR and Additional Analysis.

Peirson's morning-glory has no state or federal status, but is a CNPS List 4 plant. This species has been documented on the project site within the off-site grading sites (FLx 2002). The proposed project would result in the loss of Peirson's morning-glory from these locations. While never abundant, Peirson's morning-glory occurs throughout the Newhall Ranch Specific Plan area on virtually all ridges and slopes (Dudek & Associates 2004). Because of the common occurrence of Peirson's morning-glory within the Newhall Ranch Specific Plan area, and because CNPS List 4 plants are not considered Rare from a statewide perspective, are not defined as Rare, Threatened or Endangered pursuant to the California Endangered Species Act, are not eligible for state listing as Threatened or Endangered, and the vulnerability or susceptibility to threats on a statewide basis are considered low at this time (CNPS 2004), the loss of Peirson's morning-glory would not be considered a substantial adverse effect on a special-status species, nor would it be expected to reduce regional populations of the species to below self-sustaining numbers. Therefore, impacts to Peirson's morning-glory would be less than significant. This finding is consistent with the findings of the Newhall Ranch Program EIR and Additional Analysis, which found that impacts to this species would not be significant assuming implementation of Mitigation Measures 4.6-27, 4.6-34, 4.6-35 and 4.6-53.

Southern California black walnut has no state or federal status, but is a CNPS List 4 plant. The proposed project would result in the removal of 10 black walnut trees. CNPS List 4 plants are not considered Rare from a statewide perspective, are not defined as Rare, Threatened or Endangered pursuant to the California Endangered Species Act, are not eligible for state listing as Threatened or Endangered, and the vulnerability or susceptibility to threats on a statewide basis are considered low at this time (CDFG 2000). Implementation of RMP Measure 4.6-48 would reduce impacts to this species to below a level of significance. This finding is consistent with the findings of the Newhall Ranch Program EIR.

No populations of **San Fernando Valley spineflower** occur within the project boundaries or within 100 feet of the project site's disturbance boundaries. Therefore, no direct impacts to this species would occur. One population occurs at a location surrounded by the borrow site (but that maintains an approximately 100-foot buffer from areas that would be disturbed). Another population occurs to the west of the borrow site's disturbance boundary but also maintains a minimum 100-foot buffer from areas that would be disturbed. Additionally, a population of this species was identified in proximity to the northern project site boundary (north of SR 126, west of the access road to the Valencia Commerce Center business park) during surveys conducted in 2002; this population has not been observed during subsequent surveys

conducted in 2003, 2004, and 2005.[8] Given the proximity of populations to areas that would be disturbed, without the incorporation of avoidance measures, these populations of San Fernando Valley spineflower could be indirectly impacted by construction-related activities. Consistent with the requirements of the RMP (4.6-68), these areas would be fenced with temporary orange fencing during grading/construction to ensure that no disturbance will take place within this buffer. As also required by the RMP (4.6-67), the buffer area would be revegetated with a native seed mix to prevent erosion and reduce the potential of invasive plants from encroaching on the preserved spineflower populations. The grading concept considered the effects of indirect impacts associated with altered hydrologic patterns. Manufactured slopes surrounding the plant population have been contoured to direct storm water runoff away from the plants. Since the population occurs at a high point, the amount and location of runoff received by these populations would not be affected in the post developed condition. The proposed grading concept, proposed buffers, and implementation of the above RMP measures, would reduce the potential for significant indirect impacts to San Fernando Valley spineflower.

11.2.7 Bio-7, Protected Oaks and Live Oak Woodland

As previously discussed (**Section 9.1.3, Oaks**), CLATO protects any species in the genus *Quercus* that are at least 8 inches in diameter or has a combined trunk circumference of any two trunks of at least 38 inches (12 inches in diameter), as measured 4.5 feet above the mean natural grade. A heritage oak, as defined by CLATO, is an oak tree that measures 36 inches or more in diameter as measured 4.5 feet above natural ground, or any oak of 36 inches or greater in diameter having a significant historical or cultural importance to the community. CLATO requires that all potential impacts to oak trees be preceded by an application to the County that includes a detailed oak tree report, and that loss of or damage to protected oaks be mitigated at a minimum 2:1 ratio.

Based on the proposed grading plan, 7.82 acres of coast live oak woodland would be removed (this includes ~~approximately~~ 12 "heritage" and 87 non-heritage oak trees). An additional 7 non-heritage oak trees may be subjected to damage (i.e., impacts from operations occurring with the protective zone of the tree). A total of 103 oak trees (of which 9 are considered heritage) occur within 200 feet from the grading limit line and will not be removed or subjected to damage. ~~However, several (approximately 22) oak trees would remain in place and would not be impacted by the Landmark Village project.~~ Given the biological value of oak woodlands, and that the project would result in the removal or impacts to oak trees, the loss of oak woodland and protected oak trees is considered a significant impact under CLATO.

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8 Miller, Sherri. 2005. Senior Project Manager, Dudek & Associates. August 22-Personal Communication.

As also previously discussed, Senate Bill 1334, Kuehl, Oak Woodlands Conservation, contains provisions for counties to mitigate impacts to oak woodlands that would be significant under CEQA. Senate Bill 1334 provides for several mitigation alternatives that can be implemented to mitigate significant impacts on oak woodlands. Among the options are the preservation of oak woodlands under conservation easements and the planting of oak trees to replace those lost or damaged. As discussed in the Newhall Ranch Specific Plan, 2.6 Resource Management Plan, an estimated 13,660 oak trees would be protected within the SMA, particularly in the High Country SMA. Further, as discussed in the Newhall Ranch Specific Plan, 2.6 Resource Management Plan, suitable areas exist in the High Country SMA for the restoration of oak resources and the enhancement of existing stands of preserved oaks (see Newhall Ranch Specific Plan, Exhibit 2.6-9, Potential Oak Tree Restoration Areas). These include areas in the upper elevations of the Santa Susana Mountains that have been disturbed by grazing. Additional opportunities exist within the open area[9] where oak resources can be planted as an expansion of existing oak woodlands or savannahs. Oak trees would be planted in these areas such that a minimum of 7.82 acres of oak woodland would be enhanced. The actual number of trees to be planted would be that number necessary to comply with all mitigation measures stipulated in the Oak Tree Permit issued by the County pursuant to CLATO and CEQA. Given preservation of an estimated 13,600 oak trees within the SMA, the opportunities in the High Country SMA for the restoration and enhancement of a minimum of 7.82 acres of oak woodland, compliance with the permit conditions and implementation of Specific Plan RMP Measure 4.6-48, as well as proposed Mitigation Measures 4.6-98 and 4.6-101 (see **Section 13.2** below), impacts to oak trees and oak woodland habitat would be reduced to below a level of significance. These measures would also meet the requirements of Senate Bill 1334. The finding that impacts to protected oaks can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR.

11.2.8 Bio-8, Special-Status Wildlife Species

Certain special-status wildlife species that are known to occur in the project region were eliminated from further consideration in this report because the project site lacks suitable habitat to support the species as a resident or nesting species or because surveys have established that the species is not expected to frequently utilize the project site. As a result, the species are not expected to reside on or substantially utilize the project site. As shown in **Table 9**, these species include the following: San Diego fairy shrimp, Riverside fairy shrimp, San Emigdio blue butterfly, quino checkerspot butterfly, steelhead rainbow trout, California red-legged frog, sharp-shinned hawk, great egret, great blue heron, ferruginous hawk, prairie

9 Open area is a land use designation for those portions of the Specific Plan area outside of the SMAs and between development planning areas.

falcon, least bittern, bank swallow, spotted bat, southern grasshopper mouse and Los Angeles pocket mouse.

As noted in **Table 7**, above, the following special-status wildlife species were observed during the course of various field surveys conducted on or adjacent to the project site: Santa Ana sucker, unarmored threespine stickleback, arroyo chub, silvery legless lizard, southwestern pond turtle, two-striped garter snake, Cooper's hawk, Southern California rufous-crowned sparrow, Lawrence's goldfinch, northern harrier, yellow warbler, white-tailed kite, California horned lark, yellow-breasted chat, least Bell's vireo, pallid bat and San Diego desert woodrat.

Based on the presence of suitable habitat on the project site, it is reasonable to conclude that certain special-status species could potentially occur on site prior to grading or construction activities associated with project implementation. (**Table 8**, above.) Although not observed during surveys, the following species could occur on the project site: monarch butterfly, arroyo toad, western spadefoot toad, coastal western whiptail, rosy boa, San Bernardino ringneck snake, coast horned lizard, coast patch-nosed snake, tricolored blackbird, Bell's sage sparrow, long-eared owl, western burrowing owl, western yellow-billed cuckoo, southwestern willow flycatcher, merlin, loggerhead shrike, summer tanager, pale big-eared bat, western mastiff bat, mountain lion, San Diego black-tailed jackrabbit, fringed myotis, yuma myotis, and American badger.

(i) Impacts to Species Observed On or Adjacent to the Landmark Village Site

(a) Special-Status Wildlife Species Occurring Within SEA 23

Santa Ana sucker (*Catostomus santaanae*), ***California Species of Special Concern***. This species has been documented in the Santa Clara River and could occur in the portion of the river on and adjacent to the project site. Construction activities associated with the proposed Long Canyon Road Bridge, bridge abutments, and temporary haul routes could result in the loss of individual fish. The location of the proposed bank stabilization features is set back beyond the existing riparian corridor in a majority of the project site and would not interface with the active stream channel. Depending on the number and extent of this species that may be disturbed or removed during construction of the bridge, the loss of Santa Ana sucker would be a significant impact. Implementation of Newhall Ranch Program EIR Mitigation Measure 4.6-57, as well as Mitigation Measures 4.6-81, 4.6-82, 4.6-83, 4.6-84, 4.6-85, and 4.6-86 (which are proposed as part of this Biota Report; see below) would reduce direct impacts to the Santa Ana sucker to below a level of significance. The finding that impacts to Santa Ana sucker can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR.

Unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), ***Federal Endangered, California Endangered, California Fully Protected***. This species has been documented in the Santa Clara River adjacent to the project site. Construction activities associated with the proposed Long Canyon Road Bridge, bridge abutments, and temporary haul routes could result in the loss of individual fish. The location of the proposed bank stabilization features is set back beyond the existing riparian corridor in a majority of the project site and would not interface with the active stream channel. The loss of unarmored threespine stickleback would be a significant impact. Implementation of Newhall Ranch Program EIR Mitigation Measures 4.6-54, 4.6-57, 4.6-59, as well as the proposed Mitigation Measures 4.6-81, 4.6-82, 4.6-83, 4.6-84, 4.6-85 and 4.6-86 would reduce direct impacts to the unarmored threespine stickleback to below a level of significance. The finding that impacts to unarmored threespine stickleback can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR.

Arroyo chub (*Gila orcutti*), ***California Species of Special Concern***. This species has been documented in the Santa Clara River and could occur in the portion of the river adjacent to the project site. Construction activities associated with the proposed Long Canyon Road Bridge, bridge abutments, and temporary haul routes could result in the loss of individual fish. The location of the proposed bank stabilization features is set back beyond the existing riparian corridor in a majority of the project site and would not interface with the active stream channel. Depending on the number and extent of this species that may be

disturbed or removed during construction of the bridge, the loss of arroyo chub would be a significant impact. Implementation of Newhall Ranch Program EIR Mitigation Measures 4.6-57, as well as the proposed Mitigation Measures 4.6-81, 4.6-82, 4.6-83, 4.6-84, 4.6-85 and 4.6-86 would reduce direct impacts to the arroyo chub to a less than significant level. The finding that impacts to arroyo chub can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR.

Silvery legless lizard (*Anniella pulchra pulchra*), ***California Species of Special Concern.*** This species has been observed on the project site in Chiquito Canyon. Because suitable habitat occurs on site in the form of riparian and riverbank habitats within the SMA/SEA 23, as well as scrub, chaparral and oak woodland habitats outside of the SMA/SEA boundary, silvery legless lizard could occur throughout those portions of the site with these habitat types. Construction-related activities could result in the direct loss of individual lizards. Implementation of proposed Mitigation Measure 4.6-89 and 4.6-98 would reduce the magnitude of direct impacts. However, given the amount of potentially occupied habitat to be developed and/or disturbed, direct impacts to this species would still be considered significant. This finding is consistent with the findings of the Newhall Ranch Program EIR that concludes the substantial loss of habitat, and potentially the direct loss of individuals of this species, would be considered an unavoidable significant impact. See **Bio-2, Wildlife Habitat Loss**, for a discussion of project-related impacts to special-status wildlife due to habitat loss.

Coastal western whiptail (*Aspidoscelis tigris stehnegeri*), ***California Special Animal.*** This species has been observed on the project site. Suitable habitat occurs in association with grassland, scrub, riverbank and oak woodland habitats on site. Construction-related activities could result in the direct loss of individual whiptails. Implementation of proposed Mitigation Measures 4.6-89 and 4.6-98 would reduce the magnitude of impacts to the coastal western whiptail. However, given the amount of potentially occupied habitat to be developed and/or disturbed, direct impacts to this species would still be considered significant. This finding is consistent with the findings of the Newhall Ranch Program EIR that concludes the substantial loss of habitat, and potentially the direct loss of individuals of this species, would be considered an unavoidable significant impact. See Bio-2, Wildlife Habitat Loss, for a discussion of project-related impacts to special-status wildlife due to habitat loss. Impacts to this species were not previously analyzed as an individual topic at the program level in the Newhall Ranch Program EIR.

Southwestern pond turtle (*Clemmys marmorata pallida*), ***California Species of Special Concern.*** This species has been observed in the portion of the Santa Clara River bordering the project site (Compliance Biology 2004), and could also occur within the riparian habitats on and bordering the project site. The removal of riparian vegetation and construction activities associated with the proposed bridge and/or

bank protection could result in the loss of individual pond turtles. Depending on the number and extent of this species that may be disturbed or removed, the loss of pond turtles would be a potentially significant impact. Implementation of proposed Mitigation Measures 4.6-81, 4.6-82, 4.6-83, 4.6-84, 4.6-85, 4.6-89, and 4.6-98 would reduce impacts to the southwestern pond turtle to a less than significant level. The finding that impacts to southwestern pond turtle can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR.

Two-striped garter snake (*Thamnophis hammondii*), ***California Species of Special Concern.*** This species has been documented in the Santa Clara River and could occur within the portion of the river bordering the project site and within the riparian habitats on and bordering the project site. The removal of riparian vegetation and construction activities associated with the proposed bridge and/or bank protection could result in the loss of individual two-striped garter snakes. Depending on the number and extent of this species that may be disturbed or removed, the loss of two-striped garter snake would be a potentially significant impact. Implementation of proposed Mitigation Measures 4.6-81, 4.6-82, 4.6-83, 4.6-84, 4.6-85, 4.6-89, and 4.6-98 would reduce impacts to the two-striped garter snake to a less than significant level. The finding that impacts to two-striped garter snake can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR.

Cooper's hawk (*Accipiter cooperii*), ***California Species of Special Concern.*** The riparian woodland on and bordering the project site provides suitable nesting habitat for this species. Cooper's hawks have been observed nesting on the project site (Guthrie 2004). If present, the proposed removal of riparian vegetation and/or construction-related noise could result in the loss or abandonment of active nests during that year's nesting season. Depending on the number and extent of this species' bird nests of on the site that may be disturbed or removed, the loss of active nests would be a potentially significant impact. Implementation of proposed Mitigation Measure 4.6-88 would reduce impacts to nesting Cooper's hawks to below a level of significance. The finding that impacts to Cooper's hawk can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR.

Lawrence's goldfinch (*Carduelis lawrencei*), ***Federal Bird of Conservation Concern.*** This species has been observed in the riparian and oak woodland habitats on and bordering the project site, which provide suitable nesting habitat for this species (Guthrie 2004). If present, construction-related activities could result in the loss or abandonment of active nests during that year's nesting season. Depending on the number and extent of bird nests on the site that may be disturbed or removed, the loss of active nests would be a potentially significant impact. Implementation of proposed Mitigation Measure 4.6-88 would reduce impacts to nesting Lawrence's goldfinches to below a level of significance. Impacts to this species

were not previously analyzed as an individual topic at the program level in the Newhall Ranch Program EIR.

Northern harrier (*Circus cyaneus*), ***California Species of Special Concern.*** This species has been observed foraging on the project site (Impact Sciences 2004). Suitable nesting habitat occurs in association with the agricultural and grassland habitats on site. Should this species nest on the project site, construction-related activities could result in the loss or abandonment of active nests. Depending on the number and extent of this species' active nests on site that may be disturbed or removed, the loss of active nests would be a potentially significant impact. Implementation of proposed Mitigation Measure 4.6-88 would reduce impacts to nesting northern harriers to a less than significant level. The Newhall Ranch Program EIR concludes that due to the substantial loss of habitat resulting from buildout of the Specific Plan, impacts to northern harrier would be considered a significant unavoidable impact. See **Bio-2, Wildlife Habitat Loss**, for a discussion of project-related impacts to special-status wildlife due to habitat loss.

Yellow warbler (*Dendroica petechia brewsteri*), ***California Species of Special Concern.*** The riparian habitats on and bordering the project site provide suitable nesting habitat for this species, which has been observed on the project site (Guthrie 2004). If present, the proposed removal of riparian vegetation and/or construction-related noise could result in the loss or abandonment of active nests during that year's nesting season. Depending on the number and extent of bird nests on the site that may be disturbed or removed, the loss of active nests would be a potentially significant impact. Implementation of proposed Mitigation Measure 4.6-88 would reduce impacts to nesting yellow warblers to below a level of significance. The finding that impacts to yellow warbler can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR.

White-tailed kite (*Elanus leucurus*), ***California Fully Protected.*** This species has been observed on the project site (Guthrie 2004). The riparian and oak woodland habitats, as well as the eucalyptus trees on the project site provide suitable nesting habitat. If present, construction-related activities could result in the loss or abandonment of active nests during that year's nesting season. Depending on the number and extent of this species' bird nests that may be disturbed or removed, the loss of active nests would be a potentially significant impact. Implementation of proposed Mitigation Measure 4.6-88 would reduce impacts to nesting white-tailed kites to a less than significant level. The Newhall Ranch Program EIR concludes that due to the substantial loss of habitat resulting from buildout of the Specific Plan, impacts to white-tailed kite would be considered unavoidably significant impact. See **Bio-2, Wildlife Habitat Loss**, for a discussion of project-related impacts to special-status wildlife due to habitat loss.

California horned lark (*Eremophila alpestris*), ***California Species of Special Concern.*** This species has been observed foraging on the project site (Impact Sciences 2004). Suitable nesting habitat occurs in association with the agricultural and grassland habitats on site. Should this species nest on the project site, construction-related activities could result in the loss or abandonment of active nests. Depending on the number and extent of active nests on site that may be disturbed or removed, the loss of active nests would be a potentially significant impact. Implementation of proposed Mitigation Measure 4.6-88 would reduce impacts to nesting California horned larks to below a level of significance. Impacts to this species were not addressed by the Newhall Ranch Program EIR due to more recent identification of the species in later surveys.

Yellow-breasted chat (*Icteria virens*), ***California Species of Special Concern.*** The riparian habitats on and bordering the project site provide suitable nesting habitat, which has been observed on the project site (Guthrie 2004). If present, the proposed removal of riparian vegetation and/or construction-related noise could result in the loss or abandonment of active nests during that year's nesting season. Depending on the number and extent of bird nests on the site that may be disturbed or removed, the loss of active nests would be a potentially significant impact. Implementation of proposed Mitigation Measure 4.6-88 would reduce impacts to nesting yellow-breasted chats to a less than significant level. Impacts to this species were not addressed by the Newhall Ranch Program EIR due to more recent identification of the species in later surveys.

Least's Bell's vireo (*Vireo bellii pusillus*), ***Federal Endangered, California Endangered.*** The riparian habitats on and bordering the project site provide suitable nesting habitat. Although no individuals have been observed nesting on the site, this species has been observed nesting a short distance to the east and west of the tract map boundaries (Guthrie 2004). If present, the proposed removal of riparian vegetation and/or construction-related noise could result in the loss or abandonment of active nests during that year's nesting season. Depending on the number and extent of this species' bird nests on site that may be disturbed or removed, the loss of active nests would be a potentially significant impact. Implementation of proposed Mitigation Measure 4.6-88 would reduce impacts to nesting least Bell's vireos to below a level of significance. The finding that impacts to least Bell's vireo can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR.

Pallid bat (*Antrozous pallidus*), ***California Species of Special Concern***. This species was detected on the project site during ANABAT surveys conducted in 2004, and is expected to forage on the project site and bordering areas. The project site lacks the preferred roosting habitat (i.e., rocky outcrops and crevices) of this species and, therefore, this species is not expected to roost on the project site. As the proposed project would not result in the loss of active roosts of this species, no impacts to roosting bats would

occur. The finding that impacts to pallid bat are less than significant is consistent with the findings of the Newhall Ranch Program EIR.

(b) Special-Status Wildlife Species Occurring Outside of the SMA/SEA 23

Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), ***California Species of Special Concern.*** This species is a fairly common resident at the off-site grading sites and could nest at these locations (Guthrie 2004). Construction-related activities could result in the loss or abandonment of active nests during that year's nesting season. Depending on the number and extent of this species' bird nests on the site that may be disturbed or removed, the loss of active nests would be a potentially significant impact. Implementation of proposed Mitigation Measure 4.6-88 would reduce impacts to nesting Southern California rufus-crowned sparrows to a less than significant level. The Newhall Ranch Program EIR concludes that due to the substantial loss of habitat resulting from buildout of the Specific Plan, impacts to Southern California rufous-crowned sparrow would be considered unavoidably significant impact. See **Bio-2, Wildlife Habitat Loss**, for a discussion of project-related impacts to special-status wildlife due to habitat loss.

San Diego desert woodrat (*Neotoma lepida intermedia*), ***California Species of Special Concern***. Desert woodrats were observed on both off-site grading sites during mammal surveys conducted in 2004. In the absence of contrary evidence, it is assumed that the animals observed were the San Diego (*intermedia*) subspecies. Construction-related activities would result in the direct loss of individual woodrats or active woodrat nests (stick houses). Implementation of proposed Mitigation Measure 4.6-89 and 4.6-98 would reduce the magnitude of impacts to the San Diego desert woodrat. However, given the amount of potentially occupied habitat to be developed and/or disturbed, direct impacts to this species would still be considered significant. This finding is consistent with the findings of the Newhall Ranch Program EIR that concludes the substantial loss of habitat, and potentially the direct loss of individuals of this species, would be considered an unavoidable significant impact. See **Bio-2, Wildlife Habitat Loss**, for a discussion of project-related impacts to special-status wildlife due to habitat loss.

(ii) Impacts to Species Potentially Occurring on the Landmark Village Site

(a) Special-Status Wildlife Potentially Occurring Within the SMA/SEA 23

Arroyo toad (*Bufo californicus*), ***Federal Endangered, California Species of Special Concern***. The riparian areas on and adjacent to the project site provide suitable habitat for this species. However, based on the results of protocol surveys, it appears that arroyo toads are not breeding or otherwise utilizing habitats

4. **Maps on pages 334 and 337 of Volume III are not clear and legends/captions are confusing.**

   The "*" symbol on page 334 identifies the location of the May 31st willow flycatcher sighting and is not part of a legend. There were no sightings of willow flycatcher along the Ventura County section of the river in 2004 (Figure 4, page 337). As directed by SEATAC (October, 3, 2005), Volumes II through IV of the Draft Landmark Village Biota Report will not be reprinted.

on or bordering the project site (Compliance Biology 2004). In addition, on April 13, 2005, the USFWS issued a revised critical habitat designation for the arroyo toad. (See 70 Fed.Reg. 19562.) In that Final Rule, effective May 13, 2005, the USFWS deleted the entire Newhall Ranch Specific Plan area from the designated critical habitat for the arroyo toad. However, arroyo toad have been documented in low numbers upstream of the project site, and given the presence of suitable habitat, it is possible that arroyo toad could occupy habitats on or adjacent to the project site prior to the commencement of construction activities. Should arroyo toad occur, construction-related activities could result in the loss of individual toads, which would be a significant impact. Implementation of proposed Mitigation Measures 4.6-81, 4.6-82, 4.6-83, and 4.6-84 would reduce impacts to the arroyo toad to below a level of significance. The finding that impacts to arroyo toad can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR.

Western spadefoot (*Scaphiopus hammondii*), ***California Species of Special Concern.*** This species was not observed on the project site during focused surveys (Compliance Biology 2004). Seasonal backwater areas associated with the drainages on and bordering the site, as well as depressions within existing dirt roads, provide breeding habitat. Given documented occurrences of the species in the project area, and the presence of suitable breeding habitat, western spadefoot could occur on the project site. Depending on the number and extent of western spadefoot on the site that may be disturbed or removed, the loss of this species would be a potentially significant impact. Implementation of proposed Mitigation Measure 4.6-97 would reduce impacts to western spadefoot to a less than significant level. The finding that impacts to western spadefoot can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR.

~~**Coastal western whiptail** (*Aspidoscelis tigris stehnegeri*), ***California Special Animal.*** This species has not been observed on the project site. However, suitable habitat occurs in association with grassland, scrub, riverbank and oak woodland habitats on site, and coastal western whiptail could occur in areas supporting these habitat types. Should this species occur on site, construction-related activities could result in the direct loss of individual whiptails. Implementation of proposed Mitigation Measures 4.6-89 and 4.6-98 would reduce the magnitude of impacts to the coastal western whiptail. However, given the amount of potentially occupied habitat to be developed and/or disturbed, direct impacts to this species would still be considered significant. This finding is consistent with the findings of the Newhall Ranch Program EIR that concludes the substantial loss of habitat, and potentially the direct loss if individuals of this species, would be considered an unavoidable significant impact. See **Bio-2, Wildlife Habitat Loss**, for a discussion of project-related impacts to special status wildlife due to habitat loss. Impacts to this species were not previously analyzed as an individual topic at the program level in the Newhall Ranch Program EIR.~~

Rosy boa (*Charina trivirgata*), ***California Special Animal***._ ~~This species has not been observed on the project site. However,~~ S~~s~~uitable habitat occurs in association with scrub, chaparral, riverbank and oak woodland habitats, and rosy boa is presumed to~~could~~ occur in portions of the site supporting these habitat types. ~~Should this species occur on site, c~~Construction-related activities could result in the direct loss of individual animals. Implementation of proposed Mitigation Measures 4.6-89 and 4.6-98 would reduce the magnitude of impacts to the rosy boa. However, given the amount of potentially occupied habitat to be developed and/or disturbed, direct impacts to this species would still be considered significant. This finding is consistent with the findings of the Newhall Ranch Program EIR that concludes the substantial loss of habitat, and potentially the direct loss o~~i~~f individuals of this species, would be considered an unavoidable significant impact. See **Bio-2, Wildlife Habitat Loss**, for a discussion of project-related impacts to special-status wildlife due to habitat loss.

San Bernardino ringneck snake (*Diadophis punctatus modestus*), ***California Special Animal***. ~~This species has not been observed on the project site. However, s~~Suitable habitat occurs in association with scrub, chaparral, riverbank and oak woodland habitats, and San Bernardino ringneck snake is presumed to~~could~~ occur in portions of the site supporting these habitat types. ~~Should this species occur on site, c~~Construction-related activities could result in the direct loss of individual animals. Implementation of proposed Mitigation Measures 4.6-89 and 4.6-98 would reduce the magnitude of impacts to the San Bernardino ringneck. However, given the amount of potentially occupied habitat to be developed and/or disturbed, direct impacts to this species would still be considered significant. This finding is consistent with the findings of the Newhall Ranch Program EIR that concludes the substantial loss of habitat, and potentially the direct loss o~~i~~f individuals of this species, would be considered an unavoidable significant impact. See **Bio-2, Wildlife Habitat Loss**, for a discussion of project-related impacts to special-status wildlife due to habitat loss.

Coast horned lizard (*Phrynosoma coronatum*), ***California Species of Special Concern.*** ~~This species has not been observed on the project site. However,~~ S~~s~~uitable habitat occurs in association with scrub, chaparral and riverbank habitats on site, and coast horned lizard is presumed to~~could~~ occur in areas supporting these habitat types. ~~Should this species occur on site, c~~Construction-related activities could result in the direct loss of individual horned lizards. Implementation of proposed Mitigation Measures 4.6-89 and 4.6-98 would reduce the magnitude of impacts to the coast horned lizard. However, given the amount of potentially occupied habitat to be developed and/or disturbed, direct impacts to this species would still be considered significant. This finding is consistent with the findings of the Newhall Ranch Program EIR that concludes the substantial loss of habitat, and potentially the direct loss o~~i~~f individuals of this species, would be considered an unavoidable significant impact. See **Bio-2, Wildlife Habitat Loss**, for a discussion of project-related impacts to special-status wildlife due to habitat loss.

10. **Page 102: the May 13, 2005 rule concerning the critical habitat designation for arroyo toad is not final; include details of the management of releases from Castaic Lake and possible consequences in the discussion of western spadefoot toad and other sensitive fish and amphibian species.**

    On April 13, 2005, the USFWS issued the Final Designation of Critical Habitat for the Arroyo Toad (*Bufo Californicus*), Final Rule. As stated in the Draft Biota Report (page 102), this rule deleted the entire Newhall Ranch Specific Plan Area from the designated critical habitat for arroyo toad. No subsequent rules regarding arroyo toad have been issued by the USFWS. However, it should be noted that this rule is the subject of pending litigation.

    Water releases from Castaic Lake are controlled by the United Water Conservation District. Accordingly, the management of water flows to benefit sensitive fish and amphibian species should be discussed with the United Water Conservation District.

5. **Griffin (1999) reports a high level of use by arroyo toads of agricultural fields as aestivation sites. There is good potential for high-value, low-cost aestivation habitat restoration within the project site. Include clearance surveys for arroyo toad within agricultural fields as a mitigation measure.**

   Arroyo toads have been found in agricultural fields (Griffin 1999), but these lands may constitute sinks (areas where mortality rates are higher than reproduction rates) over the long-term due to tilling, pesticide and fertilizer applications, and heavy equipment use (Griffin and Case 2001). However, as there is potential for arroyo toad to occur within agricultural areas on the Landmark Village project site, an additional mitigation measure (4.6-102) has been added requiring clearance surveys for arroyo toad within agricultural fields.

Tricolored blackbird (*Agelaius tricolor*), ***Federal Bird of Conservation Concern, California Species of Special Concern.*** Although the riparian habitats on and bordering the project site provide suitable nesting habitat, no individuals or nesting colonies have been observed on site. However, should this species nest on the site prior to development, construction-related activities could result in the loss or abandonment of active nests during that year's nesting season. Depending on the number and extent of bird nests on the site that may be disturbed or removed, the loss of active nests would be a potentially significant impact. Implementation of proposed Mitigation Measure 4.6-88 would reduce impacts to nesting tricolored blackbirds to a less than significant level.

The Newhall Ranch Program EIR concludes that given the potential to re-locate breeding colonies at new locations is relatively low, impacts to breeding colonies (if present) would remain significant. However, given that no breeding colonies have been documented on or adjacent to the project site during annual bird surveys, and the requirements of proposed Mitigation Measure 4.6-88, impacts to nesting tricolored blackbird (if present) can be reduced to below a level of significance at the project-level.

Long-eared owl (*Asio otus*), ***California Species of Special Concern.*** The riparian and oak woodland habitats on and bordering the project site provide suitable nesting habitat for this species. Should this species occur on the site, construction-related activities could result in the loss or abandonment of active nests during that year's nesting season. Depending on the number and extent of bird nests on site that may be disturbed or removed, the loss of active nests would be a potentially significant impact. Implementation of proposed Mitigation Measure 4.6-88 would reduce impacts to nesting long-eared owls to a less than significant level. Impacts to this species were not addressed by the Newhall Ranch Program EIR.

Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), ***Federal Candidate for Listing, Federal Bird of Conservation Concern, California Species of Special Concern.*** This species has not been observed nesting on the project site; however, one individual, thought to be a migrant, was observed during surveys in the project area (Guthrie 1997). In addition, suitable habitat does occur in association with the riparian habitats on site, and western yellow-billed cuckoo could nest in those areas. Should this species occur on the site, construction-related activities could result in the loss or abandonment of active nests. Depending on the number and extent of active nests on site that may be disturbed or removed, the loss of active nests would be a potentially significant impact. Implementation of proposed Mitigation Measure 4.6-88 would reduce impacts to nesting western yellow-billed cuckoos to a less than significant level. Impacts to this species were not addressed by the Newhall Ranch Program EIR.

Southwestern willow flycatcher (*Empidonax trailii extimus*), ***Federal Endangered.*** This species has not been observed nesting on the project site during annual bird surveys. A single willow flycatcher was observed east of the project site foraging along the Santa Clara River on May 31, 2004 (Guthrie 2004); however, given the timing of this observation and lacking any subsequent evidence of nesting, the observed willow flycatcher cannot be positively identified as belonging to the southwestern category of willow flycatchers (Guthrie 2004). However, suitable nesting habitat does occur in association with the riparian habitats on site, and southwestern willow flycatcher could nest in those areas. Should this species occur on site, construction-related activities could result in the loss or abandonment of active nests. The loss of active nests would be a significant impact. Implementation of proposed Mitigation Measure 4.6-88 would reduce impacts to nesting southwestern willow flycatchers to a less than significant level. The finding that impacts to southwestern willow flycatcher can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR.

Merlin (*Falco columbarius*), ***California Species of Special Concern.*** This species is not known to nest in California, but CDFG considers wintering merlins in California to be of Special Concern. The woodland and open areas on the site provide suitable habitat to support this species as a winter migrant; however, given the mobility of the species, the proposed project is not expected to result in the direct loss of individual merlins. Therefore, direct impacts to this species would be less than significant. Impacts to this species were not addressed by the Newhall Ranch Program EIR.

Summer tanager (*Piranga rubra*), ***California Species of Special Concern.*** This species has not been observed nesting on the project site during annual bird surveys. However, suitable habitat occurs in association with the riparian habitats on the site, and summer tanager could nest in those areas. Should this species occur on site, construction-related activities could result in the loss or abandonment of active nests. Depending on the number and extent of this species' active nests on site that may be disturbed or removed, the loss of active nests would be a potentially significant impact. Implementation of proposed Mitigation Measure 4.6-88 would reduce impacts to nesting summer tanagers to a less than significant level. The finding that impacts to summer tanager can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR.

Pale big-eared bat (*Corynorhinus townsendii pallescens*), ***California Species of Special Concern;*** **western mastiff bat** (*Eumops perotis*), ***California Species of Special Concern*****; fringed myotis** (*Myotis thysanodes*), ***Special Animal*****; yuma myotis** (*Myotis yumanemsis*), ***Special Animal***. These bat species have not been observed on the project site, but given the presence of suitable habitat, these species could roost and/or forage on or adjacent to the site. Should active bat roosts be present, construction related activity could result in the direct loss or abandonment of active roost sites. Implementation of proposed Mitigation

Measure 4.6-90 would reduce impacts to roosting bats to below a level of significance. The finding that impacts to special-status bats can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR.

Mountain lion (*Felis concolor ~~browni~~*), ***California Fully Protected***. The project site could be part of a lion's home range or host transient individuals. However, given the mobility of this species, the proposed project is not expected to result in the direct loss of individual mountains lions. Therefore, direct impacts to this species would be less than significant. See **Bio-2, Wildlife Habitat Loss**, for a discussion of project-related impacts to special-status wildlife due to habitat loss.

(b) Special-Status Wildlife Potentially Occurring Outside the SMA/SEA 23

Monarch butterfly (*Danaus plexippus*). The row of eucalyptus trees on the project site provides potential winter roosting habitat but is considered of limited roosting-value as the trees occur within an agricultural field and are not wind protected. Monarch butterflies have not been observed using these trees as winter roost sites. As overwintering monarch butterflies are not known or expected to substantially utilize the project site, impacts to overwinter monarchs from development of the site would be less than significant. Impacts to this species were not previously addressed by the Newhall Ranch Program EIR.

Coastal California gnatcatcher (*Polioptila californica californica*), ***Federal Threatened, California Species of Special Concern.*** The scrub habitats on and bordering the project site provide suitable nesting habitat. No California gnatcatchers were documented on the project site or greater Newhall Ranch Specific Plan Area during protocol surveys (Guthrie 2004). If present, the proposed removal of scrub vegetation and/or construction-related noise could result in the loss or abandonment of active nests during that year's nesting season. The loss of active California gnatcatcher nests (if the species initiated nesting on the site since the time of the 2004 surveys) would be a significant impact. Implementation of proposed Mitigation Measure 4.6-88 would reduce impacts to nesting California gnatcatcher to below a level of significance. The Newhall Ranch Program EIR did not address impacts to this species given its low potential to occur.

Coast patch-nosed snake (*Salvadora hexalepis virgultea*), ***California Species of Special Concern***. ~~This species has not been observed on the project site. However, suitable habitat occurs in association with~~ This species is presumed to occur within the scrub habitats on the project site~~, which could support this species. Should this species occur on the site, c~~ Construction-related activities could result in the direct loss of individual animals. Implementation of proposed Mitigation Measures 4.6-89 and 4.6-98 would

reduce the magnitude of impacts to the coast patch-nosed snake. However, given the amount of potentially occupied habitat to be developed and/or disturbed, direct impacts to this species would still be considered significant. This finding is consistent with the findings of the Newhall Ranch Program EIR that concludes the substantial loss of habitat, and potentially the direct loss of individuals of this species, would be considered an unavoidable significant impact. See **Bio-2, Wildlife Habitat Loss**, for a discussion of project-related impacts to special-status wildlife due to habitat loss.

Bell's sage sparrow (*Amphispiza belli belli*), ***Federal Bird of Conservation Concern, California Species of Special Concern.*** The scrub habitats on the off-site grading sites provide suitable nesting habitat for this species. Should this species occur on the site, construction-related activities could result in the loss or abandonment of active nests during that year's nesting season. Depending on the number and extent of this species' bird nests that may be disturbed or removed, the loss of active nests would be a potentially significant impact. Implementation of proposed Mitigation Measure 4.6-88 would reduce impacts to nesting Bell's sage sparrows to below a level of significance. The Newhall Ranch Program EIR concludes that due to the substantial loss of habitat, and potentially the direct loss of individuals, resulting from buildout of the Specific Plan, impacts to Bell's sage sparrow would be considered unavoidably significant impact. See **Bio-2, Wildlife Habitat Loss**, for a discussion of project-related impacts to special-status wildlife due to habitat loss.

Western burrowing owl (*Athene cunicularia*), ***Federal Bird of Conservation Concern, California Species of Special Concern.*** This species has not been observed on the project site. However, suitable nesting habitat (i.e., ground squirrel burrows) occurs on the project site. Should this species occur on the site, construction-related activities could result in the loss or abandonment of active burrows. Depending on the number and extent of active burrows on the site that may be disturbed or removed, the loss of active burrows would be a potentially significant impact. Implementation of proposed Mitigation Measure 4.6-88 would reduce impacts to nesting western burrowing owls to below a level of significance. The Newhall Ranch Program EIR concludes that due to the substantial loss of habitat, and potentially the direct loss of individuals resulting from buildout of the Specific Plan, impacts to western burrowing owl would be considered unavoidably significant impact. See **Bio-2, Wildlife Habitat Loss**, for a discussion of project-related impacts to special-status wildlife due to habitat loss.

Loggerhead shrike (*Lanius ludovicianus*), ***California Species of Special Concern.*** This species has not been observed nesting on the project site during annual bird surveys. However, suitable nesting habitat occurs in association with the grassland and scrub habitats on site, and loggerhead shrike could nest in those areas. Should this species occur on site, construction-related activities could result in the loss or abandonment of active nests. Depending on the number and extent of active nests on the site that may be

disturbed or removed, the loss of active nests would be a potentially significant impact. Implementation of proposed Mitigation Measure 4.6-88 would reduce impacts to nesting loggerhead shrikes to below a level of significance. The finding that impacts to loggerhead shrike can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR.

San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), ***California Species of Special Concern.*** This species has not been observed on the project site. However, suitable habitat occurs on the off-site grading sites in association with the grassland, coastal sage scrub and chaparral vegetation, and San Diego black-tailed jackrabbit could occur in these areas. Should this species occur on site, construction-related activities could result in the direct loss of individual black-tailed jackrabbit. Implementation of proposed Mitigation Measures 4.6-89 and 4.6-98 would reduce the magnitude of impacts to San Diego black tailed jackrabbit. However, given the amount of potentially occupied habitat to be developed and/or disturbed, direct impacts to this species would still be considered significant. This finding is consistent with the findings of the Newhall Ranch Program EIR that concludes the substantial loss of habitat, and potentially the direct loss o~~i~~f individuals of this species, would be considered an unavoidable significant impact. See **Bio-2, Wildlife Habitat Loss**, for a discussion of project-related impacts to special-status wildlife due to habitat loss.

American badger (*Taxidea taxus*), ***California Species of Special Concern.*** This species has not been observed on the project site; however, suitable habitat occurs on the off-site grading sites in association with the grassland and coastal sage scrub plant communities. Should this species occur on the site, construction-related activities could result in the direct loss of individual American badger. Depending on the number and extent of the species on site that may be disturbed or removed, without mitigation, the loss of American badgers would be a potentially significant impact. Implementation of proposed Mitigation Measures 4.6-89 and 4.6-98 would reduce impacts to the American badger to a less than significant level. Impacts to this species were not addressed by the Newhall Ranch Program EIR.

(iii) Impacts to Special-Status Wildlife Species Occurring Downstream of the Project Site within the SMA/SEA 23

The following special-status wildlife species are known to, or could, occur within the Santa Clara River downstream of the Landmark Village project site: **Santa Ana sucker**, **unarmored threespine stickleback**, **arroyo chub**, **southwestern pond turtle** and **two-striped garter snake**. The *Flood Technical Report for the Landmark Village Project* (PACE 2005) found that there would be no significant changes in water flows, velocities, depth, sedimentation or floodplain and channel conditions downstream of the project site as a result of the proposed project. These hydraulic effects were also found to be insufficient to alter the

amount, location and nature of aquatic and riparian habitats in the project area and downstream into Ventura County. The technical analysis further determined that the river would still retain sufficient width to allow natural fluvial processes to continue; consequently the mosaic of habitats in the river that support various sensitive species would be maintained and the population of the species within and immediately adjacent to the river corridor would not be significantly affected. Based on that technical assessment, and the analysis of these species and their habitat described in the PACE 2005 (these conclusions were reached by Entrix based upon the PACE report) report, no significant impacts to downstream populations of these special-status wildlife species are expected to occur.

11.2.9 Bio-9, Sensitive Plant Communities

As discussed in **Section 9.1.2,** four of the plant communities found within the Landmark Village project site are considered sensitive by CDFG: southern willow scrub, southern cottonwood willow riparian forest, valley freshwater marsh, and scalebroom scrub. Impacts to these sensitive plant communities are discussed below.

(i) Southern Willow Scrub

The proposed project would result in the permanent loss of 0.57 acre of southern willow scrub from the project site. An additional 4.62 acres would be temporarily disturbed by bank stabilization and/or haul roads, but would be revegetated following completion of construction. Of the total 5.13 acres of southern willow scrub on the project site, 4.90 acres are within the boundaries of the SMA/SEA 23 (of which 0.44 acre would be permanently developed and 4.46 acres would be temporarily disturbed). Given the biological value of this habitat, and because this plant community is considered sensitive and is under the jurisdiction of the CDFG, the loss of southern willow scrub would be a significant impact. Implementation of RMP Mitigation Measures 4.6-1 through 4.6-26, Newhall Ranch Program EIR Mitigation Measures 4.6-55 and 4.6-63, as well as proposed Mitigation Measure 4.6-87 would reduce impacts to this plant community to below a level of significance. The finding that impacts to southern willow scrub can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR.

(ii) Southern Cottonwood-Willow Riparian Forest

The proposed project would result in the permanent loss of 8.53 acres of southern cottonwood willow riparian forest from the project site. An additional 10.08~~9~~ acres would be temporarily disturbed by bank stabilization and/or haul roads, but would be revegetated following completion of construction. Of the total 18.61 acres of southern cottonwood willow riparian forest on the project site, 13.02 acres are within

9. **Page 98 and 99: mitigation is needed for losses of general habitat values beyond nesting resources to sensitive birds, and "Bio-2, Wildlife Habitat Loss" will apply to all of the bird species.**

   The Draft Biota Report, **Bio-8: Special-Status Wildlife Species**, addresses the direct loss of special-status wildlife species (including active nests of special-status bird species), while **Bio-2: Wildlife Habitat Loss**, addresses impacts on common and special-status wildlife (including birds) associated with the loss of wildlife habitat. As discussed in **Bio-2**, the loss of wildlife habitat would adversely affect numerous common and special-status wildlife species (associated with upland habitats). The Specific Plan establishes regulations and standards for the protection of open space areas (including the River Corridor and High County SMAs) totaling 6,170 acres. Despite preservation of this large area of open space, there would still be a permanent net loss of 867.72 acres of currently undeveloped land. As there are no feasible mitigation measures that could replace the net loss of this habitat, the Draft Biota Report identifies the loss of wildlife habitat as a significant unavoidable impact.

Minutes - August 1, 2005

16. **Increased base flow in the Santa Clara River must be avoided to maintain dry conditions down stream; reclaim water may be sequestered during the dry season and released later in the year. Address impacts of potential flow increases in the Santa Clara River.**

    As discussed in the Draft Biota Report (page 1113), the *Flood Technical Report for the Landmark Village Project* prepared by Pace (April 2005) found that there would be no significant changes in water flows, velocities, depth, sedimentation or floodplain and channel conditions downstream of the project site as a result of the proposed project. These hydraulic effects were also found to be insufficient to alter the amount, location and nature of aquatic and riparian habitats in the project area and downstream into Ventura County. The technical analysis further determined that the river would still retain sufficient width to allow natural fluvial processes to continue; consequently the mosaic of habitats in the river that support various sensitive species would be maintained and the population of the species within and immediately adjacent to the river corridor would not be significantly affected.

    Furthermore, the Draft EIR, Section 5.2, Flood, page 5.0-23, states that no significant flood-related impacts would occur as a result of the WRP. The Specific Plan is designed to use a large amount, if not all, of the effluent treated at the plant for irrigation of the project site (near-zero discharge). Increases in river flow resulting from discharges from the WRP would be very small in wet winter months (if at all) when flow in the River is already high. The WRP would theoretically have its greatest influence on the River and the species present there during the dry months. However, the Draft EIR states that during dry months or years, demand for the treated effluent would be high on the project site and, therefore, no discharge from the WRP to the River is expected. Consequently, the proposed project would not create a continuous flow of water to the confluence of Piru Creek, and the proposed project would not significantly change the flow characteristics of the River; therefore, the sensitive habitats and species in the River would not be impacted.

Minutes – October 3, 2005

2. **Water quality and hydrology, including intermittency of flows, in the river and tributaries must be maintained to ensure long-term sustainability of biological resources.**

    Please see the response to Comment 16 from the August 1, 2005 Minutes.

the boundaries of the SMA/SEA 23 (of which 2.94 acres would be permanently developed and 10.09 acres would be temporarily disturbed). Given the biological value of this riparian habitat, and because this plant community is considered sensitive and is under the jurisdiction of the CDFG, the loss of southern cottonwood willow riparian forest would be a significant impact. Implementation of RMP Mitigation Measures 4.6-1 through 4.6-26, Newhall Ranch Program EIR Mitigation Measures 4.6-55 and 4.6-63, as well as proposed Mitigation Measure 4.6-87 would reduce impacts to this plant community to below a level of significance. The finding that impacts to southern cottonwood willow riparian forest can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR.

(iii) Valley Freshwater Marsh

The proposed project would result in the loss of 0.12 acre of valley freshwater marsh from the project site. An additional 0.91 acre would be temporarily disturbed by bank stabilization and/or haul roads, but would be revegetated following completion of construction. Of the total 1.03 acre of valley freshwater marsh on the project site, 0.98 acre is within the boundaries of the SMA/SEA 23 (of which 0.07 acre would be permanently developed and 0.91 acre would be temporarily disturbed). Given the biological value of this plant community, and because this plant community is considered sensitive and is under the jurisdiction of the CDFG, the loss of valley freshwater marsh is considered to be a significant impact. Implementation of RMP Mitigation Measures 4.6-1 through 4.6-26, as well as the Newhall Ranch Program EIR Mitigation Measure 4.6-63 would, however, reduce impacts to this plant community to a less than significant level. The finding that impacts to valley freshwater marsh can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR.

(iv) Scalebroom Scrub

The proposed project would result in the loss of 5.69 acres of scalebrome from the project site. An additional 3.13~~4~~ acres of scalebrome scrub would be temporarily disturbed. All of this area is outside of the boundaries of the SMA/SEA 23. Given the biological value of this riparian plant community, and because this plant community is considered sensitive and is under the jurisdiction of the CDFG, the loss of scalebroom scrub is considered to be a significant impact. Implementation of RMP Mitigation Measures 4.6-1 through 4.6-26, Newhall Ranch Program EIR Mitigation Measures 4.6-55 and 4.6-63, as well as proposed Mitigation Measure 4.6-87 would reduce impacts to this plant community to below a level of significance. The finding that impacts to riparian plant communities can be mitigated to below a level of significance is consistent with the findings of the Newhall Ranch Program EIR.

11.2.10 Bio-10, Jurisdictional Resources

The proposed project would result in the permanent fill of 6.26 acres and the temporary disturbance of an additional 10.77 acres of drainages under the jurisdiction of the ACOE (**Figure 17, Impacted Jurisdictional Resources**). Areas to be permanently filled include 1.85 acres of agricultural drains, 2.66 acres within Chiquito Creek, 0.62 acre of seasonal tributaries to Chiquito Creek, 0.55 acre within the Santa Clara River, and 0.58 acre of tributaries to the Santa Clara River. Temporary impacts (resulting from haul routes, utility corridor, and bank stabilization) would occur to 1.47 acres of Chiquito Canyon Creek, 0.23 acre of an agricultural drain, 4.74 acres of the Santa Clara River, 0.49 acre of tributaries to the Santa Clara River, and approximately 3.84 acres of Castaic Creek (Castaic Creek was not delineated in the field; the approximate acreage was estimated using Geographic Information Systems [GIS]).

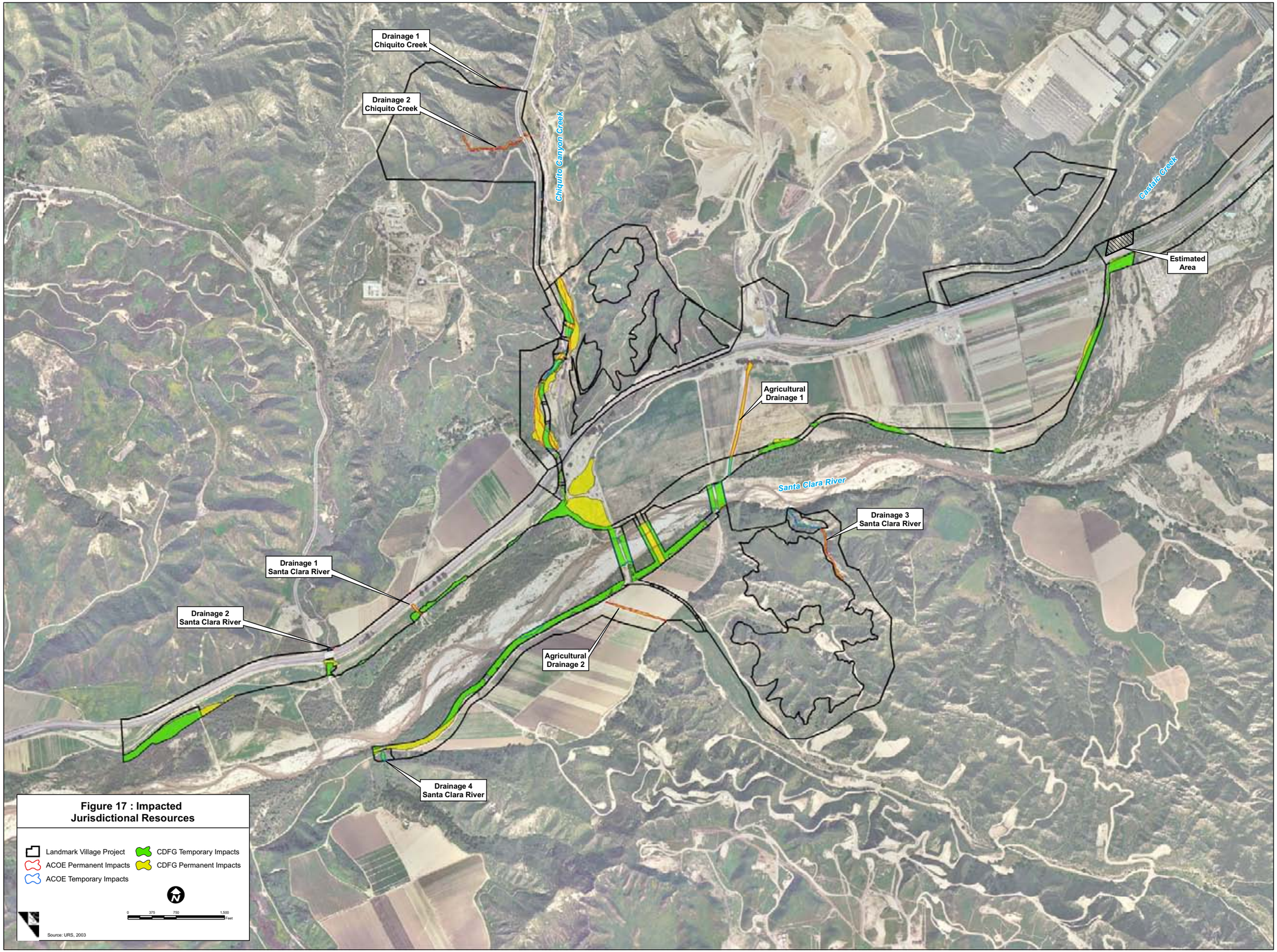

Figure 17 : Impacted Jurisdictional Resources

These areas, as well as 43.82 acres of associated riparian vegetation to be disturbed (**Bio-1** and **Bio-9**), are also under the jurisdiction of CDFG. The fill/removal of these jurisdictional resources would be a significant impact. Implementation of RMP Mitigation Measures 4.6-1 through 4.6-26, Newhall Ranch Program EIR Mitigation Measures 4.6-55 and 4.6-63, as well as proposed Mitigation Measure 4.6-87 would reduce impacts to jurisdictional resources to below a level of significance. The finding that impacts to jurisdictional resources can be reduced to below a level of significance with mitigation is consistent with the findings of the Newhall Ranch Program EIR. As previously described in **Sections 9.3.1** and **9.3.2**, the Landmark Village applicant is seeking approval of a Master 404 Permit from the ACOE and a Master 1600 Agreement from the CDFG for the Newhall Ranch Specific Plan area, including the Landmark Village site. The environmental document is in process at this time and a draft of the EIR/EIS is expected to be released for public review late 2005.

11.3 INDIRECT IMPACTS

Indirect impacts to biological resources would occur in those habitat areas surrounding the development envelope, as well as in remaining habitat areas within the proposed development area, both during and after the completion of the proposed project. Indirect impacts on biological resources as a result of project development on the site can include the following: (1) increased lighting and glare effects on wildlife species in remaining and adjacent open space areas; (2) a potential increase in pesticides, herbicides and pollutants into adjacent drainages, creeks, rivers and wetlands, as a result of landscaping irrigation and stormwater runoff; (3) an increase in non-native plant and wildlife species that are adapted to more urban environments and can out compete native species for available resources, thus reducing the distribution and population of native species; (4) increased human activity and domestic animal presence that can disturb natural habitat areas and displace wildlife populations; and (5) erosion and dust resulting from construction/grading activities.

Indirect impacts associated with the proposed project are not quantifiable, but are reasonably foreseeable. As such, the following discussion identifies expected types of secondary impacts and their relative magnitude, such that decision makers and the general public are aware of the indirect impact potential associated with implementation of the proposed project. This type of analysis is consistent with the requirements of CEQA.

11.3.1 Bio-11, Increased Light and Glare into the SMA/SEA 23

The development of a residential community would increase the number of nighttime light and glare sources on the site over current levels, which are very low to non-existent. Nighttime lighting can disturb

resting and foraging behavior and can potentially alter breeding cycles and nesting behavior. If uncontrolled, such light where proximal to riparian areas associated with the Santa Clara River and Castaic Creek could adversely impact the composition and behavior of the animal species that occur in these areas. Because of the potential disruption to breeding, movement, and foraging behavior of wildlife species, without mitigation, increased nighttime lighting and glare associated with the proposed project is a significant impact. Implementation of Newhall Ranch Program EIR Mitigation Measure 4.6-56 would reduce potential impacts resulting from increased light and glare to below a level of significance.

11.3.2 Bio-12, Landscaping Irrigation and Stormwater Runoff into the SMA/SEA 23

Over-irrigation of landscaped areas, especially when combined with the use of chemicals, could lead to runoff that contains pesticides, herbicides, nitrates and other contaminants. Any runoff that flows into the river corridor containing high levels of nutrients, particularly fertilizers and waste products such as nitrogen and phosphorous, could result in eutrophication (excessive nutrient buildup). This, in turn, could result in a depletion of available oxygen due to increased biological oxygen demand (BOD) and reduce available dissolved oxygen for aquatic organisms. Other chemicals, pesticides and herbicides could also adversely affect aquatic systems. In addition, paved surfaces would contribute runoff into the river corridor during storm events. Depending on the magnitude and frequency of storm events and the overall level of water quality, this runoff could cause increased eutrophication, depleted oxygen levels, long-term build-up of toxic compounds and heavy metals and other adverse effects to biological resources associated with aquatic systems.

Project Design Features (PDFs) incorporated into the project to address water quality and hydrologic impacts include site design, source control, treatment control, and hydromodification control Best Management Practices (BMPs). Stormwater runoff from all urban areas within the proposed project will be routed to bioretention areas, vegetated swales and/or extended detention basin treatment control BMPs.

The effectiveness of these proposed measures to maintain water quality in the Santa Clara River was analyzed by GeoSyntec Consultants.[10] The following summarizes the efficacy of these PDFs in reducing impacts on surface water quality.

Nutrients (Phosphorus and Nitrogen (Nitrate+Nitrite-N and Ammonia-N): MS4 Permit, General Construction Permit, Dewatering General Permit, and Standard Urban Stormwater Mitigation Plan

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10 GeoSyntec Consultants. April 2005. *Landmark Village Water Quality Technical Report*. (**Appendix E**)

(SUSMP)-compliant BMPs will be incorporated into the project to address nutrients in both the construction phase and post-development. Nitrate-nitrogen plus nitrite-nitrogen concentrations and loads are predicted to decrease in the post-developed condition. Total phosphorus concentration is predicted to be below the minimum observed value in the Santa Clara River. Nitrate-N plus nitrite-N and ammonia-N concentrations are predicted to be well below LA Basin Plan objectives and below or in the low range of observed values in the Santa Clara River Reach 7_E. The predicted nutrient concentrations are not expected to cause increased algae growth. On this basis, the impact of the project on nutrients is considered less than significant.

Trace Metals: MS4 Permit, General Construction Permit, General Dewatering Permit, and SUSMP-compliant BMPs will be incorporated into the project to address trace metals in both the construction phase and post-development. The mean loads of dissolved copper and dissolved zinc are predicted to increase with project development, while all trace metal concentrations and the mean load of total lead are predicted to decrease. Mean concentrations of dissolved copper, total lead, and dissolved zinc are below benchmark Basin Plan objectives and California Toxics Rule criteria. Cadmium is not expected to be present in runoff discharges from the project. On this basis, the impact of the project on trace metals is considered less than significant.

Pesticides: Pesticides in runoff may or may not increase with development as a result of landscape applications. Proposed pesticide management practices including source control, removal with sediments in infiltration basins, and advanced irrigation controls in compliance with the requirements of the MS4 Permit and the SUSMP will minimize the presence of pesticides in runoff. Final site stabilization will limit mobility of legacy pesticides that may be present in pre-development conditions. On this basis, the impact of pesticides is considered less than significant.

Pathogens: Pathogen sources include both natural and anthropogenic sources. The natural sources include bird and mammal excrement. Anthropogenic sources include leaking septic and sewer systems and pet wastes. A reduction in open space within the project area will reduce the bacteria produced by wildlife. The project will not include septic systems and the sewer system will be designed to current standards, which minimizes the potential for leaks. Thus pet wastes are the primary source of concern. The PDFs will include source controls and treatment controls, which in combination should help to reduce pathogen indicator levels in stormwater runoff. On this basis, the projects impact on pathogen and pathogen indicators is considered less than significant.

Hydrocarbons: Hydrocarbon concentrations will likely increase with development because of vehicular emissions and leaks. In stormwater runoff hydrocarbons are often associated with soot particles that can

combine with other solids in the runoff. Such materials are subject to treatment in the proposed infiltration basins and vegetated swales. Source control BMPs incorporated in compliance with the MS4 Permit, the General Construction Permit, and the SUSMP will also minimize the presence of hydrocarbons in runoff. On this basis, the impact of the project on hydrocarbons is considered less than significant.

Chloride: MS4 Permit, General Construction Permit, Dewatering General Permit, and SUSMP-compliant BMPs will be incorporated into the project to address chloride in both the construction phase and post-development. The mean concentration and load of chloride is predicted to decrease with development, the predicted concentration is well below the LA Basin Plan objective and is near the low range of observed values in the Santa Clara River Reach 7_E. On this basis, the impact of the project on chloride is considered less than significant.

Methylene Blue Activated Substances (MBAS)*:* The presence of soap in runoff from the project will be controlled through the source control PDFs, including a public education program on residential and charity car washing. Other sources of MBAS, such as cross connections between sanitary and storm sewers, are unlikely given modern sanitary sewer installation methods and inspection and maintenance practices. Therefore, MBAS are not expected to significantly impact the receiving waters of the proposed project.

Bioaccumulation: In the literature, the primary pollutants that are of concern with regard to bioaccumulation are mercury and selenium. Selenium and mercury will not be introduced by the project and are not naturally present at levels of concern in Santa Clara River watershed (GeoSyntec 2005). ~~However, selenium and mercury are not of concern in this watershed, so bioaccumulation of selenium and mercury is also not expected.~~ On this basis, the potential for bioaccumulation in the project PDFs or in the Santa Clara River and adverse effects on waterfowl and other species is considered less than significant.

11.3.3 Bio-13, Increase in Populations of Non-Native Plant and Wildlife Species

After project completion, a number of non-native plant species that are more adapted to urban environments could increase in population and potentially displace native species within the riparian corridor because of the ability of non-natives to compete more effectively for resources. It is unknown to what degree non-native plant species will displace native species in adjacent habitat areas. However, because non-native and exotic plants are commonly included in landscaping plans of both common areas

11. **Page 113 – 115: provide details of sampling methodology for water quality monitoring; explain why selenium and mercury are not of concern in the Santa Clara River watershed.**

    A detailed discussion of the sampling methodologies for water quality monitoring is provided in the Draft Biota Report, Volume II, Appendix E, GeoSyntec- The Landmark Village Water Quality Technical Report.

    The water quality analysis conducted by GeoSyntec focused on trace metals and pollutants associated with project-related activities. The primary sources of trace metals in stormwater are typically commercially available metals used in transportation (e.g. automobiles), buildings, and infrastructure. Metals are also found in fuels, adhesives, paints, and other coatings. Copper, lead, and zinc are the most prevalent metals typically found in urban runoff. Other trace metals, such as cadmium, chromium, and mercury, are typically not detected in urban runoff or are detected at very low levels (LACDPW, 2000). Selenium and mercury will not be introduced by the project and are not naturally present at levels of concern in Santa Clara River watershed (GeoSyntec 2005).

and private lots of new development projects, it can be reasonably concluded that project development could result in identifiable increases in non-native and/or exotic plant populations.

In particular, these plant species are often more adapted to a wider variety of growing conditions and can out-compete native plant populations for available nutrients, prime growing locations and other resources. Because these plants reproduce so quickly and in such large amounts, these species can quickly replace many native plant populations, resulting in lower species diversity, loss of suitable breeding and/or nesting habitat for common and special-status wildlife species, changes to the riparian ecosystem and overall reductions in habitat values. Therefore, the impact on native biological resources as a result of increased non-native plant species is considered potentially significant. Implementation of proposed Mitigation Measure 4.6-91 would reduce the magnitude of impacts resulting from an increased non-native population to below a level of significance.

Urban development also tends to attract wildlife species that are more typical of, and more adaptable to, urban settings, including house sparrows, European starlings, rock doves, brown-headed cowbirds, American crows, ravens, striped skunks, opossum, red fox, raccoons and Norway rats. An increase in meso-predators (i.e., skunk, opossum, fox) in an area can adversely impact native rodent and bird populations. Additionally, a number of native species are not adapted to urban development and their populations tend to decrease in the vicinity of residential or recreational developments.

Developed areas also attract and encourage non-native Argentine ants. These ants have the potential to negatively impact native ant populations, which serve as secondary pollinators and seed dispersers of many native flower species. Additionally, as coast horned lizard primarily feed on native ants, the reduction of native ant populations due to the introduction of Argentine ants could adversely affect the local coast horned lizard population. As discussed in the Newhall Ranch Program EIR, wildlife species typical of an urban environment currently occur in the area. Accordingly, development of the proposed project would further exacerbate an already adverse condition. Therefore, the impact on native biological resources as a result of increased non-native animal species is considered significant. Implementation of proposed Mitigation Measures 4.6-92, 4.6-93, ~~and~~ 4.6-95, and 4.6-102 would reduce the magnitude of the project's contribution towards an already adverse condition to below a level of significance.

11.3.4 Bio-14, Increased Human and Domestic Animal Presence Within the SMA/SEA 23

The proposed project would increase the number of people living and recreating adjacent to the Santa Clara River. The effect of this increase in human population would be the potential for increased human disturbances to, and ongoing degradation of, adjacent riparian habitats associated with the Santa Clara River. Increased recreation and other human activity along proposed trails and unauthorized entry into

the riparian area could result in increased noise disturbances to wildlife (especially during the breeding season of birds) which can result in nest abandonment; the harassment and/or capture of slower moving species, including certain reptiles and amphibians; the displacement of other wildlife species; an increase in the amount of refuse and pollutants in the area; compaction of soils; and trampling of ground-dwelling flora and fauna.

Increased use of the project site by future residents of Landmark Village would also result in a corresponding increase in use of the area by domestic animals. Dogs can disturb nesting or roosting sites and disrupt the normal foraging activities of wildlife in adjacent habitat areas. Should this activity occur frequently, and over a long time period, these disturbances may have a long-term effect on the behavior of both common and special-status species and can result in their extirpation from the area. Feral cats and house cats can cause substantial damage to the species composition of natural areas, including the populations of special-status species, through predation. Implementation of RMP Mitigation Measures 4.6-17 through 4.6-19 would reduce the magnitude of impacts related to increased human and domestic animal presence. However, consistent with the findings of the Newhall Ranch Program EIR, impacts caused by increased human and domestic animal presence would still be considered significant.

11.3.5 Bio-15, Construction and Grading Activities

Construction and grading activities associated with project implementation that are proposed adjacent to or within the Santa Clara River ecosystem could adversely affect sensitive vegetation and wildlife within portions of the ecosystem not directly affected. These activities can result in the following impacts: (1) siltation and erosion into creek and river drainages that could adversely affect fish spawning and movement; (2) excessive dust accumulation on vegetation that could result in the degradation or loss of some plant species; and (3) soil compaction around remaining trees. These impacts will be minimized through implementation of construction BMPs that will meet or exceed measures required by the General Construction Permit. ~~, as well as BMPs that control the other potential construction-related pollutants (PAHs, metals).~~ A Stormwater Pollution and Prevention Plan (SWPPP) will be developed as required by, and in compliance with, the General Construction Permit and Los Angeles County Standard Conditions. The General Permit requires the SWPPP to include a menu of BMPs to be selected, implemented and maintained based on the phase of construction and weather conditions to effectively control erosion and sediment to the Best Available Technology Economically Achievable and Best Conventional Pollutant Control Technology (BAT/BCT).[11] BMPs to be included in this menu include, among others: slope

[11] BAT/BCT are Clean Water Act technology-based standards that are applicable to construction site stormwater discharges. Federal law specifies factors relating to the assessment of BAT including: age of the equipment and facilities involved; the process employed; the engineering aspects of the application of various types of control techniques; process changes; the cost of achieving effluent reduction; non-water quality environmental impacts (including energy requirements); and other factors as the administrator of the U.S. EPA deems appropriate. Clean Water Act §304(b)(2)(B). Factors relating to the assessment of

12. **Page 116, third paragraph: include a mitigation measure to prohibit irrigation of perimeter landscaping.**

    To discourage invasion by Argentine ants, mitigation measure 4.6-91 has been revised to state, "Irrigation of perimeter landscaping shall be limited to temporary drip irrigation."

stabilization using rock or vegetation, revegetation, hydro-seeding or using tackifiers on exposed areas, installation of energy dissipaters, drop structures, catch basin inlet protection, construction materials management and cover and containment of construction materials and wastes. ~~Erosion control BMPs including, but not limited to, hydro-mulch, erosion control blankets, and energy dissipaters will be implemented to prevent erosion; whereas, sediment controls, including but not limited to silt fence, sedimentation ponds, and secondary containment on stockpiles will be implemented to trap sediment once it has been mobilized.~~ On this basis, the construction-related impacts of the project are considered less than significant.

11.4 CUMULATIVE IMPACTS

11.4.1 Proposed and Reasonably Foreseeable Projects

The Landmark Village project is a component of the Newhall Ranch Specific Plan. The Specific Plan will guide the long-term development of the 11,963-acre Newhall Ranch community, comprising a broad range of residential, mixed-use, and non-residential land uses developed within five village areas. Other, proposed and reasonably foreseeable projects are described below. Where the potential impacts are known, the impacts likely to be associated with these projects are first identified. The potential for these impacts to combine with similar impacts due to the proposed project is also evaluated. This list of projects is not intended to include all projects that are proposed in the project region. Instead, the analysis focuses on those projects that support or would potentially affect similar plant communities, jurisdictional resources, and special-status plant and animal species that occur on the Landmark Village project site. In particular, those projects that are adjacent to or that otherwise may affect resources associated with the Santa Clara River were included.

(i) Valencia Commerce Center

This project consists of a light industrial and commercial development over 1,500 acres on undeveloped farmlands north of the Newhall Ranch Specific Plan site and SR-126, and west of I-5. Castaic Creek traverses the site. This project was approved by the County in 1992 and a considerable portion of the site is now developed. A 404 Permit was issued for this project by the ACOE to line the existing banks with gunite bank protection. Within the project boundaries, Castaic Creek contains dense riparian woodland

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BCT include reasonableness of the relationship between the costs of attaining a reduction in effluent and the effluent reduction benefits derived; comparison of the cost and level of reduction of such pollutants from the discharge from publicly owned treatment works to the cost and level of reduction of such pollutants from a class or category of industrial sources; the age of the equipment and facilities involved; the process employed; the engineering aspects of the application of various types of control techniques; process changes; non-water quality environmental impact (including energy requirements); and other factors as the administrator deems appropriate. Clean Water Act §304(b)(4)(B). The administrator of the U.S. EPA has not issued regulations specifying BAT or BCT for construction site discharges.

and ~~supports the~~ least Bell's vireo has been documented on the site (CNDDB). ~~and arroyo toad.~~ As such, construction of the Valencia Commerce Center and the development projects associated with the proposed Valencia Company 404 Permit could cause the following potentially significant cumulative impacts: (1) loss of riparian habitat from the study area; (2) disturbance of riparian wildlife due to the proximity of urban development; (3) potential degradation of water quality in the Santa Clara River due to urban stormwater runoff; (4) permanent loss of prime farmlands; (5) temporary and permanent disturbance to habitat for the least Bell's vireo; (6) impacts to mariposa lily, everlasting, and San Fernando Valley spineflower; and (7) modification of visual qualities due to urban development, bank protection, and bridges.

(ii) West Creek Project

The proposed West Creek project is located on the west side of San Francisquito Creek, north of Newhall Ranch Road and south of the Copperhill Road Bridge. The proposed project consists of a maximum total of 2,545 residential units, along with a total of 180,000 square feet of neighborhood serving commercial uses, an elementary school and other related development. Circulation will be provided by a series of internal collector roadways that connect to the previously constructed extension of Copper Hill Drive, a public street that represents the primary roadway providing ingress and egress to the site. Private recreational facilities will be provided in the central portion of the project site and a network of hiking/biking trails will extend both throughout the project site and along San Francisquito Creek. Buried bank stabilization has been installed along the west side of San Francisquito Creek and the Decoro Drive Bridge over the creek has been completed. The project site lies partially within SEA 19.

Development of the West Creek project and the other projects along San Francisquito Creek could combine to cause the following potentially significant cumulative impacts: (1) loss of riparian habitat along the margins of the creek; (2) disturbance of riparian wildlife breeding, foraging, and movement due to the proximity of urban development and short-term construction activities; (3) potential degradation of water quality in San Francisquito Creek due to urban stormwater runoff; (4) localized alteration in channel velocities in areas where the existing channel is narrowed; (5) loss of native upland habitats due to land development; (6) permanent loss of prime farmlands; (7) modification of visual qualities due to urban development, bank protection, and bridges; and (8) potential disturbance to habitat for the unarmored threespine stickleback.

13. **Page 117, last paragraph: indicate what BMPs will be used to achieve the mitigation for construction and grading impacts.**

    A SWPPP will be developed as required by, and in compliance with, the General Construction Permit and County of Los Angeles Standard Conditions. Erosion control BMPs are designed to prevent erosion, whereas sediment controls are designed to trap sediment once it has been mobilized. The General Permit requires the SWPPP to include a menu of BMPs to be selected, implemented and maintained based on the phase of construction and weather conditions to effectively control erosion and sediment to the Best Available Technology Economically Achievable and Best Conventional Pollutant Control Technology (BAT/BCT).[2] BMPs to be included in this menu include, among others: slope stabilization using rock or vegetation, re-vegetation, hydro-seeding or using tackifiers on exposed areas, installation of energy dissipaters, drop structures, catch basin inlet protection, construction materials management and cover and containment of construction materials and wastes.

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[2] BAT/BCT are Clean Water Act technology-based standards that are applicable to construction site stormwater discharges. Federal law specifies factors relating to the assessment of BAT including: age of the equipment and facilities involved; the process employed; the engineering aspects of the application of various types of control techniques; process changes; the cost of achieving effluent reduction; non-water quality environmental impacts (including energy requirements); and other factors as the administrator of the U.S. EPA deems appropriate. Clean Water Act §304(b)(2)(B). Factors relating to the assessment of BCT include reasonableness of the relationship between the costs of attaining a reduction in effluent and the effluent reduction benefits derived; comparison of the cost and level of reduction of such pollutants from the discharge from publicly owned treatment works to the cost and level of reduction of such pollutants from a class or category of industrial sources; the age of the equipment and facilities involved; the process employed; the engineering aspects of the application of various types of control techniques; process changes; non-water quality environmental impact (including energy requirements); and other factors as the administrator deems appropriate. Clean Water Act §304(b)(4)(B). The administrator of the U.S. EPA has not issued regulations specifying BAT or BCT for construction site discharges.

15. **Page 119 – 128: the depth of discussions is inconsistent among the projects; provide an equivalent level of detail for each.**

    The level of detail provided for the projects included in the cumulative analysis equates to what is known about the project. Not every project is equally far along in the land development process so there is no way to provide an equal level of details.

14. **Page 118, second paragraph: provide details as to where least Bell's vireo and arroyo toad occur within Castaic Creek.**

    The discussion of the Valencia Commerce Center project (page 125) has been revised to reflect that arroyo toad has not been documented within the portion of Castaic Creek on the project site. Least Bell's vireo has been documented within the riparian woodland (associated with Castaic Creek) on the Valencia Commerce Center project site (CNDDB).

(iii) Entrada

The approximately 820-acre project site is located within unincorporated Los Angeles County in the Santa Clarita Valley. More specifically the project site is located directly west of I-5, both north and south of Magic Mountain Parkway. The project applicant proposes to develop the property with up to 3,300 residential units and 3.1 million square feet of commercial floor area. Approximately 48 percent of the site would be retained as open space. Bank stabilization along a portion of the Santa Clara River would be constructed in conjunction with the project. Construction and development of this project could cause potentially significant cumulative impacts to mariposa lily, everlasting, and San Fernando Valley spineflower, and valley oak savannah.

(iv) Tesoro del Valle (Upper San Francisquito Creek)

The approved project presently under construction is a master planned community of about 2,500 units on a 1,795-acre site on the west side of San Francisquito Creek. When completed, this development would include single- and multi-unit residences, commercial sites, schools, parks, and a fire station. About 1,002 acres of the site would remain in open space, and about 672 acres would remain in a natural undeveloped condition. The project required and received a General Plan Amendment from Los Angeles County, a CUP, and other local approvals. The project requires substantial grading of hills and the removal of upland habitats and numerous oak trees. The project encroaches into San Francisquito Creek at two locations. About 3.5 acres of the creek will be filled for slopes and a bridge crossing. The lower slopes will contain rip-rap bank protection. Runoff from the project will be directed to water quality basins where aquatic vegetation will be maintained to uptake urban stormwater pollutants before the stormwater is discharged into the creek. The project site lies partially within SEA 19.

Development of the Tesoro del Valle and the projects along San Francisquito Creek associated with the approved Valencia Company 404 Permit could combine to cause the following potentially significant cumulative impacts: (1) loss of riparian habitat along the margins of the creek; (2) disturbance of riparian wildlife breeding, foraging, and movement due to the proximity of urban development and short-term construction activities; (3) potential degradation of water quality in San Francisquito Creek due to urban stormwater runoff; (4) localized alteration in channel velocities in areas where the existing channel is narrowed; (5) loss of native upland habitats due to land development; (6) permanent loss of prime farmlands; (7) modification of visual qualities due to urban development, bank protection, and bridges; and (8) potential disturbance to habitat for the unarmored threespine stickleback.

(v) Cross Valley Connector (Newhall Ranch Road including the Newhall Ranch Road/Golden Valley Road Bridge)

This project would involve the extension of Newhall Ranch Road, including the Newhall Ranch Road/Golden Valley Road Bridge. Newhall Ranch Road would be extended by approximately 2 miles to the east of Bouquet Canyon Road including a bridge over the Santa Clara River connecting with Golden Valley Road. The proposed typical section of the alignment would include a six-lane roadway of approximately 120 feet in width, with a 14-foot median island and pedestrian and bicycle lanes. The proposed Golden Valley Road segment would require the construction of a bridge across the Santa Clara River and would traverse undeveloped open space (e.g., vacant lot, natural riverbed, scrub habitat) parallel to an overhead power line corridor. The proposed roadway is included as Major Arterial Highways in the City's General Plan.

(vi) North Valencia Specific Plan No. I (Industrial Park)

While a majority of the North Valencia Specific Plan, located approximately 2 miles east (upstream) of the Newhall Ranch Specific Plan site and adjacent to the north and south side of the Santa Clara River and east and west side of San Francisquito Creek, is already constructed, a relatively small portion remains to be built. The remaining portion of the project would result in the construction of 167,000 square feet of industrial/business park on 7.7 acres. The Business Park designation is intended for industrial type uses per the North Valencia No. I Annexation Specific Plan. These uses will allow general industrial, research and development, limited retail/commercial, warehousing and office use related to these uses. Primary access to the site is through Avenue Tibbitts, Anza Drive, and Avenue Hopkins.

(vii) North Valencia Specific Plan No. II

This approved project, located approximately 2 miles east (upstream) of the Newhall Ranch Specific Plan on the east side of San Francisquito Creek, entailed the annexation of 596.2 acres of land and the entitlement to develop the undeveloped portion of the annexation area (391.2 acres). Approximately 205 acres of this area is already developed with commercial and industrial uses. The remaining portions of the Specific Plan area are presently under development. The project approvals allow the developer to construct 1,900 dwelling units (1,400 single-family detached, 500 multi-family attached), 210,000 square feet of commercial/retail uses, a 15.9-acre community park, 20-acre school site, 4.1 acres of private neighborhood parks, 93.4 acres of natural open space and over 9 miles of trails and paseos. The 596.2-acre project includes approximately 391.2 acres of Specific Plan area and 205 acres of existing industrial and commercial development in the Valencia Industrial Center. The SEA in the project area is the San Francisquito Creek SEA (SEA 19). The General Plan states that, "…[t]his area was designated as an SEA primarily because of the threat of loss of suitable habitat for the unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni)*, a federally and state listed Endangered species."

The project is a diverse and balanced mix of land uses ranging from commercial retail to high density multi-family and low to medium density single-family residential uses. These uses provide land uses which support the local vicinity and region (e.g., new housing would be provided to support existing and new employment opportunities expected to occur in the Santa Clarita Valley); commercial land uses which provide services for new residents; neighborhood parks and a school site to provide local recreational and educational support for new and existing residents. The trail system will serve the recreational needs of both a local and regional area. The creek area on the site is devoted to conservation (approximately 93.4 acres of the 596.2-acre site). This area, termed the San Francisquito Creek Conservation Area, is intended to respond to the City's desire to maintain the creek and SEA as an area devoted to the protection and preservation of important biological resources. Nevertheless, impacts on

riparian resources and the riparian ecosystem and impacts on SEA 19 are considered cumulatively significant. Also, human and domestic animal use of riparian and upland habitat areas is expected to continue to occur as a result of project implementation and, therefore, will remain cumulatively significant.

(viii) Riverpark

The Newhall Land and Farming Company, will develop the Riverpark (Panhandle) project on a 695.4-acre site in the City of Santa Clarita in Los Angeles County. This project was approved by the City of Santa Clarita in May 2005. The project site is located in the central part of the City at the eastern terminus of Newhall Ranch Road, east of Bouquet Canyon Road between the Castaic Lake Water Agency (CLWA) property and Soledad Canyon Road.

The project includes the development of 695.4 acres of land for single- and multi-family uses and commercial uses. The entitlement, as approved by the City, allows the applicant to construct a residential community with 1,089 dwelling units, a maximum of 16,000 square feet of commercial uses, a trail system (Santa Clara River Trail, Newhall Ranch Road and Santa Clarita Parkway Class I trails, and trail connections from the interior planning areas), and a 29-acre active/passive park along the Santa Clara River. The project would also provide for utility easements (electric, water, wastewater, etc.), public street rights-of-way, and roughly 707 acres of City dedicated on and off- site open space area, including significant portions of the Santa Clara River. Buildout of the project necessitates the extension of Newhall Ranch Road, (full grading, four to six lanes) including the Newhall Ranch Road/Golden Valley Road Bridge over the Santa Clara River, to the Golden Valley Road/Soledad Canyon Road flyover. A portion of Newhall Ranch Road is located off site on property owned by CLWA. The project would include the construction of a portion of Santa Clarita Parkway (full grading, four vehicle lanes, Class I trail) from Newhall Ranch Road south for approximately 1,500 feet. The project will not include construction of the Santa Clarita Parkway Bridge over the Santa Clara River or its connection to Soledad Canyon Road.

The project applicant received approval of General Plan Amendment 02-002, Zone Change 02-002, Vesting Tentative Tract Map (VTTM) No. 53425, CUP No. 02-009, Hillside Development Application 02-003 including an Innovative Application, Oak Tree Permit 02-025 and Adjustment No. 02-010. Additional actions, such as grading and building plan review, would be required by the City to permit grading and construction activities on the site.

(ix) Bouquet Canyon Bridge Widening

This project would result in the widening of the Bouquet Canyon Road Bridge over the Santa Clara River to eight lanes, which would add one lane in each direction. The project consists of design and construction of roadway improvements, including the median, the relocation of a 36-inch effluent line on the south side of the bridge, the relocation of three sewer siphons on the east side of the bridge, a bike lane undercrossing on the north end of the bridge and a bike ramp from the bridge to the bike lane undercrossing on the north end of the bridge. Impacts associated with the project include hydrological and biological impacts associated with construction activities.

(x) Whittaker – Bermite (Porta Bella Project)

Specific Plan No. 91-001, proposes a comprehensive plan for development of a 996-acre site with approximately 1,678 single-family homes and 1,560 multi-family units on 399 acres. Approximately 91 acres is planned for commercial and industrial uses, 14 acres for institutional uses, and 58 acres consisting of streets. The remaining 434 acres would be devoted to natural open space and recreational uses. Traffic/transportation, geological, air quality and biological resource impacts could occur with project implementation.

(xi) Synergy Project

This project is proposed in the City of Santa Clarita and is located at terminus of Ermine Road, adjacent to the Riverpark project site. The project site is 208 acres in size and the project would consist of 916 multi-family and 95 single-family dwelling units. Hydrology, transportation/access, biological resources, water quality and air quality are expected to be potentially significant impacts.

(xii) Tick Canyon

This project is proposed to occur at the northern terminus of Shadow Pines Boulevard, outside of the present City limits. It is proposed to consist of 492 single-family units and a 34-acre park site on 500 acres. Traffic/transportation, geological, air quality and biological resource impacts could occur with project implementation. An EIR is presently being prepared for this project.

(xiii) Bee Canyon

The Bee Canyon project is proposed on a 211-acre parcel of land located between the Transit Mix project indicated above and State Route 14 (SR-14), easterly of Soledad Canyon Road. The applicant is requesting 556 single-family modular units, and the project would require the lengthy extension of public utilities. Traffic/transportation, geological, air quality and biological resource impacts could occur with project implementation. An EIR has yet to be completed for this project.

(xiv) Tract 42670

This project consists of a mixed commercial/industrial project to be located along Golden Valley Road in the center of the City of Santa Clarita. The 220-acre site would be developed with up to six million square feet of buildings. This project has been approved by the City and is under construction. Transportation/access and air quality are potential impacts associated with the project.

(xv) Fair Oaks Ranch

The Fair Oaks project (Tentative Tract Map No. 52833) involves the construction of 1,033 residential units on 602 acres just outside the eastern boundary of the City of Santa Clarita. Phase II of the Fair Oaks Ranch development involves the construction of 738 single-family homes, 336 multi-family dwellings, 153 luxury apartments, a 6-acre public park, and dedication of 321 acres of open space just outside the eastern boundary of the City of Santa Clarita. Traffic/transportation, air quality and biological resource impacts could occur with project implementation.

(xvi) Santa Clara River Enhancement and Management Plan

In 1994, a multi-agency committee formally initiated the Santa Clara River Enhancement and Management Plan. The committee consists of various parties and "stakeholders" along the river, including federal, state, and local agencies; water districts; farmers; property owners; and environmental organizations. The plan is designed to provide information on the land use, governmental, and resource conflicts along the river and its 500-year floodplain, extending from near Acton to the Pacific Ocean. Plan preparation is directed by a 26-member Project Steering Committee consisting of representatives of the counties, communities, state and federal agencies, property owners, aggregate producers, water agencies and Friends of the Santa Clara River. The Steering Committee began by identifying the river's critical issue areas. Reports were developed by subcommittees covering biology, water resources, flood control, agriculture, aggregate mining, and recreation that provide background information, goals and

recommendations for the river on the various issue areas. A series of computer-based maps covering the entire river were produced, and have been used in a GIS overlay process to identify conflicts and opportunities, and to facilitate decisions regarding uses of the river floodplain. The Steering Committee, in early 1999, approved a set of river-wide and reach-by-reach recommendations which are to be incorporated into the plan. A draft plan was completed in January 2004 and is presently under review.

(xvii) Gate King Project

The applicant is proposing to subdivide a 584-acre site into 60 lots and is requesting General Plan Amendments to change the land use designations in several areas of the site. The site is situated in the southern portion of Santa Clarita, within the community of Newhall, west of SR-14 and Sierra Highway and south of San Fernando Road. The proposal involves amending the land use designation on about 223 acres, or about 38 percent of the site. The proposed changes would eliminate the Residential (RE) and Commercial (CC) designations from the site, and would increase the area designated Industrial Commercial (IC) from 337.5 acres to about 344 acres. The area designated open space (OS) would increase from 93.2 acres to about 240 acres. The project site includes an estimated 10,680 live oaks and an additional 1,041 oaks that are either dead or have experienced severe fire damage. The proposed development would directly remove 1,000 oaks, or about 9 percent of the total number of oaks on site. Oaks to be removed include 696 coast live oaks and 304 scrub oaks. The 696 coast live oaks to be directly removed do not include 64 trees that were previously removed without City oak tree removal permits. In addition to the oaks that would be directly removed by grading, 336 oaks, or about 3 percent of the site total, could be indirectly affected by site grading and development because of their proximity to areas proposed for grading.

(xviii) Transit Mix Soledad Canyon Mine

Transit Mix, Inc. has proposed a new aggregate mine for a hillside at the entrance to Soledad Canyon. The surface mine would encompass about 300 acres on mostly private land. A separate EIR and EIS were prepared by the Bureau of Land Management and Los Angeles County Department of Regional Planning. The project would result in significant impacts to upland habitats.

Use of groundwater at the mine site could affect the amount of surface water at the mouth of Soledad Canyon where a population of the unarmored threespine stickleback is present. A long-term significant impact to this species is not anticipated because the applicant has agreed to a continuous water quality and depth-monitoring program designed to detect and prevent any adverse impacts from groundwater pumping.

(xix) Los Angeles County Sanitation Districts' Facilities Plan

Most wastewater generated within the Santa Clarita Valley is treated at two existing WRPs that are operated by the County Sanitation Districts of Los Angeles County (CSDLAC). These two treatment facilities, the Saugus WRP (District 26) located at 26200 Springbrook Avenue in Saugus, and the Valencia WRP (District 32), located at 28185 The Old Road in Valencia have been interconnected to form a regional treatment system known as the Santa Clarita Valley Joint Sewerage System (SCVJSS). The relationship between the two districts was established through a joint powers agreement that created the regional treatment system and permits the Valencia WRP to accept flows that exceed the capacity of the Saugus WRP. These two facilities provide primary, secondary and tertiary treatment. The SCVJSS has a combined permitted treatment capacity of 19.1 mgd and treated an average of 18.1 mgd.[12] Existing facilities can be expanded to handle a daily capacity of 34.1 mgd, which is sufficient to meet demand up until 2015.[13]

The CSDLAC has prepared a Facilities Plan, with a horizon year of 2015, for the Santa Clarita Valley Joint Sewerage System and a Draft EIR. The Facilities Plan estimates future wastewater generation for the probable future service area of County Sanitation Districts 26 and 32 in order to anticipate future treatment capacity and wastewater conveyance needs. According to CSDLAC estimates, total flows projected from the Santa Clarita Valley in 2015, exclusive of Newhall Ranch, would be 34.1 mgd. This projection is based upon Southern California Association of Governments (SCAG) 96 population projections exclusive of Newhall Ranch. As a result of this finding, CSDLAC proposed to incrementally expand the treatment facilities to meet future needs in two expansions to a total of 34.1 mgd.[14] This two-phase expansion plan, which would increase treatment capacity by approximately 15 mgd, was recently approved. The first phase would expand treatment capacity by approximately 9 mgd, or approximately a 47 percent increase over existing capacity. This expansion, when complete, will meet the expected wastewater treatment demand through 2010. The second phase, would increase treatment capacity an additional 6 mgd.

The proposed facilities plan is not expected to result in any significant impacts beyond localized and temporary impacts due to physical improvements to the systems. Hence, the potential for significant cumulative impacts with the proposed project is considered very low.

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12 Written correspondence from the County Sanitation Districts of Los Angeles County, March 29, 2004.
13 Written correspondence from the County Sanitation Districts of Los Angeles County, October 1, 2002.
14 Ibid.

15. **Provide information on the release characteristics referred to in the discussion of the County Sanitation District Facilities Plan on pages 126 and 127.**

    A request to the County Sanitation District has been made to provide information regarding the release characteristics from upstream treatment plants. This information will be provided upon its receipt.

(xx) Castaic Lake Water Agency Reclaimed Water Master Plan

CLWA has prepared a draft Reclaimed Water Master Plan (1993) as part of their plan to increase the amount and reliability of the overall water supply. In October 2004, CLWA began CEQA analysis of the *Recycled Water Master Plan* (2002). This analysis will result in a Program Environmental Impact Report covering the various options for a recycled water system outlined in the Master Plan. A Notice of Preparation was released for public review in April 2005. The project would use effluent from County Sanitation Districts of Los Angeles' two local wastewater treatment plants (Saugus and Valencia). Treated wastewater would be diverted from discharge to the river and instead, conveyed by pipelines to customers of reclaimed water such as golf courses, landscaped areas, and certain industrial uses. At this time, CLWA has approval from the Regional Board and Sanitation Districts to reclaim up to 1,700 acre-feet per year. The Master Plan indicates that up to 10,000 acre-feet per year may be feasibly reclaimed and used in the study area in the next 10 years.

Diverting effluent from the river could reduce surface flows, groundwater recharge, and habitat for the unarmored threespine stickleback and other sensitive aquatic species. The significance of this impact is unknown pending further environmental studies. However, it is likely that diversion from the river will only offset the past, present, and future increases in imported water use in the region that result in steadily increasing discharges of treated wastewater into the river. Hence, the effects on surface water, groundwater, and aquatic habitat may be negligible. To the extent that this conclusion is supported by future studies, no significant cumulative impact is anticipated with the proposed project.

11.4.2 Cumulative Development Impact Analysis

Development in the region has been cumulatively reducing the amount of open area and extent of sensitive habitats, and has been constricting wildlife movement. This trend has been occurring in the region since the early 1950s. Major open areas that remain undeveloped include the Angeles National Forest and Los Padres National Forest. Several large development projects are proposed for the Los Angeles/Ventura County region, including the Newhall Ranch Specific Plan.

The Newhall Ranch Specific Plan will permanently convert approximately 5,132 acres of land from a largely natural, albeit partially disturbed, habitat condition, to that of a suburban/urban environment and, at the same time, dedicate 6,170 acres (51 percent of the total Specific Plan area) in the Santa Clara River Corridor and the Santa Susana Mountains as open space. That conversion, when added to all the other such conversions of open area that are proposed, will permanently decrease the amount of land available for natural habitats and the flora and fauna that inhabit them. In some cases, specific natural habitats and plant and animal species occur in relative abundance despite the amount of development

that is on the horizon; however, other habitat and species are not as abundant. In these latter cases, incremental development has been contributing to habitat loss.

When viewed individually, it may be possible for each of the projects to mitigate potential project-specific significant impacts through the implementation of habitat replacement programs and the requirements of the regulatory processes to which each of the projects may be subject (e.g., ACOE Section 404 permit process, California Fish and Game Code 1602 permit process, etc.). However, neither implementation of the Newhall Ranch Specific Plan (including the Landmark Village project), nor any other similar large-scale project proposed on the edge of the existing urban environment, can mitigate from a biological perspective the permanent conversion of large blocks of open space area and its associated plant and wildlife habitat. For this reason, the cumulative impacts identified above are considered to be a significant, unavoidable impact.

12.0 PROJECT COMPATIBILITY WITH RIVER CORRIDOR SMA/SEA 23

As stated above, as part of the project approvals for the Newhall Ranch Specific Plan, the Board of Supervisors previously adopted a program-level SEA CUP No. 94-087-(5). SEA CUP No. 94-087-(5) approved: (a) SEA 23 boundary adjustments; and (b) Specific Plan development within the boundaries of the existing SEA 23.

In approving SEA CUP No. 94-087-(5), the Board found that the SEA boundary adjustments were consistent with General Plan policies requiring the protection of natural resources within SEAs. The then existing SEA 23 boundary on the Specific Plan site was approximately 1,298 acres in size. Under the approved Specific Plan, the SEA 23 boundaries were reduced to 975 acres, or a net reduction of 315 acres. Of the 315 net acres, 309 acres of agricultural/disturbed land were removed from the existing boundaries of SEA 23 to allow for development. The Board found that development on agricultural/disturbed land posed no direct impacts to the sensitive biological resources found within SEA 23. The Board also approved removal for development of 1 acre of sensitive riparian habitat from the existing SEA 23 boundary under the Specific Plan. The Board found that redesignating 1 acre of sensitive habitat for development would not affect the County's ability to preserve the existing SEA 23 in a viable and natural condition.[15]

As to Specific Plan development within the boundaries of the existing SEA 23, in approving SEA CUP No. 94-087-(5), the Board of Supervisors has already determined that such development conforms with the General Plan's six SEA "design compatibility criteria." The approved development included three bridge crossings (e.g., Long Canyon Road Bridge), trails, bank stabilization and other improvements.

As part of the Landmark project approvals, a project-level SEA CUP is now required to authorize project-specific development within the boundaries of the adopted River Corridor SMA/SEA 23 in order to implement the Landmark Village project. The project-specific development proposed within the adopted River Corridor SMA/SEA 23 is as follows: (a) Long Canyon Road Bridge; (b) bank stabilization; (c) a portion of the previously approved regional river trail, and a scenic vista path; (d) underground utility corridor; (e) storm drain outfalls and associated energy dissipaters; (f) riparian mitigation sites; and (g) off-site transport of materials associated with grading. While not a part of the Landmark Village project, land will be preserved on the south side of SR-126 through the Specific Plan site and the Landmark

15 See, Findings of the Board of Supervisors and Order, Conditional Use Permit No. 98-087-(5), adopted on May 27, 2003, along with the Newhall Ranch Revised Additional Analysis (SCH No. 1995011015), Volume VIII, May 2003, Section 2.4, SEA General Plan Consistency, pp. 2.4-14–2.4-39.

Village tract map site for potential future use as a train/light rail right of way. Portions of this area are located within the River Corridor SMA/SEA 23 where it crosses Castaic Creek and to the west of the tract map site along SR-126.

Presented below is a description of the six design compatibility criteria, along with a summary of the Specific Plan's conformity with such criteria, as well as Landmark Village's conformity with such criteria at the project-level. Based on this analysis, the project's proposed development within the adopted SMA/SEA 23 is consistent with both the adopted Specific Plan and the approved program-level SEA CUP No. 98-087-(5).

1. That the requested development is designed to be highly compatible with the biotic resources present, including the setting aside of appropriate and sufficient undisturbed areas.

Specific Plan Summary

The County's Board of Supervisors already found that the Specific Plan and SEA CUP No. 94-087-(5) met Design Compatibility Criterion No. 1, above. In summary, the Board found that the Specific Plan is considered highly compatible with the biotic resources present within the boundaries of the SEA 23 for the following reasons:

(a) The Specific Plan set aside appropriate and sufficient undisturbed sensitive habitat areas within the existing boundaries of SEA 23;

(b) The Specific Plan retained SEA 23 in a largely natural state;

(c) Only a relatively small amount of sensitive habitat (i.e., 1 acre, or 0.08 percent of the existing SEA) was redesignated for non-residential land uses;

(d) The impacted areas would be fully mitigated;

(e) The river would still be sufficiently wide (and in certain locations widened) to accommodate the County's Capital Flood and still retain the sensitive riparian vegetation;

(f) Winter storm runoff would still continue to open its own channels through the river vegetation, flowing in a natural, non-invasive manner and preserve the meandering characteristics of the streambed;

(g) The tributary canyons and bluffs on the south side of the river would still be preserved and provide an additional 444 acres (including 415 acres of undisturbed land), which would be dedicated to open space areas adjacent to the river; and

(h) Due to implementation of the Specific Plan, the amount of sensitive riparian habitat found in the existing SEA 23 would increase by approximately 5 acres and an additional 192 acres of additional sensitive habitat areas adjacent to the SEA 23 would be permanently preserved.

The Newhall Ranch Revised Additional Analysis, Volume VIII, May 2003, Section 2.3, Floodplain Modifications, also addressed potential impacts due to channelization and bank hardening. Based on that analysis, the Board of Supervisors found that no significant increases in velocity, erosion or sedimentation would occur in the river; and, therefore, biotic resources present within the existing boundaries of SEA 23 would not be significantly impacted.

Landmark Village Summary

At the project level, the Landmark Village development within the boundaries of the adopted SMA/SEA 23 is designed to be highly compatible with biotic resources present within that corridor, including setting aside an appropriate and sufficient amount of undisturbed area, consistent with the approved Specific Plan. This proposed development includes the approved Long Canyon Road Bridge, with a proposed span of 1,000 LF, and 11 supporting piers within the river corridor. Bridge abutments are approximately 500 LF of river length consisting of reinforced concrete transitioning to soil cement through 50 LF of river length of rip-rap. The project proposes buried soil cement bank protection along the river and Castaic Creek adjacent to and downstream of the project site. In total, approximately 17,700 LF of buried soil cement bank protection would be provided. This would include approximately 10,900 feet fronting the southern and eastern boundary of the tract map site on the north bank of the river and the west bank of Castaic Creek, and approximately 6,800 feet on the southern bank of the river beginning at the Long Canyon Road Bridge and continuing down stream and up stream of the project site (see **Figure 5** for the location of proposed bank stabilization).

The project also proposes to implement a portion of the previously approved Regional River Trail, and a scenic vista path. The trail and vista path are located along the southern boundary of the project site on the northern bank of the river. The project includes a 110-acre utility corridor that runs parallel to SR-126, from the western boundary of the Landmark tract map site to the approved Newhall Ranch WRP, from the eastern boundary of the tract map site to I-5, and then south to the existing Los Angeles County Sanitation District No. 32 WRP. The utility corridor would serve to extend municipal services to the project site. Erosion protection along the utility corridor would be provided by installing approximately 4,700 feet of turf reinforcement mats (TRM) along the southerly side of the utility corridor from the western end of the tract map site to the easterly end of the approved Newhall Ranch WRP. TRMs are designed to reinforce vegetation at the root and stem allowing vegetation to be used as erosion control in areas where flow conditions may exceed the ability of natural vegetation to remain rooted. The project also proposes 11 new storm drain outfalls and associated energy dissipaters. The storm drain outfalls would capture runoff and discharge it to the river after first passing through water quality treatment Best

Management Practices. (See *Landmark Village Water Quality Technical Report*, prepared by GeoSyntec Consultants, 2005.)

To reduce storm flow velocities and prevent erosion at storm water discharge points into the river, energy dissipaters consisting of either rip-rap or other larger reinforced concrete standard impact-type energy dissipaters would be constructed at the 11 storm drain outlets into the river. These energy dissipaters would slow the rate of flow of runoff into the river to prevent erosion of the stream channel. Additional dissipaters would be located at the outlet of Chiquito Creek and Long Canyon Creek.

To facilitate development of the Landmark Village site, an earth-hauling route will be established between the Long Canyon/Adobe Canyon borrow site and the Landmark Village site in order to import the necessary amount of fill material to the site. Crossing the Santa Clara River will be accomplished primarily by widening the existing agricultural river crossings that have been in place for decades. In addition, mitigation of impacts to riparian habitat will occur in the River Corridor SMA/SEA 23. Areas affected temporarily by construction activity and permanently by the installation of the project components described above will be replanted with native vegetation.

The above proposed improvements within the SMA/SEA 23 were contemplated under the approved Specific Plan. The vast majority of the adopted SMA/SEA 23 will be left in a natural state, consistent with the Specific Plan.

2. That the requested development is designed to maintain water bodies, watercourses, and their tributaries in a natural state.

Specific Plan Summary

The County's Board of Supervisors already found that the Specific Plan and SEA CUP No. 94-087-(5) met Design Compatibility Criterion No. 2, above. In summary, the Board found that the Specific Plan has been designed to maintain waterbodies, watercourses, and their tributaries in a natural state. As indicated above, the Board found that no significant increases in velocity, erosion, or sedimentation would occur in the river due to Specific Plan implementation. During most storm events, the velocity and depth of the river would remain unchanged from current conditions, since the course of the river is able to meander without being constrained by bridge abutments or bank protection. It is only in the infrequent, 50- to 100-year event where small increases in depth or velocity would occur at certain locations along the river. In making these findings, the Board relied on the Newhall Ranch Revised Additional Analysis, Volume VIII, May 2003, Section 2.3, Floodplain Modifications, which provided a

detailed analysis of the Specific Plan impacts to the floodplain areas within the site, including the depth and velocity of water flow in the Santa Clara River. Based on that analysis, the Board found that the Specific Plan's projected river flow increases did not significantly affect the water flow in the river.

Landmark Village Summary

As contemplated by the approved Specific Plan, Long Canyon Road Bridge will require the placement of piers and abutments in the river area; however, the effect of each bridge crossing, including Long Canyon Road Bridge, was thoroughly assessed in the Newhall Ranch Revised Additional Analysis, Volume VIII, May 2003, Section 2.3, Floodplain Modifications. The bridge is intended as the primary bridge crossing over the Santa Clara River providing access to the central portions of the Newhall Ranch Specific Plan. The bridge will span approximately 1,000 feet over the Santa Clara River, with a width of approximately 100 feet. Support for the bridge will involve construction of piers within the bed of the Santa Clara River. Each support will be spaced approximately 100 feet apart. Additionally, abutments and bank stabilization would be required on either side of the bridge to protect against erosive forces.

As contemplated by the approved Specific Plan, the Landmark Village development will include bank stabilization, but only where necessary to protect development from erosion, and only after satisfying FEMA and Los Angeles County Department of Public Works requirements. The Specific Plan's Conceptual Backbone Drainage Plan, as implemented by the Landmark Village Drainage and Water Quality Plan, provides drainage and flood control protection to developed uses, while preserving the Santa Clara River and major tributaries as resources. The buried bank stabilization approach uses soil cement, which is buried beneath the existing banks of the river to resist scouring. The soil placed on top of the bank stabilization is replanted with native vegetation to revegetate the disturbed area. Typically, the lining must be buried at least twice the height of the lining in order to resist scouring. Burying the toe of the lining requires temporary excavation and backfilling. A temporary construction zone of approximately 75 feet would occur at the base of the bank protection in order to bury the material. The original channel elevation would be restored after construction. The area would also be replanted with native vegetation. A total of approximately 10,920 linear feet of buried bank stabilization will be constructed on the north side of the river, and an additional 6,560 linear feet of stabilization would be constructed on the south side, for a total of 17,480 linear feet (**Figure 5, Proposed Bank Stabilization**, above). The bank stabilization along portions of the southern boundary of the river corridor, directly west of Long Canyon Bridge would be designed and constructed to retain the Santa Clara River's significant riparian vegetation and habitat, to allow the river to continue to function as a regional wildlife corridor, and to provide flood protection pursuant to County standards. All of the bank stabilization

proposed in conjunction with the project is consistent with the Newhall Ranch Specific Plan. A detailed description of the proposed bank stabilization is provided in **Section 2.5, Bank Stabilization**, above.

The Specific Plan RMP and the Newhall Ranch Program EIR (March 1999) include measures that will replace any vegetation temporarily or permanently removed (see Program EIR, Mitigation Measures 4.6-1 to 4.6-26). Following project buildout, all areas disturbed during the installation of the bridge and the bank stabilization would be vegetated with riparian-associated plant species. Additionally, areas within the proposed riparian buffer (**Figure 16, Riparian Habitat Buffers**, above) would be planted with native plant species. With mitigation, the river, Castaic Creek and Chiquito Creek would be maintained with natural soft bottoms and a predominance of buried bank protection replanted with native vegetation.

3. That the requested development is designed so that wildlife movement corridors (migratory paths) are left in an undisturbed and natural state.

Specific Plan Summary

The County's Board of Supervisors already found that the Specific Plan and SEA CUP No. 94-087-(5) met Design Compatibility Criterion No. 3, above. In summary, the Board found that under the Specific Plan, the SMA/SEA 23 would continue to function as a wildlife movement corridor because the Specific Plan design retained both the riparian vegetation in the river and the natural flow of the water without the need for periodic vegetation clearing. The Board found that the Specific Plan showed a substantially reduced level of impact to sensitive riparian habitat along the Santa Clara River (the originally proposed 103 acres of impact was reduced to approximately 1 acre). The Board further found that the Specific Plan resulted in an increase of 5 acres in the amount of sensitive riparian habitat along the river, and that the Specific Plan established transition areas to separate the SMA/SEA 23 from the urban uses identified in the Land Use Plan. In addition, the Board found that the three bridges over the river, including Long Canyon Road Bridge, would be sufficiently high as to allow the continued use of the river by animals for movement east to west along and within the river route, and that lighting controls would ensure that the SMA/SEA 23 would continue to function as a wildlife movement corridor. The Board also found that Section 2.5 (Public Services and Facilities Plan) and Section 2.6 (Resources Management Plan) of the Specific Plan provide objectives and conceptual plans for preserving the river and Salt Canyon in a natural and undisturbed state. Finally, the Board found that the Newhall Ranch Final EIR and Additional Analysis addressed impacts and imposed mitigation measures for the identified impacts that would occur. As a condition of approval, the Board required the applicant to conserve in perpetuity approximately 1,517 acres of the Salt Creek watershed in Ventura County, adjacent to the Specific Plan site, which enhances the Specific Plan's compatibility with animal movement in the region.

Moreover, the Board found that the tributaries (Castaic, San Martinez, and Chiquito Canyon Creeks) to the Santa Clara River within the SMA/SEA 23 would all be maintained and preserved in a largely natural state with soft bottoms pursuant to Section 2.5 (Public Services and Facilities Plan) and Section 2.6 (Resources Management Plan) of the Specific Plan. Furthermore, the Board found that the remainder of these tributaries outside the SMA/SEA 23 but within the Specific Plan were designated open space areas and preserved in a largely natural state.

The Board found that the Salt Canyon area of the Specific Plan served as a wildlife movement corridor, and that the limited development proposed within the adopted SMA/SEA 23 would not have an impact upon this wildlife movement area. As indicated above, the Board required the applicant to dedicate 1,517 acres of the Salt Creek watershed in Ventura County, adjacent to the Specific Plan site, in perpetuity, thereby enhancing the Specific Plan's compatibility with animal movement in the region.

In addition, the Board noted that Caltrans had completed the widening of SR-126 from Fillmore in Ventura County to the I-5 in Los Angeles County. As part of that widening project, major north/south animal movement undercrossings were installed under SR-126 at four locations. In addition, three additional larger undercrossings exist along SR-126 within the Specific Plan area at locations where bridges and culverts were constructed over secondary tributary stream courses. Because the undercrossings were designed to facilitate north/south wildlife movement, and because the three undercrossings within the Specific Plan site are of sufficient size to accommodate north/south wildlife movement, the Board found that north/south connectivity across the Santa Clara River will not be significantly impacted. The Board's findings were supported by the Newhall Ranch Revised Additional Analysis, Volume VIII, May 2003, Section 2.2, Salt Creek Corridor.

Landmark Village Summary

Consistent with the approved Specific Plan, for the most part, animal migratory paths within the SMA/SEA 23 will be left in an undisturbed, natural state. Again, the exception will be at the Long Canyon Road Bridge pier locations and abutments. The Long Canyon Road Bridge is proposed to be approximately 1,000 feet in length and a maximum of 100 feet in width. It will range from approximately 11–22 feet in height above the riverbed with an estimated 11 vertical support columns or piers extending into the riverbed. The piers will be approximately 100 feet apart from one another. When confronted with bridges or overpasses along a preferred movement corridor, wildlife, particularly larger mammals, will generally move under these structures as long as there is adequate vertical and horizontal spacing, a natural (dirt, sand, vegetation) substrate on which to travel while under the structure, and an "openness" effect that allows the animal to detect light, open space and habitat at the exiting end of the structure.

The proposed Long Canyon Road Bridge will adequately meet these requirements and is not expected to significantly alter wildlife movement along the river corridor.

Consistent with the findings of the Newhall Ranch Program EIR, development of the proposed project would limit northern access to or disbursement from the Santa Clara River for wildlife. However, given that the tract map site is currently used for agriculture and is generally devoid of cover, the tract map site is not expected to be a substantial part of a regional north-south wildlife movement corridor. In light of the above, the proposed project's impacts on regional wildlife movement would be less than significant.

Other proposed development within the SMA/SEA 23 (bank stabilization, trails, storm drain outlets, utility corridor, riparian mitigation sites and off-site transport of grading materials) will have a de minimus impact on migratory pathways. This is because cover provided by riparian vegetation to be removed by development activity would be replaced in the river corridor with native vegetation.

4. That the requested development retains sufficient natural vegetative cover and/or open spaces to buffer critical resource areas from said requested development.

Specific Plan Summary

The County's Board of Supervisors already found that the Specific Plan and SEA CUP No. 94-087-(5) met Design Compatibility Criterion No. 4, above. In summary, the Board found that the Specific Plan retained sufficient natural vegetative cover and open space areas to buffer critical resources found in the SMA/SEA 23 from the proposed development shown in the Specific Plan.

Specifically, species that utilize the Santa Clara River corridor are typically found in the riverbed itself or within the riparian habitats found adjacent to the river course. As discussed under the first compatibility criterion above, after combining the land preserved in the revised SEA (975 acres) with the preserved open area immediately adjacent to the revised SEA (415 acres), a total of 1,390 acres of undisturbed land would be preserved as part of the Specific Plan, including 577 acres of sensitive habitat. The existing SEA 23 consists of 380 acres of sensitive habitats. Due to Specific Plan implementation, the amount of sensitive riparian habitat in SEA 23 would actually increase by approximately 5 acres when compared with the amount of sensitive habitat within the existing SEA 23. This additional amount of land would provide sufficient habitat and open areas to buffer the sensitive resources from the 1 acre of sensitive habitats redesignated for non-residential land uses within existing SEA 23.

In addition to the amount of land that will be permanently preserved for use by sensitive species, the Specific Plan requires a setback between the river and proposed land uses of 75 to 100 feet in width. This area will be planted with native species to buffer sensitive species from potential impact. The Specific Plan also provides transition areas between the riparian resources of the proposed River Corridor SMA/SEA 23 and proposed urban development.

In general, the transition areas would be trails; open areas, including natural or revegetated slopes and other planted areas; and bank protection areas, which would consist of buried bank stabilization. Buried bank protection areas would be restored to a natural condition through the planting of native vegetation over the stabilized areas, thereby enabling their use by sensitive animal species.

The Specific Plan's Regional River Trail would extend along the northern edge for the entire 5-mile length of the Specific Plan. The Regional River Trail would be built on land which is elevated and provided with buried bank protection where necessary in order to eliminate flooding and bank erosion. Where bank protection does not exist, the trail would be located on a natural shelf above the elevation of the river.

The Specific Plan also includes 415 acres of open area, including oak-filled canyons, River bluffs and a Community Park that would separate riparian habitats from urban development on the south side of the river. The Specific Plan contains a number of measures that are intended to promote compatibility between developed uses and preserved open area. For example, the Specific Plan RMP (Section 2.6) contains standards covering recreation and access, location and nature of bank protection, and grading. The RMP requires graded areas adjacent to and within SEAs to be clearly marked thereby buffering and avoiding important habitat areas from impacts from development. Furthermore, Chapter 4 of the Specific Plan (Design Guidelines) requires shielded lighting fixtures to minimize glare and direct rays impacts to adjacent areas, resulting in additional protection of the habitat areas.

The tributaries (Castaic, San Martinez, and Chiquito Canyon Creeks) to the Santa Clara River are all maintained with the SMA/SEA 23, and are preserved in a largely natural state pursuant to Section 2.5 (Public Services and Facilities Plan) and Section 2.6 (Resources Management Plan) of the Specific Plan. Furthermore, the remainder of these tributaries within the Specific Plan are designated open area and are preserved in a largely natural state.

The Board of Supervisors previously evaluated the adequacy of the width of the proposed buffer area along the Santa Clara River when the Specific Plan was originally approved in March 1999. Prior to final approval, the Board required that the Specific Plan design be revised to incorporate an additional 100-foot

buffer between development and riparian resources to protect riparian habitat and sensitive species within SEA 23 boundaries. This finding was arrived at after evaluating the potential impacts of proposed land uses along the entire length of the river, coupled with the existing habitat protection and enhancement provisions contained in the Specific Plan RMP and Design Guidelines.

Exhibits depicting the Newhall Ranch River corridor riparian habitat buffers along the entire course of the Santa Clara River within the Specific Plan boundaries were presented to the Commission in a Staff Report, dated August 27, 2001. The exhibits show the width of the buffer between the riparian resources and adjacent development along the entire length of the river as originally approved by the Board. (Note that the exhibits do not reflect changes to the Potrero Bridge, the WRP site, and the other areas no longer proposed for development, which increased the acreage of riparian habitat and buffer area.)

As shown on the exhibits, the width of the riparian habitat corridor varies from a minimum of 300 feet to 2,205 feet (0.4 mile) at its widest point. The total buffer area (478 acres) varies in width from a minimum of 135 feet to more than 800 feet, and is three-quarters the size of the riparian habitat area itself. The average buffer width is approximately 400 feet. As shown on the exhibits, the buffer widths are greatest where the existing riparian habitat corridor is the narrowest; in some cases two to three times greater.

The buffer area is comprised of several different components: (a) the Salt Creek wildlife corridor connection and the High Country 1/2-mile-wide buffer at the west end of the Specific Plan on the south side of the river; (b) native upland habitats in the open area along the south side of the river; (c) disturbed areas within the river corridor that will be restored or enhanced as riparian habitat; (d) buried bank stabilization that will be revegetated with native riparian and upland plant species; and (e) landscaped open space areas such as Community Parks, the Regional River Trail and Community Trails. In addition, these Specific Plan buffer areas will be enhanced by the condition requiring the applicant to conserve approximately 1,517 acres of the Salt Creek watershed in Ventura County, adjacent to the Specific Plan site.

The Specific Plan RMP (Chapter 2.6) provides standards by which biological resources will be managed during construction and thereafter for the life of the community. It contains (a) provisions for restoration and enhancement of disturbed areas such as agricultural fields; (b) restrictions on pedestrian and vehicular access to the river corridor; (c) design standards for transition areas between development and the river; (d) conveyance of conservation easements; and (e) preparation of a financial plan for the long-term management of the riparian resources by the Center for Natural Lands Management. In addition, the Specific Plan RMP Design Guidelines contain provisions restricting the manner in which developed areas relate to the river corridor, including site planning, fencing, landscape design, grading and lighting.

These measures satisfy the General Plan SEA design compatibility criteria as means to protect sensitive habitat and species, including the unarmored threespine stickleback and least Bell's vireo.

In summary, the Specific Plan retains sufficient natural vegetative cover and open space to buffer critical resources found in the SMA/SEA 23 from the proposed development shown in the Specific Plan. Specific Plan implementation would result in the direct preservation of 1,390 acres of land along the Santa Clara River corridor within the boundaries of the Specific Plan area. The Specific Plan also incorporates an extensive buffer area to protect critical resources within the SMA/SEA 23.

Landmark Village Summary

Consistent with the approved Specific Plan, the proposed development within Landmark Village will retain sufficient natural vegetative cover and/or open space areas to complement the adopted SMA/SEA 23. As part of the Landmark Village development, a setback or buffer zone will be established along the southern boundary of the tract map site to protect sensitive habitat along the SMA/SEA 23. The proposed project maintains a buffer ranging in width from 700 feet to 70 feet. While the buffer is generally greater than 100 feet, the buffer is reduced to 70 feet for approximately 100 feet along the western boundary of the tract map (just to the south of SR-126). This area is located adjacent to Chiquito Canyon Creek in an area that has been disturbed by the construction and operation of SR-126, as well as by agricultural-related activities. The vegetation within the reduced buffer area is characterized disturbed sandy soils and areas of sparse, disturbed riparian vegetation. This area is located to the north of the well-developed cottonwood willow riparian forest associated with the confluence of Chiquito Canyon Creek and the Santa Clara River. Given the proximity of the reduced buffer area to SR-126, and the disturbed condition and limited extent of riparian habitat present, use of the area by special-status bird species is expected to be limited. A minimum of a 100-foot buffer is present along all other portions of the tract map site and in all areas bordering mature cottonwood willow riparian forest and willow scrub habitats. Furthermore, the vegetation within portions of the setback or buffer area will be restored and/or enhanced to increase habitat values when compared to existing conditions.

5. That where necessary, fences or walls are provided to buffer important habitat areas from development.

Specific Plan Summary

The County's Board of Supervisors already found that the Specific Plan and SEA CUP No. 94-087-(5) met Design Compatibility Criterion No. 5, above. In summary, the Board found that the discussion of Design

Compatibility Criterion No. 4, above, described how the Specific Plan incorporated vegetative cover and open space areas to buffer critical resources from the proposed uses in the Specific Plan. In addition to these features, the Board found that the Specific Plan buffered habitat from proposed uses through development regulations and design guidelines. As indicated in Chapter 4 of the Specific Plan, future residential subdivisions and commercial development constructed within the Specific Plan area must include fences or walls that will preclude access to sensitive resources within SEA 23. As each tract or parcel map is submitted to the County, it must be reviewed to determine whether proposed uses substantially comply with the standards, regulations, and guidelines of the Specific Plan, including those pertaining to fencing and walls to ensure that they buffer important SMA/SEA 23 habitat areas from development.

Landmark Village Summary

Consistent with the approved Specific Plan, the Landmark Village development proposes fences and walls to protect significant habitat within the adopted SMA/SEA 23. A hiking/biking trail is proposed along the bank of the Santa Clara River beginning at the northeastern project boundary along Castaic Creek and extending west along the Santa Clara River. The conceptual alignment follows the top of the bank stabilization (approximately 50–150 feet from the existing riparian edge). The trail is approximately 16 feet wide and approximately 2 miles in length. It will be constructed of asphalt or similar material. Themed fencing will define the perimeter of the trail and the alignment will be landscaped with native plant materials and the trail will not be lighted at night. In addition, other mitigation measures and conditions of approval will be adopted to ensure the protection of sensitive biotic resources within the SMA/SEA 23 (e.g., shielding of illumination).

6. That roads and utilities serving the proposed development are located and designed so as not to conflict with critical resources, habitat areas or migratory paths.

Specific Plan Summary

The County's Board of Supervisors already found that the Specific Plan and SEA CUP No. 94-087-(5) met Design Compatibility Criterion No. 6, above. In summary, the Board found that the Specific Plan proposed the construction of three bridges and several utility lines across the Santa Clara River, within the existing SEA 23. Utilities serving the proposed Specific Plan, where feasible, would be incorporated with the river bridges.

The Board found that the bridge crossings, including the Long Canyon Road Bridge, would have support columns in the riverbed, but the crossings are elevated structures so as to reduce impacts on river vegetation and sensitive species and to allow species that move along the river course to continue to use existing resources. Moreover, the Board found that the elevated bridge crossings would ultimately replace the existing at-grade agriculture crossings, which would minimize the amount of direct disturbance to the riverbed and its environs. Based on the assessment provided in the Newhall Ranch Revised Additional Analysis, Volume VIII, May 2003, Section 2.4, SEA General Plan Consistency, the Board concluded that the roads and utilities serving the Specific Plan were located and designed so as not to conflict with critical resources, habitat areas or migratory paths.

Landmark Village Summary

Consistent with the approved Specific Plan, at the project level, the Landmark Village development will design and locate project roads and utilities so as not to conflict with critical resources, habitat areas or migratory paths. The vast majority of roadways and utilities serving Landmark Village are removed far to the north of the SMA/SEA 23 and have no impacts to it. The number and location of the bridge crossings were established by the Specific Plan in part to minimize impacts on the SMA/SEA 23 and other sensitive resources. As part of the Landmark Village development, the Long Canyon Road Bridge crossing will be implemented. All other roads within the Landmark Village development are designed to parallel SEA and loop back to the planned Long Canyon Road Bridge crossing, or to SR-126. All roads used by daily vehicular traffic are outside of the adopted SMA/SEA 23. Only minor encroachment from trails and public improvements encroach within the SMA/SEA 23. Encroachments necessary as part of the utility corridor would be located adjacent to SR-126 and would be buried. Any natural area impacted by construction activity would be replanted with native vegetation.

13.0 MITIGATION MEASURES

The Landmark Village project would be subject to the mitigation measures/conditions of approval contained in the RMP of the Newhall Ranch Specific Plan and the Newhall Ranch Program EIR. These mitigation measures have been reviewed and approved by the County in association with the Newhall Ranch Specific Plan and WRP (May 27, 2003). These measures are all contained in the Newhall Ranch Specific Plan Mitigation Monitoring Plan, which is provided in **Appendix C**.

Measures from the Natural River Management Plan (NRMP) Final EIR/EIS, 404 Permit and 1603 Streambed Alteration Agreement for Portions of the Santa Clara River and its Tributaries (1998) prepared by ACOE and CDFG are also included below. The NRMP analyzes impacts associated with the implementation of various public improvements (bank stabilization, trails, bridges, utility crossings, etc.) along and within portions of the Santa Clara River adjacent to upstream Newhall Land properties. Although the NRMP did not cover the portion of the river bordering the Landmark Village tract map site, the NRMP provides relevant guidance and methods approved by CDFG, ACOE and the County to address impacts on sensitive biological resources associated with the Santa Clara River and its environs. The Landmark Village applicant is seeking approval of a Master 404 Permit from the ACOE and a Master 1600 Agreement from the CDFG for the Newhall Ranch Specific Plan area, including the Landmark Village site. The environmental document is in process at this time and a draft of the EIR/EIS is expected to be released for public review late 2005.

To mitigate impacts to biological resources not fully addressed by the RMP, the Newhall Ranch Program EIR, the Additional Analysis and the incorporated NRMP measures, additional mitigation measures are proposed as part of this Biota Report to further reduce the magnitude of potentially significant impacts.

The numbering system of the mitigation measures provided below corresponds with, and follows sequentially, the numbering system used in the adopted Newhall Ranch Specific Plan revised Mitigation Monitoring Plan, which is provided in **Appendix C**. The Newhall Ranch Mitigation Monitoring Plan includes Mitigation Measures 4.6-1 through 4.6-80.

13.1 NRMP MITIGATION MEASURES

To further reduce impacts to biological resources that would result from project implementation, the following mitigation measures from the NRMP are hereby incorporated into this report. (NOTE: These

measures have been modified to address all of the special-status wildlife species [potentially] occurring on the Landmark Village project site and other site-specific conditions.)

4.6-81 Construction activities in the riverbed shall be restricted to the following areas of temporary disturbance: (1) an 85-foot-wide zone that extends into the river from the base of the rip-rap gunite or soil cement bank protection from where it intercepts the river bottom; (2) 100 feet on either side of the outer edge of a new bridge or bridge to be modified; (3) 50-foot-wide corridor for all utility lines; and (4) 20-foot-wide temporary access ramps and roads to reach construction sites. The locations of these temporary construction sites and the routes of all access roads shall be shown on maps submitted with the Verification Request Letter submitted to the ACOE and CDFG for individual project approval. The construction plans should indicate what type of vegetation, if any, would be temporarily disturbed and the post-construction activities to facilitate natural revegetation of the temporarily disturbed areas.

4.6-82 Prior to initiating construction for the installation of bridges, storm drain outlets, utility lines, and/or bank protection, all construction sites and access roads within the riverbed, as well as all riverbed areas within 300 feet of the construction site and access road, shall be inspected by a qualified biologist for the presence of arroyo toad, southwestern pond turtle, two-striped garter snake, unarmored threespine stickleback, Santa Ana sucker and arroyo chub. The ACOE, USFWS and the CDFG shall be notified of the inspection and shall have the option of attending. If any of the above agencies is not represented, the biologist shall file a written report of the inspection with the agency not in attendance within 14 days of the survey and no sooner than 30 days prior to any construction work in the riverbed.

4.6-83 Construction work areas and access roads shall be cleared of arroyo toad, southwestern pond turtle, two-striped garter snake, unarmored threespine stickleback, Santa Ana sucker and arroyo chub immediately before the prescribed work is to be carried out, immediately before any equipment is moved into or through the stream or habitat areas, and immediately before diverting any stream water. The removal of such species shall be conducted by a qualified biologist using procedures approved by the ACOE, USFWS and CDFG, and with the appropriate collection and handling permits. Species shall be relocated to nearby suitable habitat areas. A plan to relocate these species shall be submitted to the ACOE, USFWS and CDFG for review and approval no later than 30 days prior to construction. Under no circumstances shall the unarmored threespine stickleback or arroyo toad be collected or relocated, unless USFWS personnel or their agents implement this measure.

14. **Clarify the term "major drainage" in the Resource Management Plan.**

    The term "major drainage" as used in the Resource Management Plan refers to drainages that achieve a maximum flow of 2000 cfs during an event.

Minutes - September 12, 2005

3. **Use of High Country SMA as a mitigation area must incorporate accounting of impacts and mitigation. SEATAC disagrees with the assumption that the Specific Plan EIR provides adequate mitigation for habitat losses; the Tract Map EIR must address the mitigation required, and if mitigation areas as delineated in the Specific Plan EIR are used, an accounting of "mitigation credits" must be made and kept up to date.**

   The preservation of the High Country SMA (and associated habitats) is not intended to serve as acre-to-acre mitigation to offset impacts to biological resources associated with build out of the Specific Plan. The Newhall Ranch Program EIR and Final Additional Analysis provides for the preservation of 6,170 acres (including the High Country SMA, River Corridor SMA, Salt Creek Corridor, and Open Areas). The preservation of this large area of habitat would lessen the magnitude of impacts to biological resources, however, it does not fully compensate for the net loss of habitat proposed for development within the entire Specific Plan area. Accordingly, the Newhall Ranch Program EIR and Final Additional Analysis identify significant impacts to biological resources that cannot be mitigated to below a level of significance (i.e., significant unavoidable impacts). As summarized in the Draft Biota Report (page 22), the loss of habitat associated with build out of the Specific Plan (including the loss of 1,820 of the 5,183 acres of coastal sage scrub, 202 of the 1,213 acres of chaparral, and 1,480 of the 1,896 acres of non-native grassland habitat present) is identified as an significant unavoidable impact.

   In addition, the preservation of habitat within the High Country SMA (as well as other areas to be preserved) provides creation, enhancement, and/or restoration mitigation opportunities. Specifically, existing habitats within preserved areas can be enhanced. The Landmark Village Draft Biota Report (page 149, 4.6-101) identifies the High Country SMA as a mitigation site to "create, enhance, and/or restore 7.82 acres of live oak woodland." Additionally, the High Country SMA and Salt Creek are identified (page 149, 4.6-99) as potential mitigation sites for slender mariposa lily.

   To assist in determining what types of mitigation are feasible in the High Country SMA, the acreage of each plant community present was quantified (see below). The applicant has also committed to conducting an updated functional assessment of the habitat types to be preserved in the High Country SMA as well as enhancement opportunities. Given the presence of approximately 563 acres of coast live oak woodland in the High Country SMA, there are opportunities to implement mitigation measure 4.6-101. Additionally, given that over 30,000 slender mariposa lily plants have been recorded in Salt Creek (Dudek & Associates 2003), there are opportunities to implement mitigation measure 4.6-99.

Acreages of Plant Communities in the High Country SMA

Plant Community	Acreage
Agricultural	128.3
Alluvial scrub	15.7
Coastal sage scrub	2,929.3
Coastal sage scrub/grassland	29.8
Grassland	203.6
Great basin scrub	17.5
Riparian great basin scrub	9.9
Live oak woodland	563.6
Mixed chaparral	881.4
Mule fat scrub	6.4
Valley oak savanna	358.5
Valley oak woodland	4.8
Willow scrub	2.2

Minutes – October 3, 2005

1. **The revised Biota Report must provide a better accounting of impacts at the project site and mitigations in the High Country.**

Please see the response to Comment 3 from the September 12, 2005 Minutes.

4. **Mitigation Measure 4.6-43 is inadequate due to the phrase "may be used;" Mitigation Measures beyond 4.6-80 are not included in the MMP provided with the report.**

   Mitigation measure 4.6-43 is part of the Resource Management (RMP) of the Newhall Ranch Specific Plan and the Newhall Ranch Program EIR. These mitigation measures have been reviewed and approved by the County in association with the Newhall Ranch Specific Plan and WRP (May 27, 2003).

   Specifically, mitigation measure 4.6-43 states, "Suitable portions of *Open Area* may be used for mitigation of riparian, *oak resources*, or elderberry shrub." The intent of this measure is to allow for particular types of mitigation to occur within the protected Open Area; this measure does not make mitigating for the loss of biological resources conditional. The Draft Biota Report includes additional mitigation measures to further address the loss of riparian, oak, and elderberry shrub habitats (see 4.6-48, 4.6-87, 4.6-96, 4.6-101). These measures include creating detailed mitigation plans, which identify all mitigation sites (with the Open Area being one possible location for mitigation sites). Given the above, mitigation measure 4.6-43 in not considered inadequate when viewed as part of a larger resource management plan.

   Mitigation measures 4.6-81 through 4.6-101 are included in the Draft Biota Report (see pages 150-157).

16. **Page 143: Mitigation Measure 4.6-81 does not provide mitigation for any impacts; Mitigation measure 4.6-83 needs further detail: provide information on seasonal restrictions to mitigation activities and methodology on how fish are to be cleared.**

    Mitigation measure 4.6-81 restricts the limits of construction activities in the riverbed. This measure serves to minimize potential impacts to special-status wildlife species known or presumed to occur within the river corridor (e.g., unarmored threespine stickleback, see page 101). This measure would also serve to minimize the potential that construction activities could result in the loss of populations of the undescribed species of everlasting.

    Mitigation measure 4.6-83 provides specific performance criteria, including that a plan to relocate any captured animals shall be submitted to the ACOE, USFWS and CDFG for review and approval no later than 30 days prior to construction. The development of a relocation plan (specifying methods/procedures/seasonal restrictions) that requires approval by ACOE/USFWS/CDFG provides adequate assurance that agency-approved measures to capture, handle, and relocate animals will be implemented.

4.6-84 A qualified biologist shall be present when any stream/river diversion takes place, or when blocking nets and seines are used (see also EIR Mitigation Measure 4.6-57), and shall patrol the areas both within, upstream and downstream of the work area to rescue any species stranded by the diversion of the stream water or trapped by the nets/seines. Species that are collected shall be relocated to suitable locations downstream of the work area. Under no circumstances shall the unarmored threespine stickleback or arroyo toad be collected or relocated, unless USFWS personnel or their agents implement this measure.

4.6-85 Blocking nets, or fences with 1/8~~4~~-inch-square mesh, 18 inches high and buried 6 inches, shall be placed downstream of the work area to assure that none of the species move into the construction area.

4.6-86 Installation of bridges, culverts or other structures shall not impair movement of fish and aquatic life. Bottoms of temporary culverts shall be placed at or below channel grade. Bottoms of permanent culverts shall be placed below channel grade.

13.2 ADDITIONAL MITIGATION MEASURES

To further reduce the magnitude of impacts to biological resources that would result from project implementation, the following mitigation measures would be required and are hereby incorporated into this report:

4.6-87 The riparian revegetation plan to be developed by the applicant shall demonstrate the feasibility of creating the required mitigation acreage (see Mitigation Measure 4.6-63). The plan shall specify, at a minimum, the following: (1) the location of mitigation sites; (2) the quantity and species of plants to be planted; (3) procedures for creating additional habitat; (4) methods for the removal of non-native plants; (5) a schedule and action plan to maintain and monitor the enhancement/restoration area; (6) a list of criteria and performance standards by which to measure success of the mitigation sites; (7) measures to exclude unauthorized entry into the riparian creation/enhancement areas; and (8) contingency measures in the event that mitigation efforts are not successful. The plan shall be subject to the approval of CDFG, ACOE, and the County, and approved prior to issuance of the grading permit.

4.6-88 Within 30 days of ground disturbance activities associated with construction or grading that would occur during the nesting/breeding season of native bird species potentially nesting on the site (typically March through August in the project region, or as determined by a qualified

biologist), the applicant shall have weekly surveys conducted by a qualified biologist to determine if active nests of bird species protected by the Migratory Bird Treaty Act and/or the California Fish and Game Code are present in the disturbance zone or within 300 feet (500 feet for raptors) of the disturbance zone. The surveys shall continue on a weekly basis with the last survey being conducted no more than seven days prior to initiation of disturbance work. If ground disturbance activities are delayed, then additional pre-disturbance surveys shall be conducted such that no more than seven days will have elapsed between the survey and ground disturbance activities.

If active nests are found, clearing and construction within 300 feet of the nest (500 feet for raptors) shall be postponed or halted, at the discretion of the biologist, until the nest is vacated and juveniles have fledged, as determined by the biologist, and there is no evidence of a second attempt at nesting. Limits of construction to avoid an active nest shall be established in the field with flagging, fencing or other appropriate barriers, and construction personnel shall be instructed on the sensitivity of nest areas. The biologist shall serve as a construction monitor during those periods when construction activities will occur near active nest areas to ensure that no inadvertent impacts on these nests occur. The results of the surveys, and any avoidance measures taken, shall be submitted to the County of Los Angeles within 30 days of completion of the pre-construction surveys and/or construction monitoring to document compliance with applicable state and federal laws pertaining to the protection of native birds.

4.6-89 A pre-ground disturbance survey shall be conducted by a qualified biologist (subject to approval by the County) within 14 days or any disturbance activities in all areas on the project site containing suitable habitat for coast horned lizard, silvery legless lizard, coastal western whiptail, rosy boa, San Bernardino ringneck snake, coast patch-nosed snake, southwestern pond turtle, two-striped garter snake, American badger, San Diego black-tailed jackrabbit and San Diego desert woodrat. If any of these species are observed within the disturbance zone, they shall be relocated to a suitable area outside of the disturbance zone. Results of the surveys and relocation efforts shall be provided to CDFG. Collection and relocation of animals shall only occur with the proper scientific collection and handling permits.

If active San Diego desert woodrat nests (stick houses) with young are identified within the disturbance zone or within 100 feet of the disturbance zone, a fence shall be erected around the nest site with a 100-foot minimum buffer from construction activities. This buffer may be greater, if determined to be appropriate by the biologist. At the discretion of the biologist, clearing and construction within the fenced area would be postponed or halted until young have left the nest.

17. **Page 144: revise Mitigation Measure to state that 1/8-inch mesh will be used, rather than 1/4-inch.**

    Mitigation measure 4.6-85 has been revised to state that 1/8-inch mesh will be used (rather than 1/4-inch mesh).

The biologist shall serve as a construction monitor during those periods when disturbance activities will occur near active nest areas to ensure that no inadvertent impacts on these nests will occur. If San Diego desert woodrats are observed within the grading footprint outside of the breeding period, individuals shall be relocated to a suitable location on or in proximity to the project site by a qualified biologist in possession of a scientific collecting permit.

4.6-90 No earlier than 20 days prior to any grading activity that would occur during the breeding season of native bat species potentially utilizing the site (April 1 through August 31), a field survey shall be conducted by a qualified biologist (retained by the applicant, with selection reviewed by the County) to determine if active roosts of special-status bats such as western mastiff bat, fringed myotis and yuma myotis are present in areas of the project site containing suitable roosting habitat, such as woodlands and buildings. If active roosts are found, construction within 200 feet shall be postponed or halted, at the discretion of the biological monitor, until the roost is vacated and juveniles have fledged, as determined by the biologist. Implementation of this measure would ensure that no loss of active roost colonies of either species will occur and, therefore, will reduce impacts on bat species to a less than significant level.

4.6-91 Prior to the issuance of a grading permit, the applicant shall prepare a landscaping plan. This plan will be subject to review and approval by the County and CDFG and will include a plant palette composed of locally-native, non-invasive species that are adapted to the conditions found on the Landmark Village site, without requiring high irrigation rates. Irrigation of perimeter landscaping shall be limited to temporary drip irrigation. The landscaping plan will also include a list of invasive plant species prohibited from being planted on the project site. This list of prohibited plants will be compiled in cooperation with a qualified restoration specialist and will be distributed to future occupants of the Landmark Village site.

4.6-92 Waste and recycling receptacles that discourage foraging by wildlife species adapted to urban environments shall be installed in common areas and parks throughout the Landmark Village site.

4.6-93 The Landmark Village Home Owners Association shall supply educational information to future residents of the Landmark Village site regarding the importance of not feeding wildlife, ensuring that trash (containing food) is not accessible to wildlife, keeping the ground free of fallen fruit from trees and not leaving pet food outside.

4.6-94 All oaks with driplines within 50 feet of land clearing (including brush clearing) or areas to be graded shall be enclosed in a temporary fenced zone for the duration of the clearing or grading activities. Fencing shall extend to the root protection zone (i.e., the area at least 15 feet from the

trunk or half again as large as the distance from the trunk to the drip line, whichever distance is greater). No parking or storage of equipment, solvents or chemicals that could adversely affect the trees shall be allowed within 25 feet of the trunk at any time. Removal of the fence shall occur only after the project biologist confirms the health of preserved trees.

4.6-95 Prior to use and placement on the Landmark Village site, all landscaping materials (including organic mulches) shall be inspected and certified "free" of Argentine ants.

4.6-96 A mitigation plan for elderberry scrub shall be developed and implemented by the applicant. The plan shall demonstrate the feasibility of replacing the acreage of this plant community to be removed at a 1:1 ratio. The plan shall specify, at a minimum, the following: (1) the location of mitigation sites; (2) the quantity and species of plants to be planted; (3) procedures for creating additional habitat; (4) methods for the removal of non-native plants; (5) a schedule and action plan to maintain and monitor the mitigation area; (6) a list of criteria and performance standards by which to measure success of the mitigation sites; (7) measures to exclude unauthorized entry into the mitigation areas; and (8) contingency measures in the event that mitigation efforts are not successful. The plan shall be subject to the approval of the County prior to the issuance of grading permits.

4.6-97 Prior to the issuance of a grading permit for ground disturbance, construction or site preparation activities, the applicant shall retain the services of a qualified biologist, approved by the CDFG and Los Angeles County, to conduct appropriately timed focused surveys for spadefoot toad within all portions of the project site containing suitable breeding habitat. If western spadefoot are not identified on the project site, no further measures would be required. Should western spadefoot be identified on the project site, the measures provided below would be implemented.

(A) Under the direct supervision of the qualified biologist, western spadefoot toad habitat shall be created within suitable natural sites on the Newhall Ranch Specific Plan area, outside of the proposed development envelope. The amount of occupied breeding habitat to be impacted by the Landmark Village project shall be replaced at a 2:1 ratio. The actual relocation site design and location shall be approved by CDFG and consist of a shallow excavated pond(s) utilizing an artificial rubber pond liner as a base. The location shall be as far away as possible from any of the homes and roads to be built. The relocation pond(s) shall be designed such that it only supports standing water for several weeks following seasonal rains in order that aquatic predators (i.e., fish, bullfrogs, crayfish, etc.) cannot become established. The size and number of ponds shall be determined by CDFG. Terrestrial habitat surrounding the proposed relocation site shall be as similar in type, aspect, and density to the location of the existing ponds as possible. No site preparation or construction activities shall be permitted in the vicinity of the currently occupied ponds until the design and construction of the pool habitat in preserved areas of the site has been completed and the relocation of all western spadefoot toad adult, tadpoles, and egg masses detected are moved to the created pool habitat to the satisfaction of the monitoring biologist and CDFG.

18. **Page 146: Include language in Mitigation Measure 4.6-91 to require locally indigenous species in the landscaping plan.**

    Mitigation measure 4.6-91 has been revised to state that the landscaping plan "…will include a plant palette composed of locally native, non-invasive species that are adapted to the conditions found on the Landmark Village site, without requiring high irrigation rates."

(B) Based on appropriate rainfall and temperatures, generally between the months of February and April, the biologist shall conduct a series of surveys in all appropriate habitats within the development envelope prior to the initiation of construction activities. Surveys will include evaluation of all previously documented occupied areas and a reconnaissance level survey of the remaining natural areas of the site. All western spadefoot adults, tadpoles, and egg masses encountered shall be collected and released in identified relocation pond(s) described above.

(C) The qualified biologist shall monitor the relocation site for a minimum period of five years, or as otherwise directed by CDFG. Specific monitoring requirements and success criteria shall be approved by CDFG. It is expected that minimum requirements will include annual monitoring during and immediately following peak breeding season such that surveys can be conducted for adults as well as for egg masses, larval and post larval toads. Further, survey data will be provided to CDFG by the monitoring biologist following each monitoring period and a written report summarizing the monitoring results will be provided to CDFG at the end of the monitoring effort. Success criteria for the monitoring program shall include verifiable evidence of toad reproduction at the relocation site.

4.6-98 For all grading and construction activities a qualified biologist shall be retained by the applicant (with selection reviewed by the County) to ensure that incidental construction impacts on special-status wildlife species are avoided or minimized. The biologist shall be in possession of a Scientific Collecting permit and relocate any wildlife species (for which they are permitted to handle) that may be destroyed or adversely affected as a result of construction and/or site preparation activities. Should a state or federally listed species be encountered, construction shall be halted until a permitted biologist can relocate the animal(s). Responsibilities of the construction biological monitor include the following:

- Attend the pre-construction meeting to ensure that timing/location of construction activities do not conflict with other mitigation requirements (e.g., seasonal surveys for nesting birds). Conduct meetings with the contractor and other key construction personnel describing the importance of restricting work to designated areas.
- Discuss procedures for minimizing harm/harassment of wildlife encountered during construction.
- Review/designate the construction area in the field with the contractor in accordance with the final grading plan. Haul roads, access roads, and on-site staging and storage areas shall be sited within grading areas to minimize degradation of habitat adjacent to these areas. If activities outside these limits are necessary, they shall be evaluated by the biologist to ensure no special-status species or habitat will be affected.
- Conduct a field review of the staking (to be set by the surveyor) designating the limits of all construction activity. Any construction activity areas immediately adjacent to riparian areas or other special-status resources (such as large trees or bird nests) may be flagged or temporarily fenced by the monitor, at his/her discretion.
- Periodically visit the site during construction to coordinate and monitor compliance with the above provisions.

- Submit to the County an immediate report of any conflicts or errors resulting in impacts to special-status resources as well as a final report on the results of construction and any recommendations for improving the process.

4.6-99 A mitigation plan for slender mariposa lily shall be developed prior to the issuance of a grading permit and implemented by the applicant. The plan shall include an assessment of enhancement opportunities of slender mariposa lily populations occurring within protected areas in the High Country SMA, the River Corridor SMA, the Salt Creek Corridor, and spineflower preserves. The plan shall demonstrate the feasibility of replacing the number of individual plants to be removed at a 1:1 ratio and/or enhancing and protecting existing populations of the species. The mitigation ratio should take in consideration the existing population of slender mariposa lily that are being preserved in Salt Creek, which is located within the Specific Plan area, to the south of the Landmark Village project site. A total of 30,830 slender mariposa lily plants have been recorded in Salt Creek (Dudek & Associates 2003). The plan shall specify, at a minimum, the following: (1) the location of mitigation sites in protected/preserved areas within the Newhall Ranch Specific Plan area; (2) methods for harvesting seeds and salvaging and transplantation of individual bulbs/plants to be impacted; (3) site preparation procedures for the mitigation site; (4) a schedule and action plan to maintain and monitor the mitigation area; (5) a list of criteria and performance standards by which to measure success of the mitigation site; (6) measures to exclude unauthorized entry into the mitigation areas; and (7) contingency measures in the event that mitigation efforts are not successful. The plan shall be subject to the approval of the County prior to the issuance of a grading permit.

4.6-100 Appropriately timed focused surveys for the undescribed species of *Gnaphalium* (**Bio-6**) shall be conducted by a qualified botanist prior to the commencement of grading/construction activities within suitable habitat (primarily river terraces) of the species to determine if plants have established within potential impacted areas since the time of the 2005 survey. No longer than one year shall elapse between completion of the survey and commencement of construction activities. Should the species be documented within the project boundary, avoidance measures shall be implemented to minimize impacts to individual plants. These measures shall include adjusting the boundaries/location of haul routes and other project features. If, due to project design constraints, avoidance of all plants is not possible, then available methods for salvaging seeds and/or transplantation of individual plants to be impacted will be evaluated and implemented. All seed collection and/or transplantation methods, as well as the location of the receiver site for seeds/plants (assumed to be within preserved open space areas of Newhall Ranch along the Santa Clara River), shall be coordinated and approved by the County prior to the issuance of a grading permit.

4.6-101 The Oak Resource Replacement Plan to be prepared (as described in Mitigation Measure 4.6-48) shall include measures to create, enhance, and/or restore 7.82 acres of coast live oak woodland

within the High Country SMA. The plan shall be subject to the requirements outlined in Mitigation Measure 4.6-48.

4.6-102 Clearance surveys for arroyo toad shall be conducted within portions of the Landmark Village project site containing agricultural fields (in addition to the arroyo toad survey areas specified in mitigation measures 4.6-82 and 4.6-83). Should arroyo toad be identified, the USFWS shall be contacted immediately and construction activities shall be halted. Under no circumstances shall arroyo toad be collected or relocated unless USFWS personnel or their agents implement the measure.

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7. **SEATAC requests a field trip to see the sites of proposed buried bank stabilization.**

   The field trip was conducted on October 19, 2005.

APPENDIX A

Guidelines Compliance Checklist

Appendix A—GUIDELINE COMPLIANCE CHECKLIST

	PAGE	PREPARER'S INITIALS
Setting	33	KB
Original topographical quad sheet (or color photocopy)	35	KB
Project site photographs or color photocopies	Appendix F-2	KB
Color aerial photographs	12,13,16,19,36,44,59,78,111, Appendix F-2	KB
SEA/SERA map	36	KB
Biotic survey of the project site	Appendix E-1	KB
Floral and faunal lists in systematic/alphabetic order	Appendix D-23	KB
Table of sensitive species impacts matrix	Appendix D-3	KB
Document showing CNDDB contact	Appendix G-2	KB
Site/grading plans	16	KB
Initial study questionnaire	Appendix B-2	KB
Impacts	80	KB
Mitigation measures	142	KB
Mitigation monitoring	Appendix C-3	KB
Preparer's resume/qualifications	Appendix H-2	KB

APPENDIX B

Initial Study Checklist

STAFF USE ONLY

PROJECT NUMBER: *00-196*

CASES: *TR 53108*

SPA, CUP

*** * * * INITIAL STUDY * * * ***

COUNTY OF LOS ANGELES
DEPARTMENT OF REGIONAL PLANNING

GENERAL INFORMATION

I.A. Map Date: *June 10, 2003*

Staff Member: *Hsiao-ching Chen*

Thomas Guide: *4459 E5, E6*

USGS Quad: *Val Verde*

Location: *South of State Route 126 ("SR-126") near the intersection with Chiquito Canyon Road north of Santa Clarita River and west of the Castaic Creek.*

Description of Project: *An application to subdivide the subject propertyinto 418 lots to include a maximum of 1,444 residential units , a maximum of 1,353,000 square feet of non-residential mixed-used space, an elementary school, a community park, three private recreational facilities, open space and river trail uses. This Initial Study analyzes impacts associated with all off-site improvements including buried bank stabilization and the Long Canyon Road Bridge to be developed in conjunction with the tract development. Two borrow sites (one located south of the Santa Clara River and the other north of SR-126 of unspecified acreage) and possible haul routes will be located outside of the tract map boundary but within the SP area. The domestic water system will be connected to existing facilities within the Valencia Commerce Center to the northeast)* Gross Area: *291.2 acres(tract map)*

Environmental Setting: *The project site is the first phase of the Riverwood Village Planning Area development of the Newhall Ranch Specific Plan in western unincorporated Los Angeles County, north of the Santa Clara River and west of Interstate 5 ("I-5"). The site is currently used for agricultural purposes and contains miscellaneous, ancillary sheds for agricultural storage and dirt roads. There is southern willow riparian habitat that extends to the central portion of the site along the southern boundary of the tract map. Three oak trees exist on site. Chiquita Landfill is located to the north of the project site. Several active and abandoned oil wells are located within the tract boundary. Some off-site improvement analyzed in this Initial Study are within SEA 23, Santa Clara River, containing habitat for endangered stickleback.*

Zoning: *Commercial, Mixed-Used, Medium Residential, Low-Medium Residential, Low Residential, High Residential, River Corridor, Community Park, Business Park, Open Area, (Newhall Ranch Specific Plan)*

General Plan: *(Newhall Ranch Specific Plan)*

Community/Area Wide Plan: *(Newhall Ranch Specific Plan)*

Major projects in area:

Project Number	Description & Status
00-210	*Castaic Junction Industrial Park (pending)*
89-081	*Chiquita Canyon Landfill (approved)*
87-360	*Valencia Commerce Center (approved)*
03-238 / TR 60030	*21 industrial lots on 110 AC (pending)*

NOTE: For EIRs, above projects are not sufficient for cumulative analysis.

REVIEWING AGENCIES

Responsible Agencies

- ☐ None
- ☒ Regional Water Quality Control Board
  - ☒ Los Angeles Region
  - ☐ Lahontan Region
- ☐ Coastal Commission
- ☒ Army Corps of Engineers
- ☒ *Caltrans*

Trustee Agencies

- ☐ None
- ☒ State Fish and Game
- ☒ State Parks
- ☒ *USFWS*
- ☐ _____

Special Reviewing Agencies

- ☐ None
- ☒ Santa Monica Mountains Conservancy
- ☒ Castaic Union SD
- ☒ William S. Hart SD
- ☒ Castaic Area Town Council
- ☒ California Dept of Water Resources
- ☒ *SCOPE (courtesy notification)*
- ☒ *Valencia Water Company*
- ☒ *DOC DOGGR*
- ☒ *DTSC, AQMD*
- ☒ *City of Santa Clarita*
- ☒ *Ventura County*
- ☒ *SCAG*

Regional Significance

- ☐ None
- ☒ SCAG Criteria
- ☒ Air Quality
- ☒ Water Resources

County Reviewing Agencies

- ☒ Subdivision Committee
- ☒ DPW: *Traffic & Lighting, Transportation Planning, Waterworks, Env Programs, Design, Land Development (Drainage & Grading), Geotechnical and Materials Engineering, Watershed, Waterworks, Flood Maintenance, Programs Development, Building & Safety,*
- ☒ Health Services: *Env Hygiene*
- ☒ *San District, Sheriff*
- ☒ *FD, Library*

IMPACT ANALYSIS MATRIX

CATEGORY	FACTOR	Pg	Less than Significant Impact/No Impact	Less than Significant Impact with Project Mitigation	Potentially Significant Impact	Potential Concern
			ANALYSIS SUMMARY (See individual pages for details)			
HAZARDS	1. Geotechnical	5	☐	☐	☒	*Expansive soil, high groundwater, excessive grading*
	2. Flood	6	☐	☐	☒	*100-year floodplain*
	3. Fire	7	☒	☐	☐	
	4. Noise	8	☐	☐	☒	*School/residences adjacent to SR-126*
RESOURCES	1. Water Quality	9	☐	☐	☒	*Construction, domestic water supply from groundwater*
	2. Air Quality	10	☐	☐	☒	*Exceed AQMD regional threshold, non-attainment area*
	3. Biota	11	☐	☐	☒	*SEA 23, oaks, southern willow riparian habitat*
	4. Cultural Resources	12	☐	☐	☒	*known resources in the area*
	5. Mineral Resources	13	☐	☐	☒	*Site was previouly used for oil extraction*
	6. Agriculture Resources	14	☐	☐	☒	*Prime farmland*
	7. Visual Qualities	15	☐	☐	☒	*SR-126 scenic corridor*
SERVICES	1. Traffic/Access	16	☐	☐	☒	*Exceed CMP threshold*
	2. Sewage Disposal	17	☐	☐	☒	*Sewage disposal prior to construction of treatment plant*
	3. Education	18	☐	☐	☒	*Limited school space*
	4. Fire/Sheriff	19	☐	☐	☒	*Project specific impacts and mitigations to be determined*
	5. Utilities	20	☐	☐	☒	*Water, solid waste*
OTHER	1. General	21	☐	☐	☒	*Community characteristics*
	2. Environmental Safety	22	☐	☐	☒	*Abandoned oil wells*
	3. Land Use	23	☐	☐	☒	*Specific plan amendment*
	4. Pop./Hous./Emp./Rec.	24	☐	☐	☒	*Demand for new recreation facility*
	Mandatory Findings	25	☐	☐	☒	*Biota, air quality*

DEVELOPMENT MONITORING SYSTEM (DMS) *

As required by the Los Angeles County General Plan, DMS shall be employed in the Initial Study phase of the environmental review procedure as prescribed by state law.

1. Development Policy Map Designation: *Urban expansion and SEA*

2. ☒ Yes ☐ No Is the project located in the Antelope Valley, East San Gabriel Valley, Malibu/Santa Monica Mountains or Santa Clarita Valley planning area?

3. ☒ Yes ☐ No Is the project at urban density and located within, or proposes a plan amendment to, an urban expansion designation?

If both of the above questions are answered "yes", the project is subject to a County DMS analysis.

☒ Check if DMS printout generated (attached) Date of printout: *7/22/2003*

☐ Check if DMS overview worksheet completed (attached)

*EIRs and/or staff reports shall utilize the most current DMS information available.

Environmental Finding:

FINAL DETERMINATION: On the basis of this Initial Study, the Department of Regional Planning finds that this project qualifies for the following environmental document:

☐ NEGATIVE DECLARATION, inasmuch as the proposed project will not have a significant effect on the environment.

An Initial Study was prepared on this project in compliance with the State CEQA Guidelines and the environmental reporting procedures of the County of Los Angeles. It was determined that this project will not exceed the established threshold criteria for any environmental/service factor and, as a result, will not have a significant effect on the physical environment.

☐ MITIGATED NEGATIVE DECLARATION, inasmuch as the changes required for the project will reduce impacts to insignificant levels (see attached discussion and/or conditions).

An Initial Study was prepared on this project in compliance with the State CEQA Guidelines and the environmental reporting procedures of the County of Los Angeles. It was originally determined that the proposed project may exceed established threshold criteria. The applicant has agreed to modification of the project so that it can now be determined that the project will not have a significant effect on the physical environment. The modification to mitigate this impact(s) is identified on the Project Changes/Conditions Form included as part of this Initial Study.

☒ ENVIRONMENTAL IMPACT REPORT*, inasmuch as there is substantial evidence that the project may have a significant impact due to factors listed above as "significant."

☐ At least one factor has been adequately analyzed in an earlier document pursuant to legal standards, and has been addressed by mitigation measures based on the earlier analysis as described on the attached sheets (see attached Form DRP/IA 101). The EIR is required to analyze only the factors not previously addressed.

Reviewed by: *Hsiao-ching Chen* Date: _____

Approved by: *Daryl Koutnik* Daryl Koutnik Date: 26 AUGUST 2003

☐ This proposed project is exempt from Fish and Game CEQA filling fees. There is no substantial evidence that the proposed project will have potential for an adverse effect on wildlife or the habitat upon which the wildlife depends. (Fish & Game Code 753.5).

☐ Determination appealed--see attached sheet.

*NOTE: Findings for Environmental Impact Reports will be prepared as a separate document following the public hearing on the project.

HAZARDS - 1. Geotechnical

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site located in an active or potentially active fault zone, Seismic Hazards Zone, or Alquist-Priolo Earthquake Fault Zone?
				Salt Creek and Del Valle Fault Zone are located to the west of the tract map
b.	☒	☐	☐	Is the project site located in an area containing a major landslide(s)?
				Project site contains a landslide area
c.	☐	☒	☐	Is the project site located in an area having high slope instability?
d.	☒	☐	☐	Is the project site subject to high subsidence, high groundwater level, liquefaction, or hydrocompaction?
				Groundwater levels vary between 6 to 27 feet.
e.	☒	☐	☐	Is the proposed project considered a sensitive use (school, hospital, public assembly site) located in close proximity to a significant geotechnical hazard?
				Project contains an elementary school and residential development
f.	☒	☐	☐	Will the project entail substantial grading and/or alteration of topography including slopes of more than 25%?
				Total grading is estimated to be approximately 7 million cubic yards.
g.	☒	☐	☐	Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?
				Expansive soils present on site.
h.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☒ Building Ordinance No. 2225 C Sections 308B, 309, 310 and 311 and Chapters 29 and 70.

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☒ Approval of Geotechnical Report by DPW

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by, **geotechnical** factors?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

HAZARDS - 2. Flood

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Is a major drainage course, as identified on USGS quad sheets by a dashed line, located on the project site? *Santa Clara River, Castaic Creek, and Chiquito Canyon are adjacent to the property*
b.	☒	☐	☐	Is the project site located within or does it contain a floodway, floodplain, or designated flood hazard zone? *Portions of the tract are within 100-year FEMA floodplain*
c.	☐	☐	☒	Is the project site located in or subject to high mudflow conditions? *Santa Clara River, Castaic Creek, and Chiquito Canyon are adjacent to the property*
d.	☐	☐	☒	Could the project contribute or be subject to high erosion and debris deposition from run off? *Earthwork during site development would have the potential to increase erosion and deposition during periods of heavy rain.*
e.	☒	☐	☐	Would the project substantially alter the existing drainage pattern of the site or area? *Project includes a man-made drainage network to capture and control runoff.*
f.	☒	☐	☐	Other factors (e.g., dam failure)? *Site is within the Castaic Lake dam inundation area*

STANDARD CODE REQUIREMENTS

☐ Building Ordinance No. 2225 C Section 308A ☐ Ordinance No. 12,114 (Floodways)
☒ Approval of Drainage Concept by DPW

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by **flood (hydrological)** factors?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

HAZARDS - 3. Fire

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site located in a Very High Fire Hazard Severity Zone (Fire Zone 4)? *Site is located within Fire Zone 3*
b.	☐	☒	☐	Is the project site in a high fire hazard area and served by inadequate access due to lengths, widths, surface materials, turnarounds or grade?
c.	☐	☒	☐	Does the project site have more than 75 dwelling units on a single access in a high fire hazard area?
d.	☐	☐	☒	Is the project site located in an area having inadequate water and pressure to meet fire flow standards? *New public water system required.*
e.	☐	☒	☐	Is the project site located in close proximity to potential dangerous fire hazard conditions/uses (such as refineries, flammables, explosives manufacturing)? *Adjacent to Fire Zone 4*
f.	☐	☒	☐	Does the proposed use constitute a potentially dangerous fire hazard?
g.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☒ Water Ordinance No. 7834 ☒ Fire Ordinance No. 2947 ☒ Fire Regulation No. 8

☐ Fuel Modification/Landscape Plan

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Project Design ☐ Compatible Use

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by **fire hazard** factors?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

HAZARDS - 4. Noise

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Is the project site located near a high noise source (airports, railroads, freeways, industry)?
				Site is adjacent to SR-126
b.	☒	☐	☐	Is the proposed use considered sensitive (school, hospital, senior citizen facility) or are there other sensitive uses in close proximity?
				There are residential and school components in this tract map
c.	☐	☐	☒	Could the project substantially increase ambient noise levels including those associated with special equipment (such as amplified sound systems) or parking areas associated with the project?
				The tract map will include commercial activities.
d.	☒	☐	☐	Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels without the project?
				During construction period
e.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☒ Noise Ordinance No. 11,778 ☐ Building Ordinance No. 2225--Chapter 35

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☐ Compatible Use

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be adversely impacted by **noise**?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

RESOURCES - 1. Water Quality

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Is the project site located in an area having known water quality problems and proposing the use of individual water wells? *Santa Clara River is impaired waterway; groundwater is proposed water resource*
b.	☐	☒	☐	Will the proposed project require the use of a private sewage disposal system?
	☐	☐	☐	If the answer is yes, is the project site located in an area having known septic tank limitations due to high groundwater or other geotechnical limitations*or* is the project proposing on-site systems located in close proximity to a drainage course?
c.	☒	☐	☐	Could the project's associated construction activities significantly impact the quality of groundwater and/or storm water runoff to the storm water conveyance system and/or receiving water bodies? *Grading and other earth movement during construction period.*
d.	☒	☐	☐	Could the project's post-development activities potentially degrade the quality of storm water runoff and/or could post-development non-storm water discharges contribute potential pollutants to the storm water conveyance system and/or receiving bodies? *Urban runoff*
e.	☒	☐	☐	Other factors? *Domestic water for the site, which will be supplied by the Valencia Water Company, is a blend of imported water and groundwater withdrawn primarily from Alluvial and Saugus aquifers. Some remediation efforts by federal and state agencies are underway.*

STANDARD CODE REQUIREMENTS

☐ Industrial Waste Permit ☒ Health Code Ordinance No. 7583, Chapter 5

☒ Plumbing Code Ordinance No. 2269 ☒ NPDES Permit Compliance (DPW)

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by, **water quality** problems?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

RESOURCES - 2. Air Quality

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Will the proposed project exceed the State's criteria for regional significance (generally (a) 500 dwelling units for residential uses or (b) 40 gross acres, 650,000 square feet of floor area or 1,000 employees for nonresidential uses)? *1,444 dwelling units and a maximum of 1,353,000 square feet of non-residential mixed-used space*
b.	☒	☐	☐	Is the proposal considered a sensitive use (schools, hospitals, parks) and located near a freeway or heavy industrial use? *An elementary school will be located near SR-126.*
c.	☒	☐	☐	Will the project increase local emissions to a significant extent due to increased traffic congestion or use of a parking structure, or exceed AQMD thresholds of potential significance per Screening Tables of the CEQA Air Quality Handbook? *Project exceeds regional threshold*
d.	☒	☐	☐	Will the project generate or is the site in close proximity to sources which create obnoxious odors, dust, and/or hazardous emissions? *Project is adjacent to SR-126, Chiquita Canyon Landfill north of the site*
e.	☐	☐	☒	Would the project conflict with or obstruct implementation of the applicable air quality plan? *Santa Clarita Valley is a non-attainment area*
f.	☒	☐	☐	Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation? *South Coast Air Basin is a non-attainment area.*
g.	☒	☐	☐	Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?
h.	☒	☐	☐	Other factors: *Construction impacts from 7,000,000 c.y. of fill*

STANDARD CODE REQUIREMENTS

☐ Health and Safety Code Section 40506

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Project Design ☒ Air Quality Report including toxic emission analysis for diesel particulates

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by, **air quality**?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

RESOURCES - 3. Biota

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Is the project site located within a Significant Ecological Area (SEA), SEA Buffer, or coastal Sensitive Environmental Resource (ESHA, etc.), or is the site relatively undisturbed and natural? *Off-site improvement associated with this project is within SEA 23 Santa Clara River*
b.	☒	☐	☐	Will grading, fire clearance, or flood related improvements remove substantial natural habitat areas? *7,000,000 cubic yards of fill to come from within Specific Plan area*
c.	☒	☐	☐	Is a major drainage course, as identified on USGS quad sheets by a blue, dashed line, located on the project site? *Santa Clara River*
d.	☒	☐	☐	Does the project site contain a major riparian or other sensitive habitat (e.g., coastal sage scrub, oak woodland, sycamore riparian woodland, wetland, etc.)? *Southern willow riparian habitat*
e.	☒	☐	☐	Does the project site contain oak or other unique native trees (specify kinds of trees)? *Coast Live Oaks, cottonwood trees*
f.	☒	☐	☐	Is the project site habitat for any known sensitive species (federal or state listed endangered, etc.)? *Least Bell's vireo, San Fernando Valley Spineflower in borrow site area; SEA 23 is habitat for unarmored threespine stickleback.*
g.	☒	☐	☐	Other factors (e.g., wildlife corridor, adjacent open space linkage)? *Santa Clara River*

☒ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☒ Oak Tree Permit ☒ SEATAC Review

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on **biotic resources**?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

RESOURCES - 4. Archaeological / Historical / Paleontological

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Is the project site in or near an area containing known archaeological resources or containing features (drainage course, spring, knoll, rock outcroppings, or oak trees) which indicate potential archaeological sensitivity? *CA-LAN-2234*
b.	☒	☐	☐	Does the project site contain rock formations indicating potential paleontological resources? *Portion of Long Canyon under consideration as a borrow site is underlain by the Saugus Formation, which is considered to contain a diverse assemblage of marine and non-marine vertebrate fossils in the Santa Clarita Valley*
c.	☐	☒	☐	Does the project site contain known historic structures or sites? *Site is vacant except for several storage sheds*
d.	☐	☐	☒	Would the project cause a substantial adverse change in the significance of a historical or archaeological resource as defined in 15064.5? *CA-lan-2234 may be impacted.*
e.	☐	☐	☒	Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? *The construction of a borrow site may destroy a unique paleontological resource*
f.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☒ Phase I Archaeology Report

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **archaeological, historical**, or **paleontological** resources?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

RESOURCES - 5.Mineral Resources

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☐	☒	Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? *Oil extraction activities in portions of the site.*
b.	☐	☒	☐	Would the project result in the loss of availability of a locally important mineral resource discovery site delineated on a local general plan, specific plan or otherland use plan?
c.	☒	☐	☐	Other factors? *Project site has been previously used for oil extraction*

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **mineral** resources?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

RESOURCES - 6. Agriculture Resources

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?
				Portions of the tract are prime farmland
b.	☐	☒	☐	Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?
c.	☒	☐	☐	Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?
				Site is currently used for agricultural purposes
d.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project leave a significant impad (individually or cumulatively) on **agriculture** resources?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

RESOURCES - 7. Visual Qualities

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Is the project site substantially visible from or will it obstruct views along a scenic highway (as shown on the Scenic Highway Element), or is it located within a scenic corridor or will it otherwise impact the viewshed? *Project is located along the Santa Clara River/SR-126 view corridor*
b.	☒	☐	☐	Is the project substantially visible from or will it obstructviews from a regional riding or hiking trail? *Santa Clara River trail*
c.	☒	☐	☐	Is the project site located in an undeveloped or undisturbed area, which contains unique aesthetic features? *Area along SR-126 has view of river and mesas to south*
d.	☒	☐	☐	Is the proposed use out-of-character in comparison to adjacent uses because of height, bulk, or other features? *Site is surrounded by vacant land currently undeveloped*
e.	☒	☐	☐	Is the project likely to create substantial sun shadow, light or glare problems? *New buildings may have night lighting and glare surfaces*
f.	☐	☐	☐	Other factors (e.g., grading or land form alteration):

☐ **MITIGATION MEASURES / ☐ OTHER CONSIDERATIONS**

☐ Lot Size ☒ Project Design ☒ Visual Report ☐ Compatible Use

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on **scenic** qualities?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

SERVICES - 1. Traffic/Access

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Does the project contain 25 dwelling units, or more and is it located in an area with known congestion problems (roadway or intersections)? *1,444 residential units, a maximum of 1,353,000 square feet of non-residential mixed-used space, and a 45,000 sq.ft. school*
b.	☐	☐	☒	Will the project result in any hazardous traffic conditions? *New circulation patterns*
c.	☐	☒	☐	Will the project result in parking problems with a subsequent impact on traffic conditions? *Sufficient parking spaces will be provided according to applicable codes*
d.	☐	☒	☐	Will inadequate access during an emergency (other than fire hazards) result in problems for emergency vehicles or residents/employees in the area?
e.	☒	☐	☐	Will the congestion management program (CMP) Transportation Impact Analysis thresholds of 50 peak hour vehicles added by project traffic to a CMP highway system intersection or 150 peak hour trips added by project traffic to a mainline freeway link be exceeded? *Project exceeds CMP thresholds for residential and commercial development*
f.	☐	☐	☒	Would the project conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)? *To be analyzed in the DEIR on Specific Plan consistency*
g.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Project Design ☒ Traffic Report ☒ Consultation with Traffic & Lighting Division

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **traffic/access** factors?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

SERVICES - 2. Sewage Disposal

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	If served by a community sewage system, could the project create capacity problems at the treatment plant? *Site currently is not serviced by any existing sewage system and treatment plant. Although a 6.8-mgd water reclamation plant servicing the area is proposed in the Newhall Ranch Specific Plan, it will not be completed prior to development of this tract. Interim plan for sewage treatment is necessary and its associated impacts will need to be analyzed.*
b.	☒	☐	☐	Could the project create capacity problems in the sewer lines serving the project site? *Same as above*
c.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ Sanitary Sewers and Industrial Waste Ordinance No. 6130

☐ Plumbing Code Ordinance No. 2269

☐ MITIGATION MEASURES / ☐ OTHER CONSIDERATIONS

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **sewage disposal** facilities?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

SERVICES - 3. Education

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Could the project create capacity problems at the district level? *Castaic Union School and William S. Hart Union High School Districts currently operate over capacity. And schools to be constructed within the SP will not be in place prior to development of the tract map. Therefore, interim impacts are to be analyzed.*
b.	☒	☐	☐	Could the project create capacity problems at individual schools which will serve the project site? *Interim impact to be analyzed.*
c.	☒	☐	☐	Could the project create student transportation problems? *No transportation currently exists; interim student transportation problems will occur before elementary, junior high, and high schools are constructed to adequately serve the Specific Plan area.*
d.	☒	☐	☐	Could the project create substantial library impacts due to increased population and demand? *The development of the tract will create new demand to existing library services*
e.	☒	☐	☐	Other factors? *The tract map includes a 7-acre elementary school*

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☒ Site Dedication ☒ Government Code Section 65995 ☒ Library Facilities Mitigation Fee

The applicant has school mitigation agreements with both effected school districts

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) relative to **educational** facilities/services?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

SERVICES - 4. Fire/Sheriff Services

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☐	☒	Could the project create staffing or response time problems at the fire station or sheriff's substation serving the project site? *According to the Specific Plan, three fire stations will be funded by the applicant per Newhall Ranch Specific Plan and two of them are within the Specific Plan area. However, these fire stations will not be in place in time before this first-phase development within the Specific Plan. The closest existing fire station is Fire Station 76 located at 27223 Henry Mayo Drive, less than 1 mile from the site. The nearest sheriff station is located at 23740 Magic Mountain Parkway. However, SP DEIR indicates that project specific impacts on sheriff department's services are to be determined at the time of project proposal. Therefore, this factor needs to be analyzed in this EIR.*
b.	☐	☐	☒	Are there any special fire or law enforcement problems associated with the project or the general area? *New residential area to be covered.*
c.	☐	☐	☐	Other factors?

☒ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☒ Fire Mitigation Fees

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) relative to **fire/sheriff** services?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

SERVICES - 5. Utilities/Other Services

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☐	☒	Is the project site in an area known to have an inadequate public water supply to meet domestic needs or to have an inadequate ground water supply and proposes water wells? *DMS does not provide assessment of water supply and demand for the Valencia Water Company level. The EIR needs to demonstrate that there is sufficient water for the tract map.*
b.	☐	☐	☒	Is the project site in an area known to have an inadequate water supply and/or pressure to meet fire fighting needs? *See above*
c.	☐	☒	☐	Could the project create problems with providing utility services, such as electricity, gas, or propane? *Gas Company and Edison's current infrastructure is capable of serving the entire SP at its build-out.*
d.	☒	☐	☐	Are there any other known service problem areas (e.g., solid waste)? *Newhall SP at its build-out will have unavoidable impacts on solid waste facilities. Provide project specific analysis and mitigation measures in the EIR .*
e.	☒	☐	☐	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services or facilities (e.g., fire protection, police protection, schools, parks, roads)? *No public infrastructure currently exists in project area.*
f.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ Plumbing Code Ordinance No. 2269 ☐ Water Code Ordinance No. 7834

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) relative to **utilities/services**?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

OTHER FACTORS - 1. General

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Will the project result in an inefficient use of energy resources?
b.	☒	☐	☐	Will the project result in a major change in the patterns, scale, or character of the general area or community? *Site is currently vacant and high intensity uses are proposed*
c.	☒	☐	☐	Will the project result in a significant reduction in the amount of agricultural land? *See discussion under "Agriculture" resource.*
d.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ State Administrative Code, Title 24, Part 5, T-20 (Energy Conservation)

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot size ☐ Project Design ☐ Compatible Use

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to any of the above factors?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

OTHER FACTORS - 2. Environmental Safety

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Are any hazardous materials used, transported, produced, handled, or stored on-site?
b.	☒	☐	☐	Are any pressurized tanks to be used or any hazardous wastes stored on-site? *Propane and other pressurized tanks may be used within commercial areas*
c.	☐	☒	☐	Are any residential units, schools, or hospitals located within 500 feet and potentially adversely affected?
d.	☒	☐	☐	Have there been previous uses which indicate residual soil toxicity of the site? *Site contain several abandoned oil wells*
e.	☐	☒	☐	Would the project create a significant hazard to the public or the environment involving the accidental release of hazardous materials into the environment?
f.	☐	☒	☐	Would the project emit hazardous emissions or handle hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?
g.	☒	☐	☐	Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or environment? *Site is within the Exxon Castaic Junction Oil Field.*
h.	☐	☒	☐	Would the project result in a safety hazard for people in a project area located within an airport land use plan, within two miles of a public or public use airport, or within the vicinity of a private airstrip?
i.	☐	☒	☐	Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?
j.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Toxic Clean up Plan

CONCLUSION

Considering the above information, could the project have a significant impact relative to **public safety**?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

OTHER FACTORS - 3. Land Use

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Can the project be found to be inconsistent with the plan designation(s) of the subject property? *Project requires Specific Plan Amendment*
b.	☐	☒	☐	Can the project be found to be inconsistent with the zoning designation of the subject property?
c.				Can the project be found to be inconsistent with the following applicable land use criteria:
	☐	☒	☐	Hillside Management Criteria?
	☐	☐	☒	SEA Conformance Criteria?
	☒	☐	☐	Other? *Resource Management Plan Conformance*
d.	☐	☒	☐	Would the project physically divide an established community?
e.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **land use** factors?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

OTHER FACTORS - 4. Population/Housing/Employment/Recreation

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Could the project cumulatively exceed official regional or local population projections?
b.	☐	☒	☐	Could the project induce substantial direct or indirect growth in an area (e.g., through projects in an undeveloped area or extension of major infrastructure)?
c.	☐	☒	☐	Could the project displace existing housing, especially affordable housing? *Site is vacant*
d.	☐	☒	☐	Could the project result in a substantial job/housing imbalance or substantial increase in Vehicle Miles Traveled (VMT)?
e.	☒	☐	☐	Could the project require new or expanded recreational facilities for future residents? *New recreational facilities are required for the development of the SP. The facilities to be provided for the tract map are to be identified and analyzed in the EIR.*
f.	☐	☒	☐	Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?
g.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **population, housing, employment**, or **recreational** factors?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

MANDATORY FINDINGS OF SIGNIFICANCE

Based on this Initial Study, the following findings are made:

	Yes	No	Maybe	
a.	☒	☐	☐	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?
				Biota
b.	☒	☐	☐	Does the project have possible environmental effects which are individually limited but cumulatively considerable? "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.
				Soild Waste
c.	☒	☐	☐	Will the environmental effects of the project cause substantial adverse effects on human beings, either directly or indirectly?
				Water quality, air quality, noise

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the environment?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

PROJECT NO. 00-196

CASE NO. TR53108

URBAN SERVICES ANALYSIS
WATER CAPACITY ANALYSIS

7/22/2003

WATER AVAILABILITY EVALUATION

(ACRE-FEET/YEAR)

	DEMAND								
		POTENTIAL							
WATER COMPANY	EXISTING DEMAND	RECORDED	APPROVED	PENDING	PROJEC	TOTAL	DRY SUPPLY	NORMAL SUPPLY	POTENTIAL SIGNIFICANT IMPACT
VALENCIA WC	22,735	2,895.06	4,973.30	1,332.70	593.27	32,529.32			
SC VALLEY WIDE	64,350	5,983.81	9,372.36	7,044.56	593.27	87,343.99	90,600	96,000	NO

SANTA CLARITA VALLEY WIDE FUTURE SUPPLY

YEAR			
2004	90,600	96,000	NO
2005	90,600	96,000	NO
2006	90,600	96,000	NO
2007	90,600	96,000	NO

CRITERIA

DEMAND FACTORS (AF/YR):	SF	MF	MH	COMMERCIAL (PER ACRE)	INDUSTRIAL (PER ACRE)
VALENCIA WC	0.56	0.30	0.09	2.77	3.14

Note:

Dry Supply - Ranges from 90,600 to 147,500 acre-feet-per year.

Conjunctive-use and groundwater banking supplies are not included in table.

Normal Supply - Ranges from 96,000 to 151,900 acre-feet-per year.

URBAN SERVICES ANALYSIS

FIRE PROTECTION ANALYSIS

7/22/2003

PROJECT NO. 00-196
CASE NO. TR53108

RESPONSE DISTANCE EVALUATION (MILES)

MAXIMUM DISTANCE CRITERIA

Lot Type	Residential	Commercial Industrial	Approximate Distance	Potential Significant Impact
COMMERCIAL		1.5	0.5	No
MULTIPLE FAMILY	1.5		0.5	No
SINGLE FAMILY	1.5		0.5	No

PROJECT NO. 00-196
CASE NO. TR53108

URBAN SERVICES ANALYSIS

SCHOOL CAPACITY ANALYSIS

7/22/2003

STUDENT EVALUATION

SCHOOL DISTRICT	ENROLLMENT	PENDING	APPROVED	RECORDED	PROJEC	TOTAL	CAPACITY	STUDENT OVERLOAD	POTENTIAL SIGNIFICANT IMPACT
CASTAIC UNION EL	1,135	722	206	644	216	2,923	1,430	1,493	YES
CASTAIC UNION JH	1,350	380	152	452	119	2,453	1,800	653	YES
WM.S. HART SR HI	9,903	1,575	2,811	1,680	156	16,125	9,512	6,613	YES

URBAN SERVICES ANALYSIS

LIBRARY CAPACITY ANALYSIS

PROJECT NO 00-196
CASE NO. TR53108

7/22/2003

LIBRARY	EXISTING DEMAND	DEMAND POTENTIAL RECORDED	APPROVED	PENDING	PROJECT	TOTAL	SUPPLY	POTENITAL SIGNIFICANT IMPACT
VALENCIA								
VOLUMES	174,090	34,039	37,995	26,246	8,924	281,294	211,688	YES
SPACE (SQ FT)	33,861	6,621	7,390	5,105	1,736	54,712	23,966	YES
-AREA CLUSTER-*								
VOLUMES	320,598	68,901	126,506	68,882	8,924	593,811	348,467	YES
SPACE (SQ FT)	62,356	13,401	24,605	13,398	1,736	115,496	67,777	YES

* AREA CLUSTER IS THE GROUP OF LIBRARIES SERVING THE ENTIRE COMMUNITY.

	CRITERIA
VOLUMES PER CAPITA:	2
SQUARE FOOT PER CAPITA:	0.389

URBAN SERVICES ANALYSIS

SEWER TREATMENT CAPACITY ANALYSIS

(MILLION GALLONS PER DAY)

7/22/2003

PROJECT NO. 00-196

CASE NO: TR53108

SEWER AGENCY	EXISTING DEMAND	RECORDED	APPROVED	PENDING	PROJECT	TOTAL	SUPPLY	POTENTIAL SIGNIFICANT IMPACT
S.D. NO. 26 & 32	15.04	3.01	5.19	3.22	0.34	26.80	19.10	YES

PLANNED EXPANSION

SEWER AGENCY	TOTAL CAPACITY	COMPLETION EXPECTED	POTENTIAL SIGNIFICANT IMPACT
S.D. NO. 26 & 32			
FIRST STAGE	28.10	2002	NO
PRACTICAL SITE CAPACITY:	34.10	2010	NO

CRITERIA

DEMAND FACTORS (GAL/DAY):	SF	MF	MH	COMMERCIAL (PER ACRE)	INDUSTRIAL (PER ACRE)
S.D. NO. 26 & 32	260	195	156	1,440	2,009

APPENDIX C

Management and Mitigation Plans

MITIGATION MONITORING PLAN
(Newhall Ranch Specific Plan)

INTRODUCTION The Mitigation Monitoring Program describes the procedures the applicant and others will use to implement the mitigation measures adopted in connection with the approval of the Specific Plan and Water Reclamation Plant and the methods of monitoring such actions. A Monitoring Program is necessary only for impacts which would be significant if not mitigated. The following consists of a monitoring program table noting the responsible agency for mitigation monitoring, the schedule and a list of all Specific Plan-related mitigation measures.

PURPOSE *The Mitigation Monitoring Program (MMP) has been prepared in conformance with Section 21081.6 of the California Environmental Quality Act. It is the intent of this program to (1) verify satisfaction of the required mitigation measures of the EIR; (2) provide a methodology to document implementation of the required mitigation; (3) provide a record of the Monitoring Program; (4) identify monitoring responsibility; (5) establish administrative procedures for the clearance of mitigation measures; (6) establish the frequency and duration of monitoring; and (7) utilize existing review processes wherever feasible.*

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.1 GEOTECHNICAL AND SOIL RESOURCES			
4.1-1. The standard building setbacks from ascending and descending man-made slopes are to be followed in accordance with Section 1806.4 of the Los Angeles County Building Code, unless superseded by specific geologic and/or soils engineering evaluations. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 44)	Applicant (Civil Engineer, Geotechnical Engineer, Engineering Geologist)	Building and Grading Plan Check	1. LACDPW, Geology/Soils Section, and Building and Safety 2. LACDPW, Building and Safety and Geology/Soils Section 3. Prior to Issuance of Building Permits

ACOE - U.S. Army Corps of Engineers
CIWMB - California Integrated Waste Management Board
CSDLAC - County Sanitation Districts of Los Angeles County
FCD - Flood Control Division
LACFPD - Los Angeles County Fire Protection District
LACDPW - Los Angeles County Department of Public Works
RWQCBLAR - Regional Water Quality Control Board, Los Angeles Region
SCAQMD - South Coast Air Quality Management District
USFWS - U.S. Fish and Wildlife Service

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.1 GEOTECHNICAL AND SOIL RESOURCES (cont.)			
4.1-2. The existing Grading Ordinance for planting and irrigation of cut-slopes and fill slopes is to be adhered to for grading operations within the project site. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 44)	Applicant (Civil Engineer)	Field Verification	1. LACDPW, Building and Safety 2. LACDPW, Building and Safety 3. Prior to Issuance of Occupancy Permits
4.1-3. In order to safeguard against major seismic-related structural failures, all buildings within the project boundaries are to be constructed in conformance with the Los Angeles County Uniform Building Code, as applicable.	Applicant (Project Structural Engineer)	Building Plan Check	1. LACDPW, Building and Safety 2. LACDPW, Building and Safety 3. Prior to Issuance of Building Permits
MITIGATION FOR GEOLOGIC HAZARDS			
4.1-4. The location and dimensions of the exploratory trenches and borings undertaken by Allan E. Seward Engineering Geology, Inc. and R.T. Frankian & Associates are to be noted on all grading plans relative to future building plans, unless the trenches and/or borings are removed by future grading operations. If future foundations traverse the trenches or borings, they are to be reviewed and approved by the project Geotechnical Engineer. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 45)	Applicant (Geotechnical Engineer)	Grading Plan Check Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Approval of Final Grading Plans; grading
4.1-5. Wherever the Pacoima Formation is exposed, it may be potentially expansive; therefore, it is to be tested by the project Soils Engineer at the grading plan stage to determine its engineering characteristics and mitigation requirements, as necessary.	Applicant (Geotechnical Engineer)	Grading Plan Check	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Approval of Final Grading Plans
4.1-6. Should any expansive soils be encountered during grading operations, they are not to be placed nearer the finished surface than 8 feet below the bottom of the subgrade elevation. This depth is subject to revision depending upon the expansive potential measured during grading. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer) Grading Contractor	Field Investigation	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. During Grading

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.1 GEOTECHNICAL AND SOIL RESOURCES (cont.)			
4.1-7. If expansive materials are encountered at subgrade elevation in cut areas, the soils are to be removed to a depth of 8 feet below the "finished" or "subgrade" surface and the excavated area backfilled with nonexpansive, properly compacted soils. This depth is subject to revision depending upon the expansive potential measured during grading. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer)	Field Investigation	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. During Grading
4.1-8. At the time of subdivision, which allows construction, areas subject to liquefaction are to be mitigated to the satisfaction of the project Geotechnical Engineer prior to site development. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer)	Grading Plan Check Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Issuance of Grading Permit(s)
4.1-9. Subdrains are to be placed in areas of high ground water conditions (Potrero Canyon, in particular) or wherever extensive irrigation is planned. The systems are to be designed to the specifications of the Newhall Ranch Specific Plan Geotechnical Engineer.	Applicant (Geotechnical Engineer and Engineering Geologist)	Grading Plan Check Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Issuance of Grading Permit and Verify During Grading
4.1-10. Subdrains are to be placed in the major and minor canyon fills, behind stabilization blankets, buttress fills, and retaining walls, and as required by the Geotechnical Engineer during grading operations. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer and Engineering Geologist)	Grading Plan Check Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Issuance of Grading Permit and Verify During Grading
4.1-11. Canyon subdrains may be installed in "V"-ditches or in a rectangular trench excavated to expose competent material or bedrock as approved by the Geotechnical Engineer.	Applicant (Geotechnical Engineer and Engineering Geologist)	Grading Plan Check Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Issuance of Grading Permit and Verify During Grading

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.1 GEOTECHNICAL AND SOIL RESOURCES (cont.)			
4.1-12. The vertical spacing of subdrains behind buttress fills, stabilization blankets, etc., are to be a maximum of 15 feet. The gradient is to be at least 2 percent to the discharge end. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer)	Grading Plan Check Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Issuance of Grading Permit and Verify During Grading
4.1-13. Geological materials subject to hydroconsolidation (containing significant void space) are to be removed prior to the placement of fill. Specific recommendations relative to hydroconsolidation are to be provided by the project Geotechnical Engineer at the subdivision stage. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 44)	Applicant (Geotechnical Engineer and Engineering Geologist)	Receipt of Specific Hydro-consolidation Recommend-ations Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Approval of Final Grading Plans and Verify During Grading
4.1-14. Proposed structures on ridgelines will have a minimum 20-foot horizontal setback from the margin of the bedrocks to prevent perched or ground water levels where relatively impermeable materials can block downward migration.	Applicant (Geotechnical Engineer and Engineering Geologist)	Grading Plan Check Field Verification	1. LACDPW, Geology/Soils Section, and Building and Safety 2. LACDPW, Building and Safety 3. Prior to Issuance of Grading Permits and Verify during Grading
4.1-15. Subsurface exploration is required to delineate the depth and lateral extent of the landslides shown on the geologic map. This work shall be undertaken at the subdivision stage. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 15) Landslides must be mitigated through stabilization, removal, and/or building setbacks as determined by the Newhall Ranch Specific Plan Geotechnical Engineer, and to the satisfaction of the Los Angeles County Department of Public Works.	Applicant (Geotechnical Engineer and Engineering Geologist)	Receipt of Exploratory Data and Mitigation Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Approval of Final Grading Plan and Verify During Grading
4.1-16. At the subdivision stage, the existence of landslides designated with "3" on Figure 4.1-2, Existing Landslide Areas, and within or adjacent to the development area is to be confirmed. (Allan E. Seward Engineering Geology, Inc., 19 September 1994,p. 15) If landslides are confirmed in these areas, they are to be mitigated through stabilization, removal, and/or building setbacks as determined by the Newhall Ranch Specific Plan Geotechnical Engineer.	Applicant (Geotechnical Engineer)	Grading Plan Check Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Approval of Final Grading Plan and Verify During Grading

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.1 GEOTECHNICAL AND SOIL RESOURCES (cont.)			
4.1-17. The existence, or lack thereof, of landslides on or adjacent to the roadway alignments for the extension of Magic Mountain Parkway and Valencia Boulevard will be evaluated by subsurface investigations at the subdivision stage. (Allan E. Seward Engineering Geology, Inc., 13 December 1995, p. 11) If landslides are confirmed in these areas, they are to be mitigated through stabilization, removal, and/or building setbacks as determined by the Newhall Ranch Specific Plan Geotechnical Engineer.	Applicant (Geotechnical Engineer and Engineering Geologist)	Grading Plan Check Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Approval of Final Grading Plan and Verify During Grading
4.1-18. The potential hazards associated with debris flow scars and other possible surficial failures located in proximity to the roadway alignments for the extension of Magic Mountain Parkway and Valencia Boulevard will be evaluated at the subdivision stage. (Allan E. Seward Engineering Geology, Inc., 13 December 1995, p. 11) These areas are to be mitigated as determined by the Newhall Ranch Specific Plan Geotechnical Engineer.	Applicant (Geotechnical Engineer and Engineering Geologist)	Grading Plan Check	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Approval of Final Grading Plan and Verify During Grading
4.1-19. Remove debris from surficial failures during grading operations prior to the placement of fill. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 16)	Applicant (Geotechnical Engineer)	Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. During Grading Operations
4.1-20. All soils and/or unconsolidated slopewash and landslide debris is to be removed prior to the placement of compacted fills. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 45)	Applicant (Geotechnical Engineer and Engineering Geologist)	Grading Plan Check Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to approval of Final Grading Plan and During Grading

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.1 GEOTECHNICAL AND SOIL RESOURCES (cont.)			
4.1-21. Cut-slopes, which will expose landslide material, are to undergo geologic and geotechnical evaluation at the subdivision stage to determine their stability and degree of consolidation. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 15) Several options are available to mitigate potential landslide failure in the proposed cut-slopes. Landslides may be stabilized with buttress fills or shear keys designed by the Newhall Ranch Specific Plan Geotechnical Engineer; landslide material can be entirely removed and replaced with a stability fill; or the slope can be redesigned to avoid the landslide. Landslides underlying cut pad or road areas may be removed or partially removed if the Newhall Ranch Specific Plan Geologist and Geotechnical Engineer conclude that the landslide is stable and sufficiently consolidated to build on. Landslides located on ascending natural slopes above proposed graded areas will also require evaluation for stability. Unstable landslides on natural slopes above graded areas will either require stabilization, removal or building setbacks to mitigate potential hazards.	Applicant (Geotechnical Engineer and Engineering Geologist)	Grading Plan Check Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Approval of Final Grading Plan and During Grading
4.1-22. Additional geologic investigations are required prior to approval of future tentative maps which allow construction, or grading plans to determine the geologic and geotechnical feasibility of the fifteen (15) lots proposed in the High Country SMA.	Applicant (Geotechnical Engineer)	Grading Plan Check	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Approval of Tentative Maps for the 15 Estate Residential Lots
4.1-23. Prior to construction of the road embankment located within landslide Qls II, a compacted fill shear key will be constructed at the property boundary. (R.T. Frankian & Associates, 19 September 1994, p. 6)	Applicant (Geotechnical Engineer and Engineering Geologist)	Grading Plan Check Field Verification	1. LACDPW, Geology/Soils Section, and Building and Safety 2. LACDPW, Building and Safety 3. Prior to Construction of the Road Embankment and Verify During Grading
4.1-24. Landslides, which will not affect the proposed grading concept, are to be placed in Restricted Use Areas on the Final Maps. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 43)	Applicant (Geotechnical Engineer and Engineering Geologist)	Grading Plan Check	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Approval of Final Maps

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.1 GEOTECHNICAL AND SOIL RESOURCES (cont.)			
4.1-25. Surficial stability of cut-slopes designated with a "G" are to be fully evaluated at the subdivision stage, due to the possibility of wedge failures or surficial material in the slope. Corrective grading measures are to be presented in detail as mitigation at both the subdivision and Grading Plan stages of development. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, pp. 17, 43)	Applicant (Geotechnical Engineer and Engineering Geologist)	Grading Plan Check Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Approval of Final Grading Plans and During Grading
4.1-26. Cut slopes designated as "P" are potentially unstable and are to be fully evaluated at the subdivision stage to ascertain whether they are stable as designed. Corrective grading measures are to be presented in detail as mitigation at both the subdivision and Grading Plan stages of development. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, pp. 17, 43)	Applicant (Geotechnical Engineer and Engineering Geologist)	Grading Plan Check Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Approval of Final Grading Plans and During Grading
4.1-27. Cut-slopes designated with a "U" are to be further investigated at the subdivision stage to confirm underlying geologic conditions and slope stability. Corrective grading measures are to be presented in detail as mitigation at both the subdivision and Grading Plan stages of development. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, pp. 17, 43)	Applicant (Geotechnical Engineer and Engineering Geologist)	Grading Plan Check Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Approval of Final Grading Plans and During Grading
4.1-28. Cut-slopes associated with the construction of the proposed extensions of Magic Mountain Parkway and Valencia Boulevard are to be further investigated at the subdivision stage to confirm the underlying geologic conditions and slope stability. Corrective measures are to be required if it is determined that the cut-slopes will not be stable. (Allan E. Seward Engineering Geology, Inc., 13 December 1995, pp. 11 & 12)	Applicant (Geotechnical Engineer and Engineering Geologist)	Grading Plan Check Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Approval of Final Grading Plans and During Grading

According to Allan E. Seward Engineering Geology, Inc., unstable cut-slopes can either be redesigned or stabilized using various corrective grading techniques. Redesign options for unstable cut-slopes include reorientation, relocation and reducing the proposed slope gradient. Options for corrective grading include the construction of buttress fills, stability fills, shear keys, and complete removal of the landslide material.

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.1 GEOTECHNICAL AND SOIL RESOURCES (cont.)			
4.1-29. Orientations of the bedrock attitudes are to be evaluated by the Newhall Ranch Specific Plan Engineering Geologist to identify locations of required buttress fills. Buttress fill design and recommendations, if necessary, are to be presented as mitigation during the grading plan stage. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer and Engineering Geologist)	Grading Plan Check Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. Prior to Approval of Final Grading Plans
4.1-30. All fills, unless otherwise specifically designed, are to be compacted to at least 90 percent of the maximum dry unit weight as determined by ASTM Designation D 1557-91 Method of Soil Compaction. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer)	Field Verification	1. LACDPW, Geology/Soils Section 2. LACDPW, Geology/Soils Section 3. During Grading
4.1-31. No fill is to be placed until the area to receive the fill has been adequately prepared and approved by the Geotechnical Engineer. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer)	Field Verification	1. LACDPW, Geology/Soils Section, Building and Safety 2. LACDPW, Geology/Soils Section, Building and Safety 3. During Grading
4.1-32. Fill soils are to be kept free of all debris and organic material. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer)	Field Verification	1. LACDPW, Geology/Soils Section, Building and Safety 2. LACDPW, Geology/Soils Section, Building and Safety 3. During Grading
4.1-33. Rocks or hard fragments larger than 8 inches are not to be placed in the fill without approval of the Geotechnical Engineer, and in a manner specified for each occurrence. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer)	Field Verification	1. LACDPW, Geology/Soils Section, Building and Safety 2. LACDPW, Geology/Soils Section, Building and Safety 3. During Grading
4.1-34. Rock fragments larger than 8 inches are not to be placed within 10 feet of finished pad grade or the subgrade of roadways or within 15 feet of a slope face. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer)	Field Verification	1. LACDPW, Geology/Soils Section, Building and Safety 2. LACDPW, Geology/Soils Section, Building and Safety 3. During Grading

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.1 GEOTECHNICAL AND SOIL RESOURCES (cont.)			
4.1-35. Rock fragments larger than 8 inches may be placed in windrows, below the limits given above, provided the windrows are spaced at least 5 feet vertically and 15 feet horizontally. Granular soil must be flooded around windrows to fill voids between the rock fragments. The granular soil is to be wheel rolled to assure compaction. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer)	Field Verification	1. LACDPW, Geology/Soils Section, Building and Safety 2. LACDPW, Geology/Soils Section, Building and Safety 3. During Grading
4.1-36. The fill material is to be placed in layers which, when compacted, is not to exceed 8 inches per layer. Each layer is to be spread evenly and is to be thoroughly mixed during the spreading to insure uniformity of material and moisture. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer)	Field Verification	1. LACDPW, Geology/Soils Section, Building and Safety 2. LACDPW, Geology/Soils Section, Building and Safety 3. During Grading
4.1-37. When moisture content of the fill material is too low to obtain adequate compaction, water is to be added and thoroughly dispersed until the soil is approximately 2 percent over optimum moisture content. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer)	Field Verification	1. LACDPW, Geology/Soils Section, Building and Safety 2. LACDPW, Geology/Soils Section, Building and Safety 3. During Grading
4.1-38. When the moisture content of the fill material is too high to obtain adequate compaction, the fill material is to be aerated by blading or other satisfactory methods until the soil is approximately two percent over optimum moisture content. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer)	Field Verification	1. LACDPW, Geology/Soils Section, Building and Safety 2. LACDPW, Geology/Soils Section, Building and Safety 3. During Grading
4.1-39. Where fills toe out on a natural slope or surface, a keyway, with a minimum width of 16 feet and extending at least 3 feet into firm, natural soil, is to be cut at the toe of the fill. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer)	Field Verification	1. LACDPW, Geology/Soils Section, Building and Safety 2. LACDPW, Geology/Soils Section, Building and Safety 3. During Grading
4.1-40. Where the fills toe out on a natural or cut slope and the natural or cut slope is steeper than 5 horizontal to 1 vertical, a drainage bench with a width of at least 8 feet is to be established at the toe of the fill. Fills may be placed over cut slopes if the visible contact between the fill and cut is steeper than 45 degrees. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer)	Field Verification	1. LACDPW, Geology/Soils Section, Building and Safety 2. LACDPW, Geology/Soils Section, Building and Safety 3. During Grading

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.1 GEOTECHNICAL AND SOIL RESOURCES (cont.)			
4.1-41. When placing fills over slopes, sidewall benching is to extend into competent material, approved by the Geotechnical Engineer, with vertical benches not less than 4 feet. (R.T. Frankian & Associates, 19 September 1994, Appendix I) Competent material is defined as being free of loose soil, heavy fracturing or compressive soils.	Applicant (Geotechnical Engineer and Engineering Geologist)	Field Verification	1. LACDPW, Geology/Soils Section, Building and Safety 2. LACDPW, Geology/Soils Section, Building and Safety 3. During Grading
4.1-42. When constructing fill slopes, the grading contractor is to avoid spillage of loose material down the face of the slope during the dumping and compacting operations. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer)	Field Verification	1. LACDPW, Geology/Soils Section, Building and Safety 2. LACDPW, Geology/Soils Section, Building and Safety 3. During Grading
4.1-43. The outer faces of fill slopes are to be compacted by backing a sheepsfoot compactor over the top of the slope, and thoroughly covering all of the slope surface with overlapping passes of the compactor. Compaction of the slope is to be repeated after each 4 feet of fill has been placed. The required compaction must be obtained prior to placement of additional fill. As an alternate, the slope can be overbuilt and cut back to expose a compacted core. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	Applicant (Geotechnical Engineer)	Field Verification	1. LACDPW, Geology/Soils Section, Building and Safety 2. LACDPW, Geology/Soils Section, Building and Safety 3. During Grading
4.1-44. All artificial fill associated with past petroleum activities as well as other existing artificial fill, are to be evaluated by the Newhall Ranch Specific Plan Geotechnical Engineer at the subdivision and/or Grading Plan Stage. (Allan E. Seward Engineering Geology, 19 September 1994, Inc., p. 45) Unstable fills are to be mitigated through removal, stabilization, or other means as determined by the Newhall Ranch Specific Plan Geotechnical Engineer.	Applicant (Geotechnical Engineer and Engineering Geologist)	Receipt of Geotechnical Evaluation Field Verification	1. LACDPW, Geology/Soils Section, Building and Safety 2. LACDPW, Geology/Soils Section, Building and Safety 3. Prior to Approval of Final Subdivision Maps or Grading Plans, and Verify During Grading
4.1-45. Surface runoff from the future graded areas is not to run over any natural, cut, or fill slopes. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 20)	Applicant (Civil Engineer and Construction Superintendent)	Include this Measure in Specifications Field Verification	1. LACDPW, Geology/Soils Section, Building and Safety 2. LACDPW, Geology/Soils Section, Building and Safety 3. During Grading

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.1 GEOTECHNICAL AND SOIL RESOURCES (cont.)			
4.1-46. Runoff from future pads and structures is to be collected and channeled to the street and/or natural drainage courses via non-erosive drainage devices. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 20)	Applicant (Civil Engineer and Construction Superintendent)	Include this Measure in Specifications Field Verification	1. LACDPW, Geology/Soils Section, Building and Safety 2. LACDPW, Geology/Soils Section, Building and Safety 3. During Grading
4.1-47. Water is not to stand or pond anywhere on the graded pads. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 20)	Applicant (Civil Engineer and Construction Superintendent)	Include this Measure in Specifications Field Verification	1. LACDPW, Geology/Soils Section, Building and Safety 2. LACDPW, Geology/Soils Section, Building and Safety 3. During Grading
4.1-48. Oil and water wells that might occur on site are to be abandoned in accordance with State and local regulations. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 45)	Applicant (Well abandonment Specialist)	Receipt of Confirmation of Abandonment	1. California Department of Conservation, Division of Oil and Gas, Building and Safety 2. LACDPW, Geology/Soils Section, Building and Safety 3. Prior to Issuance of Grading Permits
4.1-49. If any leaking or undocumented oil wells are encountered during grading operations, their locations are to be surveyed and the current well conditions evaluated immediately. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 21) Measures are to be taken to document the wells, abandonment, and remediate the well sites (if necessary) in accordance with State and local regulations.)	Applicant (Civil Engineer and Well Abandonment Specialist)	Include Measure in Specifications Field Documentation	1. California Department of Conservation, Division of Oil and Gas, Building and Safety 2. California Department of Conservation, Division of Oil and Gas, Building and Safety 3. During Grading
4.1-50. The exact status and location of the Exxon (Newhall Land & Farming) oil well #31 will be evaluated at the subdivision stage. If necessary, the well will be abandoned in accordance with State and local regulations. (Allan E. Seward Engineering Geology, Inc., 13 December 1995, p. 12)	Applicant (Civil Engineer and Well Abandonment Specialist)	Locate Well #31 on Tract Map Documentation of Abandonment, if applicable	1. California Department of Conservation, Division of Oil and Gas, Building and Safety 2. California Department of Conservation, Division of Oil and Gas, Building and Safety 3. Prior to Issuance of Grading Permit

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.1 GEOTECHNICAL AND SOIL RESOURCES (cont.)			
MITIGATION FOR SEISMIC HAZARDS			
4.1-51. Survey control will be required to precisely locate the Salt Creek and Del Valle Faults at the subdivision stage. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 33)	Applicant (Civil Engineer and Engineering Geologist)	Receipt of Geotechnical Documentation	1. LACDPW, Geology Section 2. LACDPW, Geology Section 3. Prior to Tract Map/Site Plan Approvals as Applicable
4.1-52. Additional subsurface trenching will be performed within the Holser Structural Zone on Newhall Ranch during the subdivision stage to evaluate its existence. Within Potrero Canyon, additional subsurface evaluation will be performed during the subdivision stage to confirm that nontectonic alluvial movement was the cause of surface ground cracking during the January 17, 1994 earthquake, and to evaluate the potential for shallow-depth faults. (Allan E. Seward Engineering Geology, Inc. 19 September 1994, p. 42, as revised above)	Applicant (Engineering Geologist)	Receipt of Geotechnical Documentation	1. LACDPW, Geology Section 2. LACDPW, Geology Section 3. Prior to Tract Map/Site Plan Approvals as Applicable
No distinct evidence for Holocene activity on any of the faults traversing the Newhall Ranch Specific Plan site was observed during Allan E. Seward Engineering Geology, Inc.'s investigation; however, based on the distinct nature of faulting, the possible association of minor seismic activity, and compatible orientation of the faulting in relation to the current stress regime of the Transverse Ranges, preliminary Building Setback Zones have been designated around the mapped fault zones (see Figure 4.1-4).			
4.1-53. Precise Building Setback Zones for the Newhall Ranch Specific Plan site are to be defined at the subdivision stage.	Applicant (Civil Engineer and Engineering Geologist)	Setback Zones Identified on Tract Maps/Site Plans	1. LACDPW, Geology Section, and Building and Safety 2. LACDPW, Geology Section, and Building and Safety 3. Prior to Tract Map and Site Plan and Final Map Approvals, as Applicable
4.1-54. Due to the potential activity of the Salt Creek and Del Valle Faults, site development is to remain outside of Building Setback Zones around fault traces, and the possible fault zone connecting them (see Figure 4.1-4). (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 42) The zone shown around the possible fault connecting the Del Valle and Salt Creek Faults may be deleted if future work shows that this fault segment does not exist.	Applicant (Civil Engineer and Engineering Geologist)	Setback Zones Identified on Tract Maps/Site Plans	1. LACDPW, Geology Section, and Building and Safety 2. LACDPW, Geology Section, and Building and Safety 3. Prior to Tract Map/Site Plan/Final Map Approvals, as Applicable

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.1 GEOTECHNICAL AND SOIL RESOURCES (cont.)			
4.1-55. To minimize potential hazards from shattered ridge effects, structures and storage tanks proposed on ridgelines are to have a minimum 20 foot setback from the margins of the bedrock. Designation of specific building setbacks will require evaluation at the subdivision stage. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 40) Building setback zones are to be identified on all site plans and tract maps for the site.	Applicant (Engineering Geologist)	Setback Zones Identified on Tract Maps/Site Plans	1. LACDPW, Geology Section, and Building and Safety 2. LACDPW, Geology Section, and Building and Safety 3. Prior to Tract Map/Site Plan Approvals, as Applicable
4.1-56. The potential for ground motion and ground failure associated with a seismic event in proximity to the planned roadway alignments of Magic Mountain Parkway and Valencia Boulevard will be evaluated at the subdivision stage. (Allan E. Seward Engineering Geology, Inc., 13 December 1995, p. 11) Mitigation to reduce associated significant impacts will also be identified at that time.	Applicant (Engineering Geologist)	Receipt of Geotechnical Report and Mitigation	1. LACDPW, Geology/Soils Section, and Building and Safety 2. LACDPW, Geology/Soils Section, and Building and Safety 3. Prior to Final Map Approval

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.2 FLOOD			
4.2-1. All on- and off-site flood control improvements necessary to serve the Newhall Ranch Specific Plan are to be constructed to the satisfaction of the County of Los Angeles Department of Public Works Flood Control Division.	Applicant (Civil Engineer)	Approval of Drainage Plans Field Verification	1. LACDPW, FCD 2. LACDPW, FCD 3. Prior to Issuance of Occupancy Permit(s)
4.2-2. All necessary permits or letters of exemption from the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, California Department of Fish and Game, and the Regional Water Quality Control Board for Specific Plan-related development are to be obtained prior to construction of drainage improvements. The performance criteria to be used in conjunction with 1603 agreements and/or 404 permits are described in Section 4.6, Biological Resources, **Mitigation Measures 4.6-1** through **4.6-10** (restoration) and **4.6-11** through **4.6-16** (enhancement).	Applicant	Receipt of all Necessary Permit(s)	1. ACOE, USFWS, CDFG, RWQCBLAR 2. ACOE, USFWS, CDFG, RWQCBLAR 3. Prior to Grading
4.2-3. All necessary streambed agreement(s) are to be obtained from the California Department of Fish and Game wherever grading activities alter the flow of streams under CDFG jurisdiction. The performance criteria to be used in conjunction with 1603 agreements and/or 404 permits are described in Section 4.6, Biological Resources, **Mitigation Measures 4.6-1** through **4.6-10** (restoration) and **4.6-11** through **4.6-16** (enhancement).	Applicant	Receipt of Streambed Agreements	1. CDFG 2. LACDPW, FCD 3. Prior to Grading
4.2-4. Conditional Letters of Map Revision (CLOMR) relative to adjustments to the 100-year FIA flood plain are to be obtained by the applicant after the proposed drainage facilities are constructed.	Applicant (Civil Engineer)	Receipt of CLOMR(s)	1. Federal Insurance Administration 2. LACDPW 3. Upon Completion of Facilities
4.2-5. Prior to the approval and recordation of each subdivision map, a Hydrology Plan, Drainage Plan, and Grading Plan (including an Erosion Control Plan if required) for each subdivision must be prepared by the applicant of the subdivision map to ensure that no significant erosion, sedimentation, or flooding impacts would occur during or after site development. These plans shall be prepared to the satisfaction of the County of Los Angeles Department of Public Works.	Applicant (Project Engineer)	Approval of Final Hydrology Plan, Final Drainage Plan, and Final Grading Plan	1. LACDPW, FCD and Geology/Soils Section 2. LACDPW, FCD and Geology/Soils Section 3. Prior to Recording of Each Subdivision Map
4.2 FLOOD (cont.)			
4.2-6. Install permanent erosion control measures, such as desilting and debris basins, drainage swales, slope drains, storm drain inlet/outlet protection, and sediment traps in order to prevent sediment and debris from the upper reaches of the drainage areas which occur on the Newhall Ranch site from entering storm drainage improvements. These erosion control measures shall be installed to the satisfaction of the County of Los Angeles Department of Public Works.	Applicant (Project Engineer)	Field Verification	1. LACDPW, FCD 2. LACDPW, FCD 3. Prior to Issuance of Occupancy Permits

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.2-7. The applicant for any subdivision map permitting construction shall satisfy all applicable requirements of the NPDES Program in effect in Los Angeles County to the satisfaction of the County of Los Angeles Department of Public Works. These requirements currently include preparation of an Urban Storm Water Mitigation Plan (USWMP) containing design features and Best Management Practices (BMPs) appropriate and applicable to the subdivision. In addition, the requirements currently include preparation of a Storm Water Management Pollution Prevention Plan (SWPPP) containing design features and BMPs appropriate and applicable to the subdivision. The County of Los Angeles Department of Public Works shall monitor compliance with those NPDES requirements.	Applicant (Construction Superintendent)	Submittal of USWMP and SWPPP to RWQCBLAR Field Verification	1. RWQCBLAR 2. LACDPW, Building and Safety 3. Prior to Grading and During Grading Operations
4.2-8. The applicant for any subdivision map permitting construction shall comply with all appropriate requirements of the County of Los Angeles Standard Urban Stormwater Mitigation Plan ("SUSMP") requirements, and comply with the SWRCB-issued General Permit for Construction Activity Storm Water (SWRCB Order 99-08-DWQ), as it may be amended from time to time or replaced by other applicable stormwater permits.	Applicant (Construction Superintendent)	Submittal of SUSMP to LACDPW Field Verification	1. LACDPW, FCD 2. LACDPW, FCD 3. Prior to Issuance of Occupancy Permits

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.3 CULTURAL/PALEONTOLOGICAL RESOURCES			
The following mitigation measures are derived from the Los Angeles County Environmental Document Reporting Procedures and Guidelines for paleontological resources and Appendix K of the CEQA *Guidelines* for the protection of cultural resources. Both documents require that reasonable efforts be made to reduce significant impacts on cultural resources to levels below identified thresholds of significance:			
4.3-1. Any adverse impacts to California-LAN-2133, -2235, and the northern portion of -2233 are to be mitigated by avoidance and preservation. Should preservation of these sites be infeasible, a Phase III data recovery (salvage excavation) operation is to be completed on the sites so affected, with archaeological monitoring of grading to occur during subsequent soils removals on the site. This will serve to collect and preserve the scientific information contained therein, thereby mitigating all significant impacts to the affected cultural resource.	Applicant (Archaeologist)	Qualified Archaeologist Present During Grading Activities of Sites	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. Prior to and During Grading Activities, as appropriate
4.3-2. Any significant effects to California-LAN-2241 are to be mitigated through site avoidance and preservation. Should this prove infeasible, an effort is to be made to relocate, analyze and re-inter the disturbed burial at some more appropriate and environmentally secure locale within the region.	Applicant (Archaeologist)	Qualified Archaeologist Present During Grading Activities of site if not located before	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. Prior to and During Grading Activities, as appropriate
4.3-3. In the unlikely event that additional artifacts are found during grading within the development area or future roadway extensions, an archaeologist will be notified to stabilize, recover and evaluate such finds.	Applicant (Archaeologist)	Include this Measure in Subdivision Map Conditions if appropriate	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. During Tentative Map Processing

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.3 CULTURAL/PALEONTOLOGICAL RESOURCES (cont.)			
4.3-4. As part of an inspection testing program, a Los Angeles County Natural History Museum-approved inspector is to be on site to salvage scientifically significant fossil remains. The duration of these inspections depends on the potential for the discovery of fossils, the rate of excavation, and the abundance of fossils. Geological formations (like the Saugus Formation) with a high potential will initially require full time monitoring during grading activities. Geologic formations (like the Quaternary terrace deposits) with a moderate potential will initially require half-time monitoring. If fossil production is lower than expected, the duration of monitoring efforts should be reduced. Because of known presence of microvertebrates in the Saugus Formation, samples of at least 2,000 pounds of rock shall be taken from likely horizons, including localities 13, 13A, 14, and 23. These samples can be stockpiled to allow processing later to avoid delays in grading activities. The frequency of these samples will be determined based on field conditions. Should the excavations yield significant paleontological resources, excavation is to be stopped or redirected until the extent of the find is established and the resources are salvaged. Because of the long duration of the Specific Plan, a reassessment of the paleontological potential of each rock unit will be used to develop mitigation plans for subsequent subdivisions. The report shall include an itemized inventory of the fossils, pertinent geologic and stratigraphic data, field notes of the collectors and include recommendations for future monitoring efforts in those rock units. Prior to grading, an agreement shall be reached with a suitable public, non-profit scientific repository, such as the Los Angeles County Museum of Natural History or similar institution, regarding acceptance of fossil collections.	Applicant (Archaeologist)	LA County Natural History Museum-Approved Inspector Present During Grading Activities	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. During Grading Activities in the Pico Formation, Saugus Formation, Quaternary Terrace Deposits, and Quaternary Older Alluvium
4.4 AGRICULTURAL RESOURCES			
4.4-1. Purchasers of homes located within 1,500 feet of an agricultural field or grazing area are to be informed of the location and potential effects of farming uses prior to the close of escrow.	Applicant	Include this Information in CC&Rs	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. At Home Sales
4.4-2. New homes within 1,500 feet of farming uses within Ventura County, if any, are to be informed that agricultural activities within Ventura County are protected under the County's right-to-farm ordinance, and are to be provided with copies of the County's Amended Ordinance 3730-5/7/85.	Applicant	Include this Information in CC&Rs	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. At Home Sales

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.5 ENVIRONMENTAL SAFETY			
4.5-1. All final school locations are to comply with the California State Board of Education requirement that no schools be sited within 100 feet from the edge of the right-of-way of 100-110 kV lines; 150 feet from 220-230 kV lines; and 250 feet from 345 kV lines.	Applicant	Tentative Tract Map Review	1. State Board of Education 2. LA County Department of Regional Planning 3. Prior to Approval of Tract Maps
4.5-2. Only non-habitable structures shall be located within SCE easements.	Applicant	Tentative Tract Map Review	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. Prior to Approval of Tract Maps
4.5-3. Prior to issuance of grading permits, all abandoned oil and natural gas-related sites must be remediated to the satisfaction of the California Department of Oil and Gas, the Los Angeles County Hazardous Materials Control Program, the South Coast Air Quality Management District, and/or the Regional Water Quality Control Board (Los Angeles region).	Applicant/On-Site Oil and Natural Gas Producers	Confirmation that Oil- and Natural Gas-Related Sites are Satisfactorily Remediated	1. California Department of Conservation, Division of Oil and Gas; LA County Hazardous Materials Control Program; SCAQMD; and RWQCBLAR 2. California Department of Conservation, Division of Oil and Gas; LA County Hazardous Materials Control Program; SCAQMD; and RWQCBLAR 3. Prior to Issuance of Grading Permits
4.5-4. All on-going oil and natural gas operational sites adjacent to or in close proximity to residential, mixed-use, commercial, business park, schools, and local and Community Parks shall be secured by fencing and emergency access to these locations shall be provided.	Applicant/On-Site Oil and Natural Gas Producers	Field Verification	1. California Department of Conservation, Division of Oil and Gas 2. LACDPW, Building and Safety Department 3. Prior to Issuance of Building Permits
4.5-5. The Specific Plan is to meet the requirements of SCGC in terms of pipeline relocation, grading in the vicinity of gas mains, and development within Southern California Gas Company easements. These requirements would be explicitly defined by SCGC at the future tentative map stage.	Applicant (Civil Engineer)	Grading Plan Check	1. SCGC 2. LACDPW 3. Prior to Approval of Grading Plan

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.5 ENVIRONMENTAL SAFETY (cont.)			
4.5-6. All potential buyers or tenants of property in the vicinity of Southern California Gas Company transmission lines are to be made aware of the line's presence in order to assure that no permanent construction or grading occurs over and within the vicinity of the high-pressure gas mains.	Applicant	Include this Information in CC&Rs	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. At Home Sales
4.5-7. In accordance with the provisions of the Los Angeles County Building Code, Section 308(d), all buildings and enclosed structures that would be constructed within the Specific Plan located within 25 feet of oil or gas wells shall be provided with methane gas protection systems. Buildings located between 25 feet and 200 feet of oil or gas wells shall, prior to the issuance of building permits by the County of Los Angeles, be evaluated in accordance with the current rules and regulations of the State of California Division of Oil and Gas.	Applicant (Building Contractors)	Include this Requirement in Building Specifications Field Verification	1. California Department of Conservation, Division of Oil and Gas and LACDPW, Building and Safety 2. LACDPW, Building and Safety 3. Prior to Issuance of Occupancy Permits
4.5-8. In accordance with the provisions of the Los Angeles County Building Code, Section 308(c), all buildings and structures located within 1,000 feet of a landfill containing decomposable material (in this case the Chiquito Canyon Landfill) shall be provided with a landfill gas migration protection and/or control system.	Applicant (Building Contractors)	Include this Requirement in Building Specifications Field Verification	1. LACDPW, Building and Safety 2. LACDPW, Building and Safety 3. Prior to Issuance of Occupancy Permits
4.5-9. In accordance with the provisions of the Los Angeles County Code, Title 11, Division 4, Underground Storage of Hazardous Materials regulations, the County of Los Angeles Department of Public Works shall review, prior to the issuance of building permits by the County of Los Angeles, any plans for underground hazardous materials storage facilities (e.g., gasoline) that may be constructed or installed within the Specific Plan.	Applicant (Building Contractors)	Include this Requirement in Building Specifications Field Verification	1. LACDPW, Building and Safety 2. LACDPW, Building and Safety 3. Prior to Issuance of Occupancy Permits

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase

4.6 BIOTA

Development of the Newhall Ranch Specific Plan will result in impacts to biological resources, some of which are considered to be significant. However, the Specific Plan generally avoids areas of highest biological value, and concentrates development in lower quality areas. The mitigation measures presented below, if successfully implemented, would reduce the degree of many of these impacts to a level that is considered not significant.

Mitigation measures are separated into three categories. The first includes an overview of those design features that are incorporated as part of the Specific Plan to reduce the biological impact potential. The second category includes specific mitigation measures incorporated as part of the Resource Management Plan. The last category includes additional mitigation measures recommended as part of this Draft EIR. The specific mitigation measures in each of these categories are defined below.

SPECIFIC PLAN DESIGN MEASURES

The Specific Plan was designed to partially mitigate potential impacts to sensitive biological resources through avoidance in order to maximize the conservation of important biological features of the site. Specific elements of Specific Plan design that are intended to reduce impacts to plants, animals and habitat would be implemented through adoption and approval of the Specific Plan.

The habitat types and associated plant and wildlife species which occur on the property have become an integral part of the overall Specific Plan design, through the formulation of a conservation strategy that allows for the development of the site in a way that minimizes the effects to sensitive biological resources. In addition, this conservation strategy incorporates the design and management of important open areas in a way that conserves biological values. An important aspect of this approach was an analysis of the conservation value of habitats on the property, which used conservation principles and a GIS mapping methodology. An additional component of the conservation strategy was the consideration of the larger regional context in the conservation design of biological resources on the site. The Ranch, which extends from the ridgeline of the Santa Susana Mountains across the Santa Clara River to the uplands on the north, offers the potential for significant habitat contributions to a Santa Susana Mountains open area and a key segment of the Santa Clara River system, as well as regionally important connections between these habitat areas and across the River.

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase

4.6 BIOTA (cont.)

The biological resource conservation strategy developed for the Newhall Ranch property addresses the sequencing recommended by the resource agencies: avoidance, minimization, and mitigation for unavoidable impacts to key sensitive resources. The proposed large, open areas on the Newhall Ranch property avoid impacts to many of the highly sensitive species present or potentially occurring on the site, and their habitats. Further design with respect to potential unavoidable impacts to biological resources has minimized encroachments into key areas of the property, decreasing the overall impacts. Indirect impacts to biological resources are minimized through the dedication of large blocks of habitat that decreases the edge-area ratio, and thus, buffers the habitat from noise, lighting, and encroachment by domestic pets, non-native plants, and humans. The result of these design efforts has produced a biological resource conservation strategy that has focused conservation and mitigation efforts on the Newhall Ranch property into two Special Management Areas and their connection:

- the Santa Clara River Corridor (River Corridor SMA);
- the large block of relatively undisturbed habitats on higher elevations into the Santa Susana Mountains (High Country SMA); and
- the connection between these two areas along the Salt Creek drainage.

In this design, the Conceptual Grading Plan (Draft EIR, Figure 1.0-14) has been developed to allow for preservation of significantly large areas of sensitive native habitats associated with the natural drainage areas of the site, and major landforms have been maintained. Large contiguous blocks of valuable habitat have been avoided and provided with direct linkage. The Specific Plan has focused on putting the two key habitat resource areas into consolidated blocks (connected by the Salt Creek drainage), resulting in minimal boundaries with developed areas. The assembly of these three elements will facilitate their management as a single special management area system within the Specific Plan area, as well as allowing coordination and interface with other programs outside the boundary of Newhall Ranch. The transitions between development and the special management areas will be the focus of special design treatments to protect the integrity of the conserved areas. As indicated above, the "edges" of urban development areas have been minimized to reduce the indirect impact potential of the Specific Plan, and native and compatible species will be used for landscaping in these areas.

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase

4.6 BIOTA (cont.)

The open area system for Newhall Ranch includes the most important habitat areas of the Santa Clara River (River Corridor SMA) and the areas which have been least impacted by agricultural, and oil and natural gas production activities (High Country SMA). It also includes the largest, least fragmented patches of each habitat type that remain on Newhall Ranch. In addition to consolidating the habitat on the Ranch into two major interconnected blocks, the open areas include the largest remaining individual blocks of each of the important habitat types. Substantial proportions of each of the habitat types and vegetation associations that occur on the Ranch will be conserved within the open area system. The incorporation of the River, the mountains, and connection provides for conservation of substantially the entire range of terrain and vegetation types on Newhall Ranch.

By connecting the open areas into two major blocks with a major linkage, the land use plan for the Ranch provides for a minimum edge-to-area ratio within the Specific Plan area. The least accessible portion of the property, in terms of topography and presence of roads, is the High Country SMA. In addition, there is limited existing access to the River and to the Salt Creek corridor area. The topography along the High Country and River provide the opportunity to focus management activities to effectively limit access to the habitat in these key resource areas. Additional management practices are intended to restrict future access as the Specific Plan is implemented.

A critical component of the open area system within the Newhall Ranch property and in the region is the connection between the High Country and the River Corridor along Salt Creek. The corridor will provide continuity between the habitats and the wildlife populations within the property, as well as forming a permanent regional linkage between the Santa Clara River and the Santa Susana Mountains. Salt Creek is the most appropriate location for such a wildlife corridor connection because of several distinguishing characteristics. These include provision of a direct link between the two major open areas; less disturbance than any of the other potential connections; it is bound through most of its length by open area on the north side and, therefore, will not be surrounded by development in the future; it is the only drainage that would provide more than a discontinuous, narrow connection; it includes both upland and riparian vegetation through most of the corridor; and it is topographically isolated from areas of development on Newhall Ranch. Currently, a portion of the wildlife corridor is situated in Ventura County. Future land use decisions will be required to define the corridor's final configuration in areas that occur outside the County of Los Angeles.

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase

4.6 BIOTA (cont.)

RESOURCE MANAGEMENT PLAN MITIGATION

Approval of the Specific Plan and its associated RMP would involve an amendment to the Los Angeles County zoning ordinance such that the provisions of the Specific Plan and RMP are binding. Specific measures to mitigate impacts to biological resources are incorporated as part of the Resource Management Plan (RMP) that is part of the Newhall Ranch Specific Plan. These measures are identified below:

SANTA CLARA RIVER (RIVER CORRIDOR) SMA

MITIGATION REQUIREMENTS

Mitigation for impacts for the Specific Plan on riparian resources will include restoration of riparian habitat and may include enhancement activities as well. In addition, a mitigation bank may be established as discussed in this section. The general areas in which riparian mitigation activities may take place are shown on Exhibit 2.6-3, Candidate Riparian Restoration/Enhancement Areas, of the Specific Plan.

The mitigation of Specific Plan impacts through restoration of habitat and enhancement of existing habitat quality shall conform to the requirements set forth below:

MITIGATION THROUGH RESTORATION

Habitat restoration as referred to in the Specific Plan means the revegetation of native plant communities on sites that have had the habitat removed due to past activities, such as agricultural or oil and natural gas operations.

Riparian resources along the Santa Clara River that are impacted by the Newhall Ranch Specific Plan will require restoration of similar habitat and values. Avoidance of impacts to riparian resources shall be the primary goal during the design of the individual stages of the Specific Plan. Unavoidable impacts to riparian resources shall be minimized through Specific Plan design, and then mitigated by the implementation of a revegetation plan. The revegetation plan may be prepared as part of a California Department of Fish and Game 1603 Streambed Alteration Agreement or U.S. Army Corps of Engineers Section 404 Permit and shall include the following:

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
4.6-1. The restoration mitigation areas located within the River Corridor SMA shall be in areas that have been disturbed by previous uses or activities. Mitigation shall be conducted only on sites where soils, hydrology, and microclimate conditions are suitable for riparian habitat. First priority will be given to those restorable areas that occur adjacent to existing patches (areas) of native habitat that support sensitive species, particularly endangered or threatened species. The goal is to increase habitat patch size and connectivity with other existing habitat patches while restoring habitat values that will benefit sensitive species.	Applicant (Project Biologist)	Field Verification	1. ACOE, CDFG 2. ACOE, CDFG 3. Prior to Approval of Revegetation Plans
4.6-2. A qualified biologist shall prepare or review revegetation plans. The biologist shall also monitor the restoration effort from its inception through the establishment phase.	Applicant (Project Biologist)	Revegetation Plan Comments and Documentation of Restoration Monitoring from Qualified Biologist Field Verification	1. ACOE, CDFG 2. ACOE, CDFG 3. Prior to Approval of Revegetation Plans and Monitor During Restoration Effort
4.6-3. Revegetation Plans may be prepared as part of a California Department of Fish and Game 1603 Streambed Alteration Agreement and/or an U.S. Army Corps of Engineers Section 404 Permit, and shall include: • Input from both the Project proponent and resource agencies to assure that the Project objectives applicable to the River Corridor SMA and the criteria of this RMP are met. • The identification of restoration/mitigation sites to be used. This effort shall involve an analysis of the suitability of potential sites to support the desired habitat, including a description of the existing conditions at the site(s) and such base line data information deemed necessary by the permitting agency.	Applicant (Project Biologist)	Revegetation Plan Review	1. ACOE, CDFG 2. ACOE, CDFG 3. Prior to Approval of Revegetation Plan
4.6-4. The revegetation effort shall involve an analysis of the site conditions such as soils and hydrology so that site preparation needs can be evaluated. The revegetation plan shall include the details and procedures required to prepare the restoration site for planting (i.e., grading, soil preparation, soil stockpiling, soil amendments, etc.), including the need for a supplemental irrigation system, if any.	Applicant (Project Biologist)	Revegetation Plan Review	1. ACOE, CDFG 2. ACOE, CDFG 3. Prior to Approval of Revegetation Plan

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
4.6-5. Restoration of riparian habitats within the River Corridor SMA shall use plant species native to the Santa Clara River. Cuttings or seeds of native plants shall be gathered within the River Corridor SMA or purchased from nurseries with local supplies to provide good genetic stock for the replacement habitats. Plant species used in the restoration of riparian habitat shall be listed on the approved project plant palette (Specific Plan Table 2.6-1, Recommended Plant Species for Habitat Restoration in the River Corridor SMA) or as approved by the permitting State and Federal agencies.	Applicant (Project Biologist)	Revegetation Plan Review Field Verification	1. ACOE, CDFG 2. ACOE, CDFG 3. Prior to Approval of Revegetation Plan and Monitor During Restoration Effort
4.6-6. The final revegetation plans shall include notes that outline the methods and procedures for the installation of the plant materials. Plant protection measures identified by the project biologist shall be incorporated into the planting design/layout.	Applicant (Project Biologist)	Revegetation Plan Review	1. ACOE, CDFG 2. ACOE, CDFG 3. Prior to Approval of Revegetation Plan
4.6-7. The revegetation plan shall include guidelines for the maintenance of the mitigation site during the establishment phase of the plantings. The maintenance program shall contain guidelines for the control of non-native plant species, the maintenance of the irrigation system, and the replacement of plant species.	Applicant (Project Biologist)	Revegetation Plan Review	1. ACOE, CDFG 2. ACOE, CDFG 3. Prior to Approval of Revegetation Plan
4.6-8. The revegetation plan shall provide for monitoring to evaluate the growth of the developing habitat. Specific performance goals for the restored habitat shall be defined by qualitative and quantitative characteristics of similar habitats on the River (e.g., density, cover, species composition, structural development). The monitoring effort shall include an evaluation of not only the plant material installed, but the use of the site by wildlife. The length of the monitoring period shall be determined by the permitting state and/or federal agency.	Applicant (Project Biologist)	Revegetation Plan Review	1. ACOE, CDFG 2. ACOE, CDFG 3. Prior to Approval of Revegetation Plan

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
4.6-9. Monitoring reports for the mitigation site shall be reviewed by the permitting State and/or Federal agency.	Applicant (Project Biologist)	Review of Monitoring Reports	1. ACOE and CDFG 2. ACOE and CDFG 3. During Revegetation Activities
4.6-10. Contingency plans and appropriate remedial measures shall also be outlined in the revegetation plan.	Applicant (Project Biologist)	Revegetation Plan Review	1. ACOE, CDFG 2. ACOE, CDFG 3. Prior to Approval of Revegetation Plan
MITIGATION THROUGH ENHANCEMENT			
4.6-11. Habitat enhancement as referred to in this document means the rehabilitation of areas of native habitat that have been moderately disturbed by past activities (e.g., grazing, roads, oil and natural gas operations, etc.) or have been invaded by non-native plant species such as giant cane (*Arundo donax*) and tamarisk (*Tamarix* sp.).	Applicant (Project Biologist)	Revegetation Plan Review	1. ACOE, CDFG 2. ACOE, CDFG 3. Prior to Approval of Revegetation Plan
4.6-12. Removal of grazing is an important means of enhancement of habitat values. Without ongoing disturbance from cattle, many riparian areas will recover naturally. Grazing except as permitted as a long-term resource management activity will be removed from the River Corridor SMA pursuant to the Long-Term Management Plan set forth in Section 4.6 of the Specific Plan EIR.	Land Owner/SMA Manager	Mitigation Monitoring Reports	1. LACDRP 2. LACDRP 3. Mitigation Monitoring Reports under CUP Condition No. 8
4.6-13. To provide guidelines for the installation of supplemental plantings of native species within enhancement areas, a revegetation plan shall be prepared prior to implementation of mitigation (see guidelines for revegetation plans above). These supplemental plantings will be composed of plant species similar to those growing in the existing habitat patch (see Specific Plan Table 2.6-1).	Applicant (Project Biologist)	Revegetation Plan Review	1. ACOE, CDFG 2. ACOE, CDFG 3. Prior to Approval of Revegetation Plan

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
4.6-14. Not all enhancement areas will necessarily require supplemental plantings of native species. Some areas may support conditions conducive for rapid "natural" re-establishment of native species. The revegetation plan may incorporate means of enhancement to areas of compacted soils, poor soil fertility, trash or flood debris, and roads as a way of enhancing riparian habitat values.	Applicant (Project Biologist)	Revegetation Plan Review	1. ACOE, CDFG 2. ACOE, CDFG 3. Prior to Approval of Revegetation Plan
4.6-15. Removal of non-native species such as giant cane (*Arundo donax*), salt cedar or tamarisk (*Tamarix* sp.), tree tobacco (*Nicotiana glauca*), castor bean (*Ricans communis*), if included in a revegetation plan to mitigate impacts, shall be subject to the following standards: • First priority shall be given to those habitat patches that support or have a high potential for supporting sensitive species, particularly endangered or threatened species. • All non-native species removals shall be conducted according to a resource agency approved exotics removal program. • Removal of non-native species in patches of native habitat shall be conducted in such a way as to minimize impacts to the existing native riparian plant species.	Applicant (Project Biologist)	Revegetation Plan Review	1. ACOE, CDFG 2. ACOE, CDFG 3. Prior to Approval of Revegetation Plan
MITIGATION BANKING			
4.6-16. Mitigation banking activities for riparian habitats will be subject to State and Federal regulations and permits. Mitigation banking for oak resources shall be conducted pursuant to the Oak Resources Replacement Program. Mitigation banking for elderberry scrub shall be subject to approval of plans by the County Forester.	Applicant (Project Biologist)	State and Federal Permits; Submittal of Permits	1. ACOE, CDFG 2. ACOE, CDFG, 3. Prior to Approval of Mitigation Banking Program
		Oak Resources; Review of Oak Tree Permit	1. LACDRP 2. LACDRP 3. Approval of Oak Tree Permit
		Elderberry Scrub; Review of Initial Study	1. LACDRP 2. LACDRP 3. Prior to Grading

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
MANAGEMENT REQUIREMENTS			
RECREATION AND ACCESS			
The quality of the habitat values that are conserved in the River Corridor SMA will benefit from the control of access to riparian areas. Guidelines for the control of access to the River Corridor SMA include the following:			
4.6-17. Access to the River Corridor SMA for hiking and biking shall be limited to the River trail system (including the Regional River Trail and various Local Trails) as set forth in this Specific Plan. • The River trail system shall be designed to avoid impacts to existing native riparian habitat, especially habitat areas known to support sensitive species. Where impacts to riparian habitat are unavoidable, disturbance shall be minimized and mitigated as outlined above under **Mitigation Measures 4.6-1** through **4.6-8**.	Applicant (Design)	Review of Trails Plans, Tract Maps, and/or Site Plans (Design)	1. LA County Department of Parks and Recreation 2. LA County Department of Parks and Recreation 3. Prior to Approval of Trails Plans, Tract Maps, and/or Site Plans, as applicable.
• Access to the River Corridor SMA will be limited to day time use of the designated trail system. • Signs indicating that no pets of any kind will be allowed within the River Corridor SMA, with the exception that equestrian use is permitted on established trails, shall be posted along the River Corridor SMA. • No hunting, fishing, or motor or off-trail bike riding shall be permitted. • The trail system shall be designed and constructed to minimize impacts on native habitats.	SMA Manager (Access)	Field Verification (Access)	1. LACDRP 2. LACDRP 3. Upon Complaint
TRANSITION AREAS			
4.6-18. Where development lies adjacent to the boundary of the River Corridor SMA a transition area shall be designed to lessen the impact of the development on the conserved area. Transition areas may be comprised of Open Area, natural or revegetated manufactured slopes, other planted areas, bank areas, and trails. Exhibits 2.6-4, 2.6-5, and 2.6-6 indicate the relationship between the River Corridor SMA and the development (disturbed) areas of the Specific Plan. The SMAs and the Open Area as well as the undisturbed portions of the development areas are shown in green. As indicated on the exhibits, on the south side of the River the River Corridor SMA is separated from development by the River bluffs, except in one location. The Regional River Trail will serve as transition area on the north side of the River where development areas adjoin the River Corridor SMA (excluding Travel Village).	Applicant	Review of Trails Plans, Tract Maps, and/or Site Plans	1. LACDRP 2. LACDRP 3. Prior to Approval of Trails Plans, Tract Maps, and/or Site Plans, as applicable.

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
TRANSITION AREAS			
4.6-19. The following are the standards for design of transition areas: • In all locations where there is no steep grade separation between the River Corridor and development, a trail shall be provided along this edge. • Native riparian plants shall be incorporated into the landscaping of the transition areas between the River Corridor SMA and adjacent development areas where feasible for their long-term survival. Plants used in these areas shall be those listed on the approved plant palette (Specific Plan Table 2.6-2 of the Resource Management Plan [Recommended Plants for Transition Areas Adjacent to the River Corridor SMA]). • Roads and bridges that cross the River Corridor SMA shall have adequate barriers at their perimeters to discourage access to the River Corridor SMA adjacent to the structures. • Where bank stabilization is required to protect development areas, it shall be composed of ungrouted rock, or buried bank stabilization as described in Section 2.5.2.a, except at bridge crossings and other locations where public health and safety requirements necessitate concrete or other bank protection. • A minimum 100 foot wide buffer adjacent to the Santa Clara River should be required between the top river-side of bank stabilization and development within the Land Use Designations Residential Low Medium, Residential Medium, Mixed-Use and Business Park unless, through Planning Director review in consultation with the staff biologist, it is determined that a lesser buffer would adequately protect the riparian resources within the River Corridor or that a 100 foot wide buffer is infeasible for physical infrastructure planning. The buffer area may be used for public infrastructure, such as: flood control access; sewer, water and utility easements; abutments; trails and parks, subject to findings of consistency with the Specific Plan and applicable County policies.	Applicant	Review of Trails Plans, Tract Maps, and/or Site Plans	1. LACDRP and LACDPW for Bank Stabilization 2. LACDRP and LACDPW for Bank Stabilization 3. Prior to Approval of Trails Plans, Tract Maps, and/or Site Plans, as applicable
4.6-20. The following guidelines shall be followed during any grading activities that take place within the River Corridor SMA: • Grading perimeters shall be clearly marked and inspected by the project biologist prior to grading occurring within or immediately adjacent to the River Corridor SMA. • The project biologist shall work with the grading contractor to avoid inadvertent impacts to riparian resources.	Applicant (Project Biologist)	Field Verification	1. LACDPW 2. LACDPW 3. Prior to and During Grading Activities

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
GRADING ACTIVITIES			
LONG-TERM MANAGEMENT PLAN			
4.6-21. Upon final approval of the Newhall Ranch Specific Plan, the Special Management Area designation for the River Corridor SMA shall become effective. The permitted uses and development standards for the SMA are governed by the Development Regulations, Chapter 3 of the Specific Plan.	Los Angeles County	None Required	1. Los Angeles County 2. Los Angeles County 3. Upon Effective Date of Zoning Ordinance
4.6-22. Upon completion of development of all land uses, utilities, roads, flood control improvements, bridges, trails, and other improvements necessary for implementation of the Specific Plan within the River Corridor in each subdivision allowing construction within or adjacent to the River Corridor, a permanent, non-revocable *conservation and public access easement* shall be offered to the County of Los Angeles pursuant to **Mitigation Measure 4.6-23** below over the portion of the River Corridor SMA within that subdivision.	Land Owner	Offer of Dedication of Easement	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. Submittal of Monitoring Report(s) Under CUP Condition No. 8
4.6-23. The River Corridor SMA *Conservation and Public Access Easement* shall be offered to the County of Los Angeles prior to the transfer of the River Corridor SMA ownership, or portion thereof to the management entity described in **Mitigation Measure 4.6-26** below.	Land Owner	Offer of Dedication of Easement	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. Prior to Transfer of River Corridor Ownership Under 4.6-26
4.6-24. The River Corridor SMA *Conservation and Public Access Easement* shall prohibit grazing, except as a long-term resource management activity, and agriculture within the River Corridor and shall restrict recreation use to the established trail system. Agricultural land uses and grazing for purposes other than long-term resource management activities within the River Corridor shall be extended in the event of the filing of any legal action against Los Angeles County challenging final approval of the Newhall Ranch Specific Plan and any related project approvals or certification of the Final EIR for Newhall Ranch. Agricultural land uses and grazing for purposes other than long-term resource management activities within the River Corridor shall be extended by the time period between the filing of any such legal action and the entry of a final judgment by a court with appropriate jurisdiction, after exhausting all rights of appeal, or execution of a final settlement agreement between all parties to the legal action, whichever occurs first.	Land Owner	Review of Easement Document	1. LACDRP 2. LACDRP 3. Prior to Acceptance of Easement by County

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
4.6-25. The River Corridor SMA conservation and public access easement shall be consistent in its provisions with any other conservation easements to State or Federal resource agencies which may have been granted as part of mitigation or mitigation banking activities.	Land Owner	Review of Conservation Easement / and Resource Permits	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. Prior to Recordation of River Corridor SMA Conservation Easement
4.6-26. Prior to the recordation of the River Corridor SMA *Conservation and Public Access Easement* as specified in **Mitigation Measure 4.6-23** above, the land owner shall provide a plan to the County for the permanent ownership and management of the River Corridor SMA, including any necessary financing. This plan shall include the transfer of ownership of the River Corridor SMA to the Center for Natural Lands Management, or if the Center for Natural Lands Management is declared bankrupt or dissolved, ownership will transfer or revert to a *joint powers authority* consisting of Los Angeles County (4 members), the City of Santa Clarita (2 members), and the Santa Monica Mountains Conservancy (2 members).	Land Owner	Approval of Management Plan by County	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. Prior to Recordation of River Corridor SMA *Conservation Easement*
HIGH COUNTRY SPECIAL MANAGEMENT AREA (SMA)			
4.6-26a Two types of habitat restoration may occur in the High Country SMA: 1) riparian revegetation activities principally in Salt Creek Canyon; and 2) oak tree replacement in, or adjacent to, existing oak woodlands and savannahs. • Mitigation requirements for riparian revegetation activities within the High Country SMA are the same as those for the River Corridor SMA and are set forth in **Mitigation Measures 4.6-1** through **4.6-11** and **4.6-13** through **4.6-16** above. • Mitigation requirements for oak tree replacement are set forth in **Mitigation Measure 4.6-48** below.	Land Owner (Project Biologist)	Field Verification	1. ACOE, CDFG (Riparian) 2. ACOE, CDFG (Riparian) 3. Approval of Revegetation Plans
MITIGATION REQUIREMENTS Mitigation activities which may occur in the High Country SMA, either for impacts associated with the construction of Estate lots, trails or access roads, or for impacts identified during the subdivision process in other portions of the Specific Plan Area, include restoration of habitat and enhancement to existing habitat (see discussion below). Mitigation banking may be established as provided below. In addition, Salt Creek Canyon is a high priority area for riparian mitigation.			

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
MITIGATION THROUGH RESTORATION			
Two types of habitat restoration may occur in the High Country SMA: 1) riparian revegetation activities principally in Salt Creek Canyon; and 2) oak resource replacement in, or adjacent to, existing oak woodlands and savannas.			
Mitigation requirements for riparian revegetation activities within the High Country SMA are the same as those for the River Corridor SMA and are set forth above.			
Mitigation requirements for oak resource replacement are set forth in Specific Plan Section 2.6, paragraph 3b of the Oak Tree Replacement Program of the Resource Management Program.			
ENHANCEMENT OF HABITAT			
4.6-27. Removal of grazing from the High Country SMA except for those grazing activities associated with long-term resource management programs, is a principal means of enhancing habitat values in the creeks, brushland and woodland areas of the SMA. The removal of grazing in the High Country SMA is discussed below under (b) 4. Long Term Management. All enhancement activities for riparian habitat within the High Country SMA shall be governed by the same provisions as set forth for enhancement in the River Corridor SMA. Specific Plan Table 2.6-3 of the Resource Management Plan provides a list of appropriate plant species for use in enhancement areas in the High Country SMA.	Land Owner/CNLM	Enhancement Plans and Field Verification	1. LACDRP 2. CNLM 3. During Enhancement Activities
MITIGATION BANKING			
4.6-28. Mitigation banking activities for riparian habitats will be subject to State and Federal regulations and permits. Mitigation banking for oak resources, shall be conducted pursuant to the Oak Resource Replacement Program. Mitigation banking for elderberry scrub shall be subject to approval of plans by the County Forester.	Applicant (Project Biologist)	State and Federal Permits; Submittal of Permits	1. ACOE, and CDFG 2. ACOE, CDFG 3. Prior to Approval of Mitigation Banking Program
		Oak Resources; Review of Oak Tree Permit	1. LACDRP 2. LACDRP 3. Approval of Oak Tree Permit
		Elderberry Scrub; Review of Initial Study	1. LACDRP 2. LACDRP 3. Prior to Grading

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
MANAGEMENT REQUIREMENTS			
RECREATION AND ACCESS			
The recreation opportunities presented by the High Country SMA are a major benefit of the SMA. However, recreational needs must be balanced with the preservation of the habitat values, which are conserved in the SMA. Recreation and access will be governed by the following standards:			
4.6-29. Access to the High Country SMA will be limited to day time use of the designated trail system.	Manager of High Country SMA	Field Verification	1. JPA as described in 4.6-41 2. JPA 3. In Perpetuity
4.6-30. No pets of any kind will be allowed within the High Country SMA, with the exception that equestrian use is permitted on established trails.	Manager of High Country SMA	Field Verification	1. JPA 2. JPA 3. In Perpetuity
4.6-31. No hunting, fishing, or motor or trail bike riding shall be permitted.	Manager of High Country SMA	Field Verification	1. JPA 2. JPA 3. In Perpetuity
4.6-32. The trail system shall be designed and constructed to minimize impacts on native habitats.	Applicant (Project Biologist)	Review of Trails Plan	1. JPA 2. JPA 3. Prior to Approval of Trails Plan
TRANSITION/FUEL MODIFICATION AREAS			
Development areas are generally separated from the High Country SMA by steep slopes. Specific Plan Exhibit 2.6-7 of the Resource Management Program, Salt Creek Wildlife Corridor Land Use Perspective, illustrates that development adjacent to the Salt Creek Wildlife Corridor is significantly separated vertically from the corridor.			

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
4.6-33. Construction of buildings and other structures (such as patios, decks, etc.) shall only be permitted upon developed pads within Planning Areas OV-04, OV-10, PV-02, and PV-28 and shall not be permitted on southerly slopes facing the High Country SMA (Planning Area HC-01) or in the area between the original SEA 20 boundary and the High Country boundary. If disturbed by grading, all southerly facing slopes which adjoin the High Country SMA within those Planning Areas shall have the disturbed areas revegetated with compatible trees, shrubs and herbs from the list of plant species for south and west facing slopes as shown in Table 2.6-3, Recommended Plant Species For Use In Enhancement Areas In The High Country.	Applicant	Field Verification	1. LACDRP/LA County Forester 2. LACDRP/LA County Forester 3. Prior to the Issuance of Building Permits
Transition from the development edge to the natural area shall also be controlled by the standards of wildfire fuel modification zones as set forth in **Mitigation Measure 4.6-49**. Within fuel modification areas, trees and herbs from Table 2.6-3 of the Resource Management Plan should be planted toward the top of slopes; and trees at lesser densities and shrubs planted on lower slopes.	Project Landscape Architect	Receipt of Wildfire Fuel Modification Plan	1. Los Angeles County Forester 2. Los Angeles County Forester 3. Prior to Recordation of Subdivision Maps
GRADING ACTIVITIES			
4.6-34. Grading perimeters shall be clearly marked and inspected by the project biologist prior to impacts occurring within or adjacent to the High Country SMA.	Applicant (Project Biologist)	Field Verification	1. LACDPW 2. LACDPW 3. Prior To and During Grading
4.6-35. The project biologist shall work with the grading contractor to avoid inadvertent impacts to biological resources outside of the grading area.	Applicant (Project Biologist)	Field Verification	1. LACDPW 2. LACDPW 3. During Grading
LONG-TERM MANAGEMENT			
4.6-36. Upon final approval of the Newhall Ranch Specific Plan, the Special Management Area designation for the High Country SMA shall become effective. The permitted uses and development standards for the SMA are governed by the Development Regulations, Chapter 3.	Los Angeles County	None Required	1. Los Angeles County 2. Los Angeles County 3. Upon Effective Date of Zoning Ordinance

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
4.6-37. The High Country SMA shall be offered for dedication in three approximately equal phases of approximately 1,400 acres each proceeding from north to south, as follows: 1) The first offer of dedication will take place with the issuance of the 2,000th residential building permit of Newhall Ranch; 2) The second offer of dedication will take place with the issuance of the 6,000th residential building permit of Newhall Ranch; and 3) The remaining offer of dedication will be completed by the 11,000th residential building permit of Newhall Ranch. 4) The Specific Plan applicant shall provide a quarterly report to the Departments of Public Works and Regional Planning which indicates the number of residential building permits issued in the Specific Plan area by subdivision map number.	Land Owner	Offer of Dedication	1. LA County Department of Regional Planning 2. LA County Department of Building and Safety 3. Upon Issuance of Building Permits
4.6-38. Prior to dedication of the High Country SMA, a *conservation and public access easement* shall be offered to the County of Los Angeles and a conservation and management easement offered to the Center for Natural Lands Management. The High Country SMA *Conservation and Public Access Easement* shall be consistent in its provisions with any other *conservation easements* to State or Federal resource agencies which may have been granted as part of mitigation or mitigation banking activities.	Land Owner	Review of Easement Document	1. LA County Department of Regional Planning 2. LA County Department of Building and Safety 3. Upon Issuance of Building Permits
4.6-39. The High Country SMA conservation and public access easement shall prohibit grazing within the High Country, except for those grazing activities associated with the long-term resource management programs, and shall restrict recreation to the established trail system.	Land Owner	Review of Easement Document	1. LACDRP 2. LACDRP 3. Prior to Acceptance of Easement by Los Angeles County
4.6-40. The High Country SMA conservation and public access easement shall be consistent in its provisions with any other conservation easements to State or Federal resource agencies which may have been granted as part of mitigation or mitigation banking activities.	Land Owner	Review of Conservation Easement and Resource Permits	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. Prior to Recordation of High Country SMA Conservation Easement

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
4.6-41. The High Country SMA shall be offered for dedication in fee to a *joint powers authority* consisting of Los Angeles County (4 members), the City of Santa Clarita (2 members), and the Santa Monica Mountains Conservancy (2 members). The *joint powers authority* will have overall responsibility for recreation within and conservation of the High Country.	Land Owner	Offer of Dedication	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. Prior to Issuance of Building Permits
4.6-42. An appropriate type of service or assessment district shall be formed under the authority of the Los Angeles County Board of Supervisors for the collection of up to $24 per single family detached dwelling unit per year and $15 per single family attached dwelling unit per year, excluding any units designated as Low and Very Low affordable housing units pursuant to Section 3.10, Affordable Housing Program of the Specific Plan. This revenue would be assessed to the homeowner beginning with the occupancy of each dwelling unit and distributed to the *joint powers authority* for the purposes of recreation, maintenance, construction, conservation and related activities within the *High Country Special Management Area.*	Land Owner	Approval of Assessment District Report by County	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. Prior to Issuance of First Residential Occupancy Permit
OPEN AREA			
MITIGATION REQUIREMENTS			
4.6-43. Suitable portions of *Open Area* may be used for mitigation of riparian, *oak resources,* or elderberry scrub. Mitigation activities within *Open Area* shall be subject to the following requirements, as applicable. • River Corridor SMA Mitigation Requirements, including: **Mitigation Measures 4.6-1** through **4.6-11** and **4.6-13** through **4.6-16**; and • High Country SMA Mitigation Requirements, including: **Mitigation Measures 4.6-27, 4.6-29** through **4.6-42**, and • Mitigation Banking — **Mitigation Measure 4.6-16.**	Manager of Open Area	Review of Mitigation Plans/Field Verification	1. ACOE; CDFG or Los Angeles County as applicable 2. ACOE; CDFG or Los Angeles County as applicable 3. During Mitigation
MANAGEMENT REQUIREMENTS			
4.6-44. Drainages with flows greater than 2,000 cfs will have soft bottoms. Bank protection will be of ungrouted rock, or buried bank stabilization as described in Section 2.5.2.a, except at bridge crossings and other areas where public health and safety considerations require concrete or other stabilization.	Applicant (Civil Engineer)	Review Drainage Plans	1. LACDPW FCD 2. LACDPW FCD 3. Prior to Approval of Final Drainage Plans

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
MANAGEMENT REQUIREMENTS			
4.6-45. The precise alignments and widths of major drainages will be established through the preparation of drainage studies to be approved by the County at the time of subdivision maps which permit construction.	Applicant (Civil Engineer)	Review Drainage Plans	1. LACDPW FCD 2. LACDPW FCD 3. Prior to Approval of Tract Maps
4.6-46. While Open Area is generally intended to remain in a natural state, some grading may take place, especially for parks, major drainages, trails, and roadways. Trails are also planned to be within Open Area.	Applicant (Civil Engineer)	Review of Tentative Map	1. LACDRP 2. LACDRP 3. Prior to Tentative Map Approval
4.6-47. At the time that final subdivision maps permitting construction are recorded, the *Open Area* within the map will be offered for dedication to the Center for Natural Lands Management. Community Parks within *Open Area* are intended to be public parks. Prior to the offer of dedication of *Open Area* to the Center for Natural Lands Management, all necessary *conservation and public access easements,* as well as easements for infrastructure shall be offered to the County.	Land Owner	Review of Final Map	1. LACDRP 2. LACDRP 3. Prior to Recordation of Final Subdivision Maps
MITIGATION BANKING			
4.6-47a Mitigation Banking will be permitted within the River Corridor SMA, the High Country SMA, and the *Open Area land use designations,* subject to the following requirements: • Mitigation banking activities for riparian habitats will be subject to State and Federal regulations, and shall be conducted pursuant to the mitigation requirements set forth in **Mitigation Measure 4.6-1** through **4.6-15** above. • Mitigation banking for oak resources shall be conducted pursuant to **4.6-48** below. • Mitigation banking for elderberry scrub shall be subject to approval of plans by the County Forester.	Applicant (Project Biologist)	State and Federal Permits; Submittal of Permits	1. ACOE, CDFG 2. ACOE, CDFG 3. Prior to Approval of Mitigation Banking Program
		Oak Resources; Review of Oak Tree Permit	1. LACDRP 2. LACDRP 3. Approval of Oak Tree Permit
		Elderberry Scrub; Review of Initial Study	1. LACDRP 2. LACDRP 3. Prior to Grading

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
OAK RESOURCES REPLACEMENT PROGRAM			
4.6-48. Standards for the restoration and enhancement of oak resources within the High Country SMA and the Open Area include the following (oak resources include oak trees of the sizes regulated under the County Oak Tree Ordinance, southern California black walnut trees, Mainland cherry trees, and Mainland cherry shrubs): • To mitigate the impacts to oak resources which may be removed as development occurs in the Specific Plan Area, replacement trees shall be planted in conformance with the oak tree ordinance in effect at that time. • Oak resource species obtained from the local gene pool shall be used in restoration or enhancement. • Prior to recordation of construction-level final subdivision maps, an oak resource replacement plan shall be prepared that provides the guidelines for the oak tree planting and/or replanting. The Plan shall be reviewed by the Los Angeles Department of Regional Planning and the County Forester and shall include the following: site selection and preparation, selection of proper species including sizes and planting densities, protection from herbivores, site maintenance, performance standards, remedial actions, and a monitoring program. • All plans and specifications shall follow County oak tree guidelines, as specified in the County Oak Tree Ordinance.	Applicant (Project Biologist)	Oak Tree Permit(s)	1. LA County Forester 2. LA County Forester 3. Prior to Final Subdivision Map Recordation
WILDFIRE FUEL MODIFICATION			
The Specific Plan Area is within the extreme and moderate fire hazard zones as identified in the County of Los Angeles General Plan. The moderate fire hazard zone extends to those areas of Newhall Ranch where native brush can be found growing in its natural state. This is most common in the hillside areas. The extreme fire hazard zone includes high brush and woodlands, and all steep slopes regardless of vegetation (refer to Section 4.18, Fire Services and Hazards, for a detailed description of on-site fire zones). Development of Newhall Ranch will reduce the amount of native flammable vegetation present within the Specific Plan Area. Fire fighting capabilities will be provided by two fire stations on the Specific Plan site (see Figure 1.0-3, Land Use Plan), other nearby stations, and a system of improved roads and an urban water system with fire flows as required by the County Fire Department. Existing and proposed off-site fire facilities will also serve the Specific Plan Area.			

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
Property damage and public safety risks associated with wildfire are greatest where homes and other structures will be located adjacent to large open areas dominated by native vegetation. This condition will occur primarily in the southern portion of the Specific Plan site and where portions of the development area in the northwest section of Riverwood Village abut large natural open areas.			
Access is currently provided to the Los Angeles County Fire Department for fire prevention control of the Specific Plan Area. Access will continue to be provided as the Specific Plan is implemented.			
Fuel modification mitigation includes:			
4.6-49. To minimize the potential exposure of the development areas, Open Area, and the SMAs to fire hazards, the Specific Plan is subject to the requirements of the Los Angeles County Fire Protection District (LACFPD), which provides fire protection for the area. At the time of final subdivision maps permitting construction in development areas that are adjacent to Open Area and the High Country SMA, a wildfire fuel modification plan shall be prepared in accordance with the fuel modification ordinance standards in effect at that time and shall be submitted for approval to the County Fire Department.	Applicant	Review of Wildfire Fuel Modification Plan	1. LA County Forester 2. LA County Forester 3. Prior to Recordation of Final Subdivision Maps
4.6-50. The wildfire fuel modification plan shall depict a fuel modification zone the size of which shall be consistent with the County fuel modification ordinance requirements. Within the zone, tree pruning, removal of dead plant material and weed and grass cutting shall take place as required by the fuel modification ordinance.	Applicant (Project Biologist)	Review of Wildfire Fuel Modification Plan	1. LA County Forester 2. LA County Forester 3. Prior to Recordation of Final Subdivision Maps
4.6-51. In order to enhance the habitat value of plant communities which require fuel modification, fire retardant plant species containing habitat value may be planted within the fuel modification zone. Typical plant species suitable for Fuel Modification Zones are indicated in Specific Plan Table 2. 6-5 of the Resource Management Plan. Fuel modification zones adjacent to SMAs and Open Areas containing habitat of high value such as oak woodland and savannas shall utilize a more restrictive plant list which shall be reviewed by the County Forester.	Applicant (Project Biologist)	Review of Wildfire Fuel Modification Plan	1. LA County Forester 2. LA County Forester 3. Prior to Recordation of Final Subdivision Maps

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
4.6-52. The wildfire fuel modification plan shall include the following construction period requirements: (a) a fire watch during welding operations; (b) spark arresters on all equipment or vehicles operating in a high fire hazard area; (c) designated smoking and non-smoking areas; and (d) water availability pursuant to the County Fire Department requirements.	Applicant (Project Biologist)	Review of Wildfire Fuel Modification Plan	1. LA County Forester 2. LA County Forester 3. Prior to Recordation of Final Subdivision Maps
EIR MITIGATION MEASURES			
To further reduce impacts to biological resources that would result from Specific Plan implementation the following mitigation measures are proposed:			
4.6-53. If, at the time any subdivision map proposing construction is submitted, the County determines through an Initial Study, or otherwise, that there may be rare, threatened or endangered, plant or animal species on the property to be subdivided, then, in addition to the prior surveys conducted on the Specific Plan site to define the presence or absence of sensitive habitat and associated species, current, updated site-specific surveys for all such animal or plant species shall be conducted in accordance with the consultation requirements set forth in Mitigation Measure 4.6-59 within those areas of the Specific Plan where such animal or plant species occur or are likely to occur. The site-specific surveys shall include the unarmored three-spine stickleback, the arroyo toad, the Southwestern pond turtle, the California red-legged frog, the southwestern willow flycatcher, the least Bell's vireo, the San Fernando Valley spineflower and any other rare, sensitive, threatened, or endangered plant or animal species occurring, or likely to occur, on the property to be subdivided. All site-specific surveys shall be conducted during appropriate seasons by qualified botanists or qualified wildlife biologists in a manner that will locate any rare, sensitive, threatened, or endangered animal or plant species that may be present. To the extent there are applicable protocols published by either the United States Fish and Wildlife Service or the California Department of Fish and Game, all such protocols shall be followed in preparing the updated site-specific surveys.	Applicant (Project Biologist)	Review of Initial Study	1. LACDRP 2. LACDRP 3. Prior to Approval of Subdivision Maps

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
4.6-53. (cont.) All site-specific survey work shall be documented in a separate report containing at least the following information: (a) project description, including a detailed map of the project location and study area; (b) a description of the biological setting, including references to the nomenclature used and updated vegetation mapping; (c) detailed description of survey methodologies; (d) dates of field surveys and total person-hours spent on the field surveys; (e) results of field surveys, including detailed maps and location data; (f) an assessment of potential impacts; (g) discussion of the significance of the rare, threatened or endangered animal or plant populations found in the project area, with consideration given to nearby populations and species distribution; (h) mitigation measures, including avoiding impacts altogether, minimizing or reducing impacts, rectifying or reducing impacts through habitat restoration, replacement or enhancement, or compensating for impacts by replacing or providing substitute resources or environments, consistent with CEQA (*Guidelines* §15370); (i) references cited and persons contacted; and (j) other pertinent information, which is designed to disclose impacts and mitigate for such impacts."			
4.6-54. Prior to development within or disturbance to occupied Unarmored threespine stickleback habitat, a formal consultation with the USFWS shall occur.	Applicant (Project Biologist)	Section 7 Consultation	1. USFWS 2. USFWS 3. Prior to Grading
4.6-55. Prior to development or disturbance within wetlands or other sensitive habitats, permits shall be obtained from pertinent Federal and State agencies and the Specific Plan shall conform with the specific provisions of said permits. Performance criteria shall include that described in **Mitigation Measures 4.6-1** through **4.6-16** and **4.6-42** through **4.6-47** for wetlands, and **Mitigation Measures 4.6-27, 4.6-28,** and **4.6-42** through **4.6-48** for other sensitive habitats.	Applicant (Project Biologist)	Receipt of Appropriate Permit applications	1. ACOE, CDFG 2. ACOE, CDFG 3. Prior to Grading

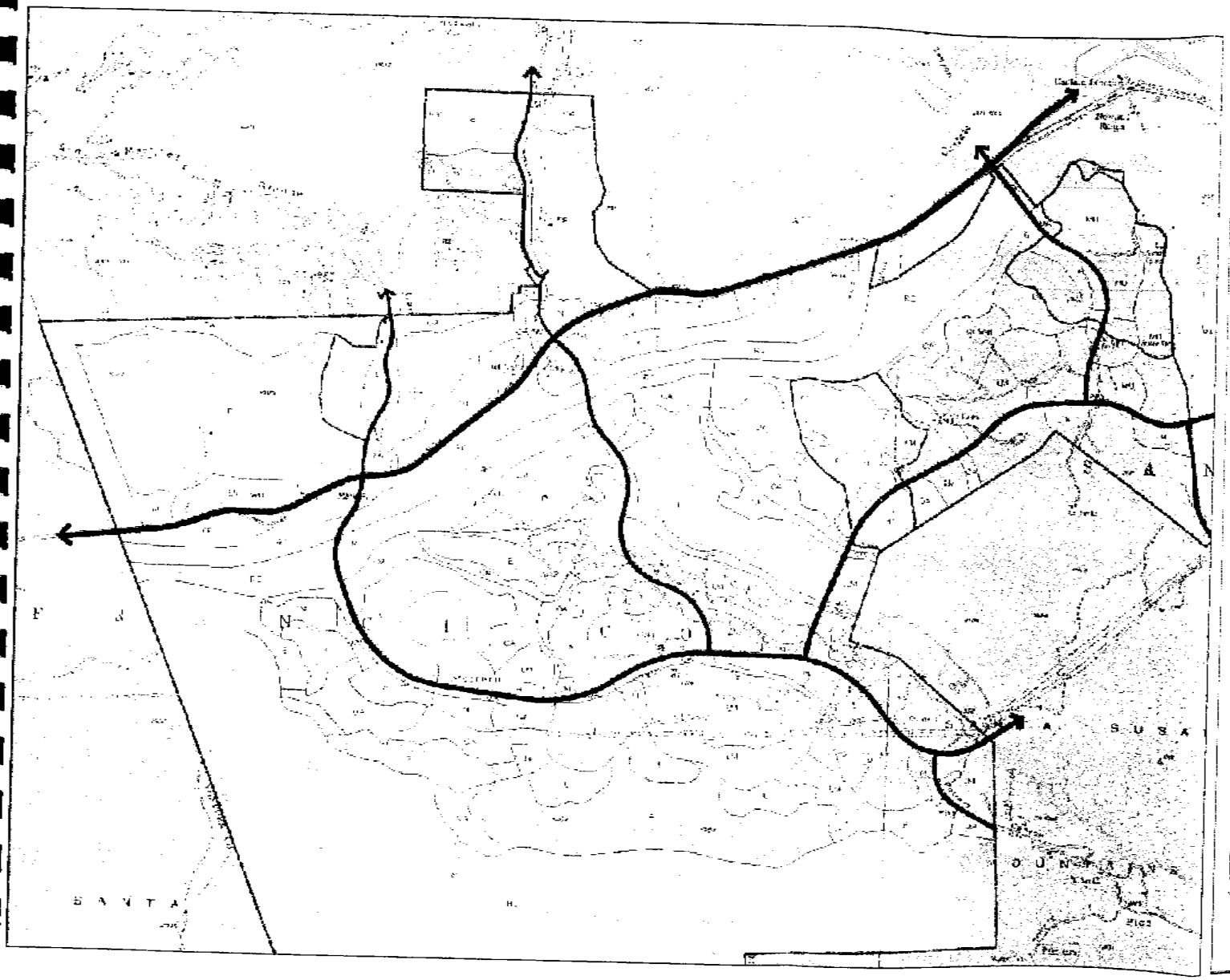
Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
4.6-56. All lighting along the perimeter of natural areas shall be downcast luminaries with light patterns directed away from natural areas.	Applicant	Building Permit Plot Plan Review	1. LACDRP 2. LACDRP 3. Prior to Issuance of Building Permits
4.6-57. Where bridge construction is proposed and water flow would be diverted, blocking nets and seines shall be used to control and remove fish from the area of activity. All fish captured during this operation would be stored in tubs and returned unharmed back to the River after construction activities were complete.	Applicant (Project Biologist)	Field Verification	1. ACOE, CDFG 2. ACOE, CDFG 3. Prior to Construction
4.6-58. To limit impacts to water quality the Specific Plan shall conform with all provisions of required NPDES permits and water quality permits that would be required by the State of California Regional Water Quality Control Board.	Project Engineer	Approval of a SWMP	1. LACDPW 2. LACDPW 3. Prior to Issuance of Grading Permit(s)

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
4.6-59. Consultation shall occur with the County of Los Angeles ("County") and California Department of Fish and Game ("CDFG") at each of the following milestones: 1) Before Surveys. Prior to conducting sensitive plant or animal surveys at the Newhall Ranch subdivision map level, the applicant, or its designee, shall consult with the County and CDFG for purposes of establishing and/or confirming the appropriate survey methodology to be used. 2) After Surveys. After completion of sensitive plant or animal surveys at the subdivision map level, draft survey results shall be made available to the County and CDFG within sixty (60) calendar days after completion of the field survey work. 3) Subdivision Map Submittal. Within thirty (30) calendar days after the applicant, or its designee, submits its application to the County for processing of a subdivision map in the Mesas Village or Riverwood Village, a copy of the submittal shall be provided to CDFG. In addition, the applicant, or its designee, shall schedule a consultation meeting with the County and CDFG for purposes of obtaining comments and input on the proposed subdivision map submittal. The consultation meeting shall take place at least thirty (30) days prior to the submittal of the proposed subdivision map to the County. 4) Development/Disturbance and Further Mitigation. Prior to any development within, or disturbance to, habitat occupied by rare, threatened, or endangered plant or animal species, or to any portion of the Spineflower Mitigation Area Overlay, as defined below, all required permits shall be obtained from both USFWS and CDFG, as applicable. It is further anticipated that the federal and state permits will impose conditions and mitigation measures required by federal and state law that are beyond those identified in the Newhall Ranch Final EIR (March 1999), the Newhall Ranch DAA (April 2001) and the Newhall Ranch Revised DAA (2002). It is also anticipated that conditions and mitigation measures required by federal and state law for project-related impacts on endangered, rare or threatened species and their habitat will likely require changes and revisions to Specific Plan development footprints, roadway alignments, and the limits, patterns and techniques associated with project-specific grading at the subdivision map level.	Applicant (Project Biologist)	Section 2081 Permit	1. USFWS and CDFG 2. USFWS and CDFG 3. Prior to Grading

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
4.6-60. If at the time subdivisions permitting construction are processed, the County determines through an Initial Study that there may be elderberry scrub vegetation on the property being subdivided, then a site specific survey shall be conducted to define the presence or absence of such habitat and any necessary mitigation measures shall be determined and applied.	Applicant (Project Biologist)	Review of Initial Study	1. LACDRP 2. LACDRP 3. Prior to Approval of Subdivision Maps
4.6-61. If at the time subdivisions permitting construction are processed, the County determines through and Initial Study that there may be mainland cherry trees and/or mainland cherry shrubs on the property being subdivided, then a site specific survey shall be conducted to define the presence or absence of such habitat and any necessary mitigation measures shall be determined and applied.	Applicant (Project Biologist)	Review of Initial Study	1. LACDRP 2. LACDRP 3. Prior to Approval of Subdivision Maps
4.6-62. When a map revision or Substantial Conformance determination on any subdivision map or Conditional Use Permit would result in changes to an approved oak tree permit, then the oak tree report for that oak tree permit must be amended for the area of change, and the addendum must be approved by the County Forester prior to issuance of grading permits for the area of the map or CUP being changed.	Applicant (Project Biologist)	Approval of Addendum to Oak Tree Report	1. LA County Forester 2. LA County Forester 3. Prior to Issuance of Grading Permits
4.6-63. Riparian resources that are impacted by buildout of the Newhall Ranch Specific Plan shall be restored with similar habitat at the rate of one acre replaced for each acre lost.	Applicant (Project Biologist)	ACOE 404 Permit	1. ACOE, CDFG 2. ACOE, CDFG 3. Prior to Grading
4.6-64. The operator of the golf course shall prepare a Golf Course Maintenance Plan which shall include procedures to control storm water quality and ground water quality as a result of golf course maintenance practices, including irrigation, fertilizer, pesticide and herbicide use. This Plan shall be prepared in coordination with the County biologist and approved by the County Planning Director prior to the issuance of a Certificate of Occupancy.	Applicant (Golf Course Operator)	Golf Course Maintenance Plan	1. LACDRP 2. LACDRP 3. Issuance of Golf Course Occupancy Permit

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
SPINEFLOWER SPECIAL STUDY MITIGATION OVERLAY			
4.6-65. In order to facilitate the conservation of the spineflower on the Newhall Ranch Specific Plan site, the applicant, or its designee, shall, concurrent with Specific Plan approval, agree to the identified special study areas shown below in **Figure 2.6-8, Spineflower Mitigation Area Overlay**. The applicant, or its designee, further acknowledges that, within and around the Spineflower Mitigation Area Overlay (**Figure 2.6-8**), changes will likely occur to Specific Plan development footprints, roadway alignments, and the limits, patterns and techniques associated with project-specific grading at the subdivision map level. The applicant, or its designee, shall design subdivision maps that are responsive to the characteristics of the spineflower and all other endangered plant species that may be found on the Specific Plan site.	Applicant	Review of Initial Study and subdivision	1. LACDRP 2. LACDRP and CDFG 3. Prior to Approval of Subdivision Maps

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
SPINEFLOWER PRESERVES			
4.6-66. Direct impacts to known spineflower populations within the Newhall Ranch Specific Plan area shall be avoided or minimized through the establishment of one or more on-site preserves that are configured to ensure the continued existence of the species in perpetuity. Preserve(s) shall be delineated in consultation with the County and CDFG, and will likely require changes and revisions to Specific Plan development footprints for lands within and around the Spineflower Mitigation Area Overlay (**Figure 2.6-8**). Delineation of the boundaries of Newhall Ranch spineflower preserve(s) for the entire Specific Plan area shall be completed in conjunction with approval of the first Newhall Ranch subdivision map filed in either the Mesas Village, or that portion of Riverwood Village in which the San Martinez spineflower population occurs. A sufficient number of known spineflower populations shall be included within the Newhall Ranch spineflower preserve(s) in order to ensure the continued existence of the species in perpetuity. The conservation of known spineflower populations shall be established in consultation with the County and CDFG, and as consistent with standards governing issuance of an incidental take permit for spineflower pursuant to Fish and Game Code section 2081, subdivision (b). In addition to conservation of known populations, spineflower shall be introduced in appropriate habitat and soils in the Newhall Ranch preserve(s). The creation of introduced populations shall require seed collection and/or top soil at impacted spineflower locations and nursery propagation to increase seed and sowing of seed. The seed collection activities, and the maintenance of the bulk seed repository, shall be approved in advance by the County and CDFG.	Applicant	Review of Initial Study and subdivision	1. LACDRP 2. LACDRP and CDFG 3. To be completed in conjunction with approval of the first Newhall Ranch subdivision map filed in either the Mesas Village, or that portion of Riverwood Village in which the San Martinez spineflower population occurs.



NEWHALL RANCH

LEGEND

LOS ANGELES SPINEFLOWER

SPINEFLOWER LOCATION

SPECIAL STUDY MITIGATION OVERLAY

LAND USE CATEGORIES

E ESTATE RESIDENTIAL

L LOW DENSITY RESIDENTIAL

LM LOW-MEDIUM DENSITY RESIDENTIAL

M MEDIUM DENSITY RESIDENTIAL

H HIGH DENSITY RESIDENTIAL

C COMMERCIAL

BP BUSINESS PARK

MU MIXED USE

VS VISITOR SERVING

OA OPEN APCE

RC RIVER CORRIDOR

HC HIGH COUNTRY

ROADS

FORMA

NORTH

Figure 2.6-8
SPINEFLOWER SPECIAL STUDY
MITIGATION OVERLAY

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
4.6-66. (cont.) Once the boundaries of the Newhall Ranch spineflower preserve(s) are delineated, the project applicant, or its designee, shall be responsible for conducting a spineflower population census within the Newhall Ranch spineflower preserve(s) annually for 10 years. (These census surveys shall be in addition to the surveys required by **Mitigation Measure 4.6-53**, above.) The yearly spineflower population census documentation shall be submitted to the County and CDFG, and maintained by the project applicant, or its designee. If there are any persistent population declines documented in the annual population census reports, the project applicant, or its designee, shall be responsible for conducting an assessment of the ecological factor(s) that are likely responsible for the decline, and implement management activity or activities to address these factors where feasible. In no event, however, shall project-related activities jeopardize the continued existence of the Newhall Ranch spineflower populations. If a persistent population decline is documented, such as a trend in steady population decline that persists for a period of 5 consecutive years, or a substantial drop in population is detected over a 10-year period, spineflower may be introduced in consultation with CDFG in appropriate habitat and soils in the Newhall Ranch preserve(s), utilizing the bulk spineflower seed repository, together with other required management activity or activities. These activities shall be undertaken by a qualified botanist/biologist, subject to approval by the County and CDFG. The project applicant, or its designee, shall be responsible for the funding and implementation of the necessary management activity or activities, including monitoring, as approved by the County and CDFG. Annual viability reports shall be submitted to the County and CDFG for 10 years following delineation of the Newhall Ranch spineflower preserve(s) to ensure long-term documentation of the spineflower population status within the Newhall Ranch preserve(s). In the event annual status reports indicate the spineflower population within the Newhall Ranch preserve(s) is not stable and viable 10 years following delineation of the spineflower preserve(s), the project applicant, or its designee, shall continue to submit annual status reports to the County and CDFG for a period of no less than an additional 5 years.	Applicant	Review of Initial Study and subdivision	1. LACDRP 2. LACDRP and CDFG 3. To be completed in conjunction with approval of the first Newhall Ranch subdivision map filed in either the Mesas Village, or that portion of Riverwood Village in which the San Martinez spineflower population occurs.

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
CONNECTIVITY, RESERVE DESIGN AND BUFFERS			
4.6-67. Indirect impacts associated with the interface between the preserved spineflower populations and planned development within the Newhall Ranch Specific Plan shall be avoided or minimized by establishing open space connections with Open Area, River Corridor, or High Country land use designations. In addition, buffers (i.e., setbacks from developed, landscaped or other use areas) shall be established around portions of the delineated preserve(s) not connected to Open Area, the River Corridor or the High Country land use designations. The open space connections and buffer configurations shall take into account local hydrology, soils, existing and proposed adjacent land uses, the presence of non-native invasive plant species, and seed dispersal vectors. Open space connections shall be configured such that the spineflower preserves are connected to Open Area, River Corridor, or High Country land use designations to the extent practicable. Open space connections shall be of adequate size and configuration to achieve a moderate to high likelihood of effectiveness in avoiding or minimizing indirect impacts (e.g., invasive plants, increased fire frequency, trampling, chemicals, etc.) to the spineflower preserve(s). Open space connections for the spineflower preserve(s) shall be configured in consultation with the County and CDFG. Open space connections for the spineflower preserve(s) shall be established for the entire Specific Plan area in conjunction with approval of the first Newhall Ranch subdivision map filed in either the Mesa Village, or that portion of the Riverwood Village in which the San Martinez spineflower location occurs.	Applicant	Review of Initial Study and subdivision	1. LACDRP/CDFG 2. LACDRP/CDFG 3. Prior to Approval of Subdivision Maps

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
4.6-67. (cont.) For preserves and/or those portions of preserves not connected to Open Area, River Corridor, or High Country land use designations, buffers shall be established at variable distances of between 80 and 200 feet from the edge of development to achieve a moderate to high likelihood of effectiveness in avoiding or minimizing indirect impacts (e.g., invasive plants, increased fire frequency, trampling, chemicals, etc.) to the spineflower preserve(s). The buffer size/configuration shall be guided by the analysis set forth in the "*Review of Potential Edge Effects on the San Fernando Valley Spineflower*," prepared by Conservation Biology Institute, January 19, 2000, and other sources of scientific information and analysis, which are available at the time the preserve(s) and buffers are established. Buffers for the spineflower preserve(s) shall be configured in consultation with the County and CDFG for the entire Specific Plan area. Buffers for the spineflower preserve(s) shall be established in conjunction with approval of the first Newhall Ranch subdivision map filed in either the Mesa Village, or that portion of the Riverwood Village in which the San Martinez spineflower location occurs. Roadways and road rights-of-way shall not be constructed in any spineflower preserve(s) and buffer locations on Newhall Ranch unless constructing the road(s) in such location is found to be the environmentally superior alternative in subsequently required tiered EIRs in connection with the Newhall Ranch subdivision map(s) process. No other development or disturbance of native habitat shall be allowed within the spineflower preserve(s) or buffer(s). The project applicant, or its designee, shall be responsible for revegetating open space connections and buffer areas of the Newhall Ranch spineflower preserve(s) to mitigate temporary impacts due to grading that will occur within portions of those open space connections and buffer areas. The impacted areas shall be reseeded with a native seed mix to prevent erosion, reduce the potential for invasive non-native plants, and maintain functioning habitat areas within the buffer area. Revegetation seed mix shall be reviewed and approved by the County and CDFG.	Applicant	Review of Initial Study and subdivision	1. LACDRP/CDFG 2. LACDRP/CDFG 3. Prior to Approval of Subdivision Maps

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
PRESERVE PROTECTION/FENCING			
4.6-68. To protect the preserved Newhall Ranch spineflower populations, and to further reduce potential direct impacts to such populations due to unrestricted access, the project applicant, or its designee, shall erect and maintain temporary orange fencing and prohibitive signage around the Newhall Ranch preserve(s), open space connections and buffer areas, which are adjacent to areas impacted by proposed development prior to and during all phases of construction. The areas behind the temporary fencing shall not be used for the storage of any equipment, materials, construction debris or anything associated with construction activities. Following the final phase of construction of any Newhall Ranch subdivision map adjacent to the Newhall Ranch spineflower preserve(s), the project applicant, or its designee, shall install and maintain permanent fencing along the subdivision tract bordering the preserve(s). Permanent signage shall be installed on the fencing along the preservation boundary to indicate that the fenced area is a biological preserve, which contains protected species and habitat, that access is restricted, and that trespassing and fuel modification are prohibited within the area. The permanent fencing shall be designed to allow wildlife movement. The plans and specifications for the permanent fencing and signage shall be approved by the County and CDFG prior to the final phase of construction of any Newhall Ranch subdivision map adjacent to a Newhall Ranch spineflower preserve(s).	Applicant (Project Biologist)	Review of Initial Study, subdivision, and grading permit application	1. LACDRP/CDFG 2. LACDRP/CDFG 3. Prior to Grading and Occupancy

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
PRESERVE PROTECTION/HYDROLOGICAL ALTERATIONS			
4.6-69. Indirect impacts resulting from changes to hydrology (i.e., increased water runoff from surrounding development) at the interface between spineflower preserve(s) and planned development within the Newhall Ranch Specific Plan shall be avoided or mitigated to below a level of significance. Achievement of this standard will be met through the documented demonstration by the project applicant, or its designee, that the storm drain system achieves pre-development hydrological conditions for the Newhall Ranch spineflower preserve(s). To document such a condition, the project applicant, or its designee, shall prepare a study of the pre- and post-development hydrology, in conjunction with Newhall Ranch subdivision maps adjacent to spineflower preserve(s). The study shall be used in the design and engineering of a storm drain system that achieves pre-development hydrological conditions. The study must conclude that proposed grade changes in development areas beyond the buffers will maintain pre-development hydrology conditions within the preserve(s). The study shall be approved by the Planning Director of the County, and the resulting conditions confirmed by CDFG. The storm drain system for Newhall Ranch subdivision maps adjacent to any spineflower preserves must be approved by the County prior to the initiation of any grading activities.	Applicant (Project Biologist)	Review of map subdivision	1. LACDPW 2. LACDPW/CDFG 3. Prior to Approval of Subdivision Maps

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
ROAD CONSTRUCTION MEASURES			
4.6-70. Consistent with the Spineflower Mitigation Area Overlay reflected in **Mitigation Measure 4.6-65**, direct impacts to known Newhall Ranch spineflower populations associated with proposed road construction or modifications to existing roadways shall be further assessed for proposed road construction at the Newhall Ranch subdivision map level, in conjunction with the tiered EIR required for each subdivision map. To avoid or substantially lessen direct impacts to known spineflower populations, Specific Plan roadways shall be redesigned or realigned, to the extent practicable, to achieve the spineflower preserve and connectivity/preserve design/buffer standards set forth in **Mitigation Measures 4.6-66 and 4.6-67**. The project applicant, or its designee, acknowledges that that road redesign and re-alignment is a feasible means to avoid or substantially lessen potentially significant impacts on the now known Newhall Ranch spineflower populations. Road redesign or alignments to be considered at the subdivision map level include: (a) Commerce Center Drive; (b) Magic Mountain Parkway; (c) Chiquito Canyon Road; (d) Long Canyon Road; (e) San Martinez Grande Road; (f) Potrero Valley Road; (g) Valencia Boulevard; and (h) Any other or additional roadways that have the potential to significantly impact known Newhall Ranch spineflower populations. Roadways and road rights-of-way shall not be constructed in any spineflower preserve(s) and buffer locations on Newhall Ranch, unless constructing the road(s) in such location is found to be the environmentally superior alternative in subsequently required tiered EIRs in connection with the Newhall Ranch subdivision map(s) process.	Applicant (Project Biologist)	Review of Initial Study and subdivision	1. LACDRP 2. LACDRP/CDFG 3. Prior to Approval of Subdivision Maps

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
ENGINEERING, DESIGN AND GRADING MODIFICATIONS			
4.6-71. Consistent with the Spineflower Mitigation Area Overlay reflected in **Mitigation Measure 4.6-65**, direct impacts to known Newhall Ranch spineflower populations shall be further assessed at the Newhall Ranch subdivision map level, in conjunction with the required tiered EIR process. To avoid or substantially lessen impacts to known spineflower populations at the subdivision map level, the project applicant, or its designee, may be required to adjust Specific Plan development footprints, roadway alignments, and the limits, patterns and techniques associated with project-specific grading to achieve the spineflower preserve and connectivity/preserve design/buffer standards set forth in **Mitigation Measures 4.6-66 and 4.6-67** for all future Newhall Ranch subdivision maps that encompass identified spineflower populations.	Applicant (Project Biologist)	Review of Initial Study and subdivision	1. LACDRP 2. LACDRP/CDFG 3. Prior to Approval of Subdivision Maps
4.6 BIOTA (cont.)			
FIRE MANAGEMENT PLAN			
4.6-72. A Fire Management Plan shall be developed to avoid and minimize direct and indirect impacts to the spineflower, in accordance with the adopted Newhall Ranch Resource Management Plan (RMP), to protect and manage the Newhall Ranch spineflower preserve(s) and buffers. The Fire Management Plan shall be completed by the project applicant, or its designee, in conjunction with approval of any Newhall Ranch subdivision map adjacent to a spineflower preserve. The final Fire Management Plan shall be approved by the County of Los Angeles Fire Department through the processing of subdivision maps. Under the final Fire Management Plan, limited fuel modification activities within the spineflower preserves will be restricted to selective thinning with hand tools to allow the maximum preservation of Newhall Ranch spineflower populations. No other fuel modification or clearance activities shall be allowed in the Newhall Ranch spineflower preserve(s). Controlled burning may be allowed in the future within the Newhall Ranch preserve(s) and buffers, provided that it is based upon a burn plan approved by the County of Los Angeles Fire Department and CDFG. The project applicant, or its designee, shall also be responsible for annual maintenance of fuel modification zones, including, but not limited to, removal of undesirable non-native plants, revegetation with acceptable locally indigenous plants and clearing of trash and other debris in accordance with the County of Los Angeles Fire Department.	Applicant (Project Biologist)	Review of Initial Study and subdivision	1. LACFD 2. LACFD/CDFG 3. Prior to Approval of Subdivision Maps

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
WATER FLOW DIVERSION AND MANAGEMENT			
4.6-73. At the subdivision map level, the project applicant, or its designee, shall design and implement project-specific design measures to minimize changes in surface water flows to the Newhall Ranch spineflower preserve(s) for all Newhall Ranch subdivision maps adjacent to the preserve(s) and buffers, and avoid and minimize indirect impacts to the spineflower. Prior to issuance of a grading permit for each such subdivision map, the project applicant, or its designee, shall submit for approval to the County plans and specifications that ensure implementation of the following design measures: (a) During construction activities, drainage ditches, piping or other approaches will be put in place to convey excess storm water and other surface water flows away from the Newhall Ranch spineflower preserve(s) and connectivity/preserve design/buffers, identified in **Mitigation Measures 4.6-66** and **4.6-67**; (b) Final grading and drainage design will be developed that does not change the current surface and subsurface hydrological conditions within the preserve(s); (c) French drains will be installed along the edge of any roadways and fill slopes that drain toward the preserve(s); (d) Roadways will be constructed with slopes that convey water flows within the roadway easements and away from the preserve(s); (e) Where manufactured slopes drain toward the preserve(s), a temporary irrigation system would be installed to the satisfaction of the County in order to establish the vegetation on the slope area(s). This system shall continue only until the slope vegetation is established and self-sustaining; (f) Underground utilities will not be located within or through the preserve(s). Drainage pipes installed within the preserve(s) away from spineflower populations to convey surface or subsurface water away from the populations will be aligned to avoid the preserve(s) to the maximum extent practicable; and (g) Fencing or other structural type barriers that will be installed to reduce intrusion of people or domestic animals into the preserve(s) shall incorporate footing designs that minimize moisture collection.	Applicant (Project Biologist)	Review of Initial Study and subdivision	1. LACDRP/LACDPW 2. LACDRP/LACDPW/CDFG 3. Prior to Approval of Subdivision Maps

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
BIOLOGICAL MONITOR			
4.6-74. A knowledgeable, experienced botanist/biologist, subject to approval by the County and CDFG, shall be required to monitor the grading and fence/utility installation activities that involve earth movement adjacent to the Newhall Ranch spineflower preserve(s) to avoid the incidental take through direct impacts of conserved plant species, and to avoid disturbance of the preserve(s). The biological monitor will conduct bi-weekly inspections of the project site during such grading activities to ensure that the mitigation measures provided in the adopted Newhall Ranch Mitigation Monitoring Program (Biota section) are implemented and adhered to. Monthly monitoring reports, as needed, shall be submitted to the County verifying compliance with the mitigation measures specified in the adopted Newhall Ranch Mitigation Monitoring Program (Biota section). The biological monitor will have authority to immediately stop any such grading activity that is not in compliance with the adopted Newhall Ranch Mitigation Monitoring Program (Biota section), and to take reasonable steps to avoid the take of, and minimize the disturbance to, spineflower populations within the preserve(s).	Monitoring Biologist	Bi-weekly site inspections and monthly monitoring reports as needed	1. LACDRP/LACDPW 2. LACDRP/LACDPW/CDFG 3. Prior to Issuance of construction permit(s)

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
CONSTRUCTION IMPACT AVOIDANCE MEASURES			
4.6-75. The following measures shall be implemented to avoid and minimize indirect impacts to Newhall Ranch spineflower populations during all phases of project construction: (a) Water Control. Watering of the grading areas would be controlled to prevent discharge of construction water into the Newhall Ranch preserve(s) or on ground sloping toward the preserve(s). Prior to the initiation of grading operations, the project applicant, or its designee, shall submit for approval to the County an irrigation plan describing watering control procedures necessary to prevent discharge of construction water into the Newhall Ranch preserve(s) and on ground sloping toward the preserve(s). (b) Storm Water Flow Redirection. Diversion ditches would be constructed to redirect storm water flows from graded areas away from the Newhall Ranch preserve(s). To the extent practicable, grading of areas adjacent to the preserve(s) would be limited to spring and summer months (May through September) when the probability of rainfall is lower. Prior to the initiation of grading operations, the project applicant, or its designee, would submit for approval to the County a storm water flow redirection plan that demonstrates the flow of storm water away from the Newhall Ranch spineflower preserve(s). (c) Treatment of Exposed Graded Slopes. Graded slope areas would be trimmed and finished as grading proceeds. Slopes would be treated with soil stabilization measures to minimize erosion. Such measures may include seeding and planting, mulching, use of geotextiles and use of stabilization mats. Prior to the initiation of grading operations, the project applicant, or its designee, would submit for approval to the County the treatments to be applied to exposed graded slopes that would ensure minimization of erosion.	Monitoring Biologist	Bi-weekly site inspections and monthly monitoring reports as needed	1. LACDRP/LACDPW 2. LACDRP/LACDPW/CDFG 3. Prior to issuance of occupancy permit(s)

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
REASSESSMENT REQUIREMENT			
4.6-76. In conjunction with submission of the first Newhall Ranch subdivision map in either Mesas Village or that portion of Riverwood Village in which the San Martinez spineflower location occurs, the project applicant, or its designee, shall reassess project impacts, both direct and indirect, to the spineflower populations using subdivision mapping data, baseline data from the Newhall Ranch Final EIR and data from the updated plant surveys (see, Specific Plan EIR Mitigation Measure 4.6-53). This reassessment shall take place during preparation of the required tiered EIR for each subdivision map. If the reassessment results in the identification of new or additional impacts to Newhall Ranch spineflower populations, which were not previously known or identified, the mitigation measures set forth in this program, or a Fish and Game Code section 2081 permit(s) issued by CDFG, shall be required, along with any additional mitigation required at that time.	Applicant (Project Biologist)	In conjunction with submission of the first subdivision map in either Mesas Village or that portion of Riverwood Village in which the San Martinez spineflower location occurs	1. LACDRP 2. LACDRP/CDFG 3. Prior to subdivision map approval

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
NEWHALL RANCH MONITORING AND MANAGEMENT			
4.6-77. Direct and indirect impacts to the preserved Newhall Ranch spineflower populations shall require a monitoring and management plan, subject to the approval of the County. The applicant shall consult with CDFG with respect to preparation of the Newhall Ranch spineflower monitoring/management plan. This plan shall be in place when the preserve(s) and connectivity/preserve design/buffers are established (see **Mitigation Measures 4.6-66 and 4.6-67**). The criteria set forth below shall be included in the plan. **Monitoring**. The purpose of the monitoring component of the plan is to track the viability of the Newhall Ranch spineflower preserve(s) and its populations, and to ensure compliance with the adopted Newhall Ranch Mitigation Monitoring Program (Biota section). The monitoring component of the plan shall investigate and monitor factors such as population size, growth or decline, general condition, new impacts, changes in associated vegetation species, pollinators, seed dispersal vectors and seasonal responses. Necessary management measures will be identified. The report results will be sent annually to the County, along with photo documentation of the assessed site conditions. The project applicant, or its designee, shall contract with a qualified botanist/biologist, approved by the County, with the concurrence of CDFG, to conduct quantitative monitoring over the life of the Newhall Ranch Specific Plan. The botanist/biologist shall have a minimum of three years experience with established monitoring techniques and familiarity with southern California flora and target taxa. Field surveys of the Newhall Ranch spineflower preserve(s) will be conducted each spring. Information to be obtained will include: (a) an estimate of the numbers of spineflowers in each population within the preserve(s); (b) a map of the extent of occupied habitat at each population; (c) establishment of photo monitoring points to aid in documenting long-term trends in habitat; (d) aerial photographs of the preserved areas at five-year intervals; (e) identification of significant impacts that may have occurred or problems that need attention, including invasive plant problems, weed problems and fencing or signage repair; and (f) overall compliance with the adopted mitigation measures.	Applicant (Project Biologist)	Site surveys and annual reports as directed by this measure The length of the active management components set forth above shall be governed by attainment of successful management criteria	1. LACDRP 2. LACDRP/CDFG 3. As necessary per the guidelines set forth in the measure

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
4.6-77. (cont.) For a period of three years from Specific Plan re-approval, all areas of potential habitat on the Newhall Ranch site will be surveyed annually in the spring with the goal of identifying previously unrecorded spineflower populations. Because population size and distribution limits are known to vary depending on rainfall, annual surveys shall be conducted for those areas proposed for development in order to establish a database appropriate for analysis at the project-specific subdivision map level (rather than waiting to survey immediately prior to proceeding with the project-specific subdivision map process). In this way, survey results gathered over time (across years of varying rainfall) will provide information on ranges in population size and occupation. New populations, if they are found, will be mapped and assessed for inclusion in the preserve program to avoid impacts to the species. **Monitoring/Reporting.** An annual report will be submitted to the County and CDFG by December 31st of each year. The report will include a description of the monitoring methods, an analysis of the findings, effectiveness of the mitigation program, site photographs and adoptive management measures, based on the findings. Any significant adverse impacts, signage, fencing or compliance problems identified during monitoring visits will be reported to the County and CDFG for corrective action by the project applicant, or its designee. **Management.** Based on the outcome of ongoing monitoring and additional project-specific surveys addressing the status and habitat requirements of the spineflower, active management of the Newhall Ranch spineflower preserve(s) will be required in perpetuity. Active management activities will be triggered by a downward population decline over 5 consecutive years, or a substantial drop in population over a 10-year period following County re-approval of the Specific Plan. Examples of management issues that may need to be addressed in the future include, but are not limited to, control of exotic competitive non-native plant species, herbivory predation, weed control, periodic controlled burns or fuel modification compliance.	Applicant (Project Biologist)	Site surveys and annual reports as directed by this measure The length of the active management components set forth above shall be governed by attainment of successful management criteria	1. LACDRP 2. LACDRP/CDFG 3. As necessary per the guidelines set forth in the measure

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
4.6-77. (cont.) After any population decline documented in the annual populations census following County re-approval of the Specific Plan, the project applicant, or its designee, shall be responsible for conducting an assessment of the ecological factor(s) that are likely responsible for the decline, and implement management activity or activities to address these factors where feasible. If a persistent population decline is documented, such as a trend in steady population decline persistent for a period of 5 consecutive years, or a substantial drop in population detected over a 10-year period, spineflower may be introduced in appropriate habitat and soils in the Newhall Ranch preserve(s), utilizing the bulk spineflower seed repository, together with other required management activity or activities. In connection with this monitoring component, the project applicant, or its designee, shall contract with a qualified botanist/biologist, approved by the County, to complete: (a) a study of the breeding and pollination biology of the spineflower, including investigation into seed physiology to assess parameters that may be important as management tools to guarantee self-sustainability of populations, which may otherwise have limited opportunity for germination; and (b) a population genetics study to document the genetic diversity of the Newhall Ranch spineflower population. The criteria for these studies shall be to develop data to make the Newhall Ranch spineflower management program as effective as possible. These studies shall be subject to approval by the County's biologist, with the concurrence of CDFG. These activities shall be undertaken by a qualified botanist/biologist, subject to approval by the County with the concurrence of CDFG. The project applicant, or its designee, shall be responsible for the funding and implementation of the necessary management activity or activities, as approved by the County and CDFG. The length of the active management components set forth above shall be governed by attainment of successful management criteria set forth in the plan rather than by a set number of years.	Applicant (Project Biologist)	Site surveys and annual reports as directed by this measure The length of the active management components set forth above shall be governed by attainment of successful management criteria	1. LACDRP 2. LACDRP/CDFG 3. As necessary per the guidelines set forth in the measure

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
TRANSLOCATION/REINTRODUCTION PROGRAM			
4.6-78. To the extent project-related direct and indirect significant impacts on spineflower cannot be avoided or substantially lessened through establishment of the Newhall Ranch spineflower preserve(s), and other avoidance, minimization, or other compensatory mitigation measures, a translocation and reintroduction program may be implemented in consultation with CDFG to further mitigate such impacts. Direct impacts (i.e., take) to occupied spineflower areas shall be fully mitigated at a 4:1 ratio. Impacts to occupied spineflower areas caused by significant indirect effects shall be mitigated at a 1:1 ratio. Introduction of new spineflower areas will be achieved through a combination of direct seeding and translocation of the existing soil seed bank that would be impacted by grading. Prior to any development within, or disturbance to, spineflower populations, on-site and off-site mitigation areas shall be identified and seed and top soil shall be collected. One-third of the collected seed shall be sent to the Rancho Santa Ana Botanical Garden for storage. One third of the seed shall be sent to the USDA National Seed Storage Lab in Fort Collins, Colorado for storage. One third shall be used for direct seeding of the on-site and off-site mitigation areas. **Direct seeding**. Prior to the initiation of grading, the project applicant, or its designee, shall submit to the County a program for the reintroduction of spineflower on Newhall Ranch. The reintroduction program shall include, among other information: (a) location map with scale; (b) size of each introduction polygon; (c) plans and specifications for site preparation, including selective clearing of competing vegetation; (d) site characteristics; (e) protocol for seed collection and application; and (f) monitoring and reporting. The program shall be submitted to CDFG for input and coordination. The project applicant, or its designee, shall implement the reintroduction program prior to the initiation of grading. At least **two** candidate spineflower reintroduction areas will be created within Newhall Ranch and one candidate spineflower reintroduction area will be identified offsite. Both on-site and off-site reintroduction areas will be suitable for the spineflower in both plant community and soils, and be located within the historic range of the taxon. Success criteria shall be included in the monitoring/management plan, with criteria for the germination, growth, and production of viable seeds of individual plants for a specified period.	Applicant (Project Biologist)	Review of Initial Study and subdivision	1. LACDRP/CDFG 2. LACDRP/CDFG 3. Prior to issuance of occupancy permits

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
4.6-78. (cont.) Although the reintroduction program is experimental at this stage, the County considers such a program to be a feasible form of mitigation at this juncture based upon available studies. Botanists/biologists familiar with the ecology and biology of the spineflower would prepare and oversee the reintroduction program. **Translocation.** Prior to the initiation of grading, the project applicant, or its designee, shall submit to the County a translocation program for the spineflower. Translocation would salvage the topsoil of spineflower areas to be impacted due to grading. Salvaged spineflower soil seed bank would be translocated to the candidate spineflower reintroduction areas. The translocation program shall include, among other information: (a) location map with scale; (b) size of each translocation polygon; (c) plans and specifications for site preparation, including selective clearing of competing vegetation; (d) site characteristics; (e) protocol for topsoil collection and application; and (f) monitoring and reporting. The translocation program shall be submitted to CDFG for input and coordination. Translocation shall occur within the candidate spineflower reintroduction areas onsite and offsite. Successful criteria for each site shall be included in the monitoring/management plan/with criteria for the germination and growth to reproduction of individual plants for the first year a specified period. Although the translocation program is experimental at this stage, the County considers such a program to be a feasible form of mitigation at this juncture based upon available studies. Botanists/biologists familiar with the ecology and biology of the spineflower would prepare and oversee the translocation program.	Applicant (Project Biologist)	Review of Initial Study and subdivision	1. LACDRP/CDFG 2. LACDRP/CDFG 3. Prior to issuance of occupancy permits

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.6 BIOTA (cont.)			
ON-GOING AGRICULTURAL ACTIVITIES			
4.6-79. The project applicant, or its designee, shall engage in regular and ongoing consultation with the County and CDFG in connection with its ongoing agricultural operations in order to avoid or minimize significant direct impacts to the spineflower. In addition, the project applicant, or its designee, shall provide 30 days advance written notice to the County and CDFG of the proposed conversion of its ongoing rangeland operations on Newhall Ranch to more intensive agricultural uses. The purpose of the advance notice requirement is to allow the applicant, or its designee, to coordinate with the County and CDFG to avoid or minimize significant impacts to the spineflower prior to the applicant's proposed conversion of its ongoing rangeland operations to more intensive agricultural uses. This coordination component will be implemented by or through the County's Department of Regional Planning and/or the Regional Manager of CDFG. Implementation will consist of the County and/or CDFG conducting a site visit of the proposed conversion area(s) within the 30-day period, and making a determination of whether the proposed conversion area(s) would destroy or significantly impact spineflower population in or adjacent to those areas. If it is determined that the conversion area(s) do not destroy or significantly impact spineflower populations, then the County and/or CDFG will authorize such conversion activities in the proposed conversion area(s). However, if it is determined that the conversion area(s) may destroy or significantly impact spineflower populations, then the County and/or CDFG will issue a stop work order to the applicant, or its designee. If such an order is issued, the applicant, or its designee, shall not proceed with any conversion activities in the proposed conversion area(s). However, the applicant, or the designee, may take steps to relocate the proposed conversion activities in an alternate conversion area(s). In doing so, the applicant, or its designee, shall follow the same notice and coordination provisions identified above. This conversion shall not include ordinary pasture maintenance and renovation or dry land farming operations consistent with rangeland management.	Applicant	Thirty (30) days advance written notice of proposed conversion to more intensive agricultural uses	1. LACDRP/CDFG 2. LACDRP/CDFG 3. As necessary
4.6 BIOTA (cont.)			
SAN MARTINEZ POPULATION			
4.6-80. Upon approval of tentative tract map(s) impacting the San Martinez portion of the Specific Plan site, the applicant shall work with the Department of Regional Planning staff and SEATAC to establish an appropriately sized preserve area to protect the spineflower population at San Martinez Canyon.	Applicant	Upon approval of tentative tract map(s) impacting San Martinez portion of site	1. LACDRP/CDFG 2. LACDRP/CDFG 3. As necessary

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.7 VISUAL QUALITIES			
Key mitigation measures incorporated into the Specific Plan include, but are not limited to: • the preservation of natural Santa Clara River vegetation and River bluffs, • the preservation of canyons tributary to the Santa Clara River and other Open Area, • the placement of the regional River Trail in between SR-126 and the River, • the regulation and limitation of urban uses between SR-126 and the River which create large windows for viewing the River Corridor, the River bluffs and Santa Susana Mountains from SR-126, • the preservation of the High Country SMA, • the preservation of significant topographic features, such as Sawtooth Ridge and Ayers Rock, • the installation of landscaping, and • the preservation of significant oak tree stands (less than 4 percent of the estimated 16,000+ oak trees would be impacted).			
4.7 VISUAL QUALITIES (cont.)			
Chapters 3 and 4 of the Specific Plan contain proposed Development Regulations and Design Guidelines, respectively. The reader is referred to those Chapters of the Specific Plan for the complete list. The Development Regulations and Design Guidelines are intended to provide a comprehensive set of regulations governing the use and development of land which is intended to achieve a development image that blends into adjoining natural landscapes and reduces the alteration of natural landforms and scenic natural features found on the Specific Plan site. The Specific Plan also includes landscape standards directing the use of drought-tolerant and native plants (including the replacement of removed oak trees) that would further highlight the surrounding natural environment. Development Regulations and Design Guidelines are proposed that address: • setbacks (Development Regulations, Specific Plan Chapter 3.4, Table 3.4-1), • building heights (Development Regulations, Specific Plan Chapter 3.4, Table 3.4-1), • signage (Development Regulations, Specific Plan Chapter 3.6), • parking (Development Regulations, Specific Plan Chapter 3.7), • site planning (Design Guidelines, Specific Plan Chapter 4.3), • architecture (Design Guidelines, Specific Plan Chapter 4.4), • fencing (Design Guidelines, Specific Plan Chapter 4.5), • landscape design (Design Guidelines, Specific Plan Chapter 4.6), • lighting (Design Guidelines, Specific Plan Chapter 4.7), and • grading (Design Guidelines, Specific Plan Chapter 4.8).			

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.7-1. In conjunction with the development review process set forth in Chapter 5 of the Specific Plan, all future subdivision maps and other discretionary permits which allow construction shall incorporate the Development Guidelines (Specific Plan Chapter 3) and Design Guidelines (Specific Plan Chapter 4), and the design themes and view considerations listed in the Specific Plan.	Applicant	Plan Check	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. Prior to Approval of Final Maps

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.7 VISUAL QUALITIES (cont.)			
4.7-2. In design of residential tentative tract maps and site planning of multifamily areas and Commercial and Mixed-Use land use designations along SR-126, the following Design Guidelines shall be utilized. • Where the elevations of buildings will obstruct the views from SR-126 to the south, the location and configuration of individual buildings, driveways, parking, streets, signs and pathways shall be designed to provide view corridors of the River, bluffs and the ridge lines south of the River. Those view corridors may be perpendicular to SR-126 or oblique to it in order to provide for views of passengers within moving vehicles on SR-126. • The Community Park between SR 126 and the Santa Clara River shall be designed to promote views from SR-126 of the River, bluffs and ridge lines to the south of the River. • Residential Site Planning Guidelines set forth in Section 4.3.1 Residential and Architectural Guidelines set forth Section 4.4.1 Residential shall be employed to ensure that the views from SR-126 are aesthetically pleasing and that views of the River, bluffs and ridge lines south of the River are preserved to the extent practicable. • Mixed-Use and the Commercial Site Planning Guidelines set forth in Section 4.3.2 and Architectural Guidelines set forth Section 4.4.2 shall be incorporated to the extent practicable in the design of the Riverwood Village Mixed-Use and Commercial land use designations to ensure that the views from SR-126 are aesthetically pleasing and to preserve views of the River, bluffs and ridge lines south of the River. • Landscape improvements along SR 126 shall incorporate the Landscape Design Guidelines, set forth in Section 4.6 in order to ensure that the views from SR-126 are aesthetically pleasing and to preserve views of the River, bluffs and ridge lines south of the River.	Applicant	Plan Check	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. Prior to Approval of Final Subdivision Maps or Site Plans as applicable

No further mitigation is recommended beyond that already incorporated into the Specific Plan. While the measures contained in the Specific Plan minimize the Specific Plan's visual impact, they cannot reduce the magnitude of the impact to less than significant levels.

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.8 TRAFFIC/ACCESS			
ON-SITE (EXCEPT SR-126 - SEE BELOW)			
The following mitigation is required relative to all on-site roadways and intersections except SR-126, which is discussed separately below:			
4.8-1. The applicants for future subdivision maps which permit construction shall be responsible for funding and constructing all on-site traffic improvements except as otherwise provided below. The obligation to construct improvements shall not preclude the applicants' ability to seek local, State or Federal funding for these facilities.	Applicant(s)	Bonding of and/or Receipt of Funding and/or Field Verification of Construction	1. LACDPW 2. LACDPW 3. Prior to Issuance of Building Permit
4.8-2. Prior to the approval of each subdivision map which permits construction, the applicant for that map shall prepare a transportation performance evaluation which shall indicate the specific improvements for all on-site roadways which are necessary to provide adequate roadway and intersection capacity as well as adequate right-of-way for the subdivision and other expected traffic. Transportation performance evaluations shall be approved by Los Angeles County Department of Public Works according to standards and policies in effect at that time. The transportation performance evaluation shall form the basis for specific conditions of approval for the subdivision.	Applicant (Traffic Engineer)	Receipt and Review of Transportation Performance Evaluation	1. LACDPW 2. LACDPW 3. Prior to Approval of Subdivision Maps
4.8-3. The applicants for future subdivisions shall provide the traffic signals at the 15 locations labeled "B" through "P" in Figure 4.8-17 as well as any additional signals warranted by future subdivision design. Signal warrants shall be prepared as part of the transportation performance evaluations noted in **Mitigation 4.8-2.**	Applicant (Traffic Engineer)	Installation of Traffic Signals or funding of or bonding of project's share	1. LACDPW 2. LACDPW 3. Prior to Issuance of Occupancy Permits
4.8-4. All development within the Specific Plan shall conform to the requirements of the Los Angeles County Transportation Demand Management (TDM) Ordinance.	Applicant (Traffic Engineer)	Subdivision Review	1. LACDPW 2. LACDPW 3. Prior to Final Map Approval and/or approval of improvement plans

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.8 TRAFFIC/ACCESS (cont.)			
4.8-5. The applicants for all future subdivision maps which permit construction shall consult with the local transit provider regarding the need for, and locations of, bus pull-ins on highways within the Specific Plan area. All bus pull-in locations shall be approved by the Department of Public Works, and approved bus pull-ins shall be constructed by the applicant.	Applicant (Traffic Engineer)	Verification of Consultation with Transit Providers Review of bus pull-in locations	1. LACDPW 2. LACDPW 3. Prior to Final Map Approval and/or approval of improvement plans
OFF-SITE ARTERIALS			
4.8-6. Prior to the recordation of the first subdivision map which permits construction, the applicant for that map shall prepare a transportation performance evaluation which shall determine the specific improvements needed to each off-site arterial and related costs in order to provide adequate roadway and intersection capacity for the expected Specific Plan and General Plan buildout traffic trips. The transportation performance evaluation shall be based on the Master Plan of Highways in effect at that time and shall be approved by the Los Angeles County Department of Public Works. The applicant shall be required to fund its fair share of improvements to these arterials, as stated on **Table 4.8-18**. The applicants total funding obligation shall be equitably distributed over the housing units and non-residential building square footage (i.e., Business Park, Visitor-Serving, Mixed-Use, and Commercial) in the Specific Plan, and shall be a fee to be paid to the County and/or the City at each building permit. For off-site areas within the County unincorporated area, the applicant may construct improvements for credit against or in lieu of paying the fee.	Applicant(s)	Payment of Fee Determination of fair share funding obligation and fee structure for off-site improvements	1. LACDPW 2. LACDPW 3. Prior to Recordation of the First Subdivision Map

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.8 TRAFFIC/ACCESS (cont.)			
FREEWAYS AND STATE HIGHWAYS (I-5 AND SR-126 IN LOS ANGELES COUNTY)			
4.8-7. Each future performance evaluation which shows that a future subdivision map will create significant impacts on SR-126 shall analyze the need for additional travel lanes on SR-126. If adequate lane capacity is not available at the time of subdivision, the applicant of the subdivision shall fund or construct the improvements necessary to serve the proposed increment of development. Construction or funding of any required facilities shall not preclude the applicant's ability to seek State, Federal or local funding for these facilities.	Applicant(s)	Receipt and Review of Transportation Performance Evaluation Applicant Funding of or bonding of Fair Share of Improvements	1. LACDPW 2. LACDPW 3. Prior to Recordation of Final Tract Map

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.8 TRAFFIC/ACCESS (cont.)			
CONGESTION MANAGEMENT			
4.8-8. Project-specific environmental analysis for future subdivision maps which allow construction shall comply with the requirements of the Congestion Management Program in effect at the time that subdivision map is filed.	Applicant	Review of future environmental analysis	1. LACDPW 2. LACDPW 3. Prior to certification of future environmental documents
SR-126 IN VENTURA COUNTY			
4.8-9. Prior to the recordation of the first subdivision map which permits construction, the applicant for that map shall prepare a transportation evaluation including all of the Specific Plan land uses which shall determine the specific improvements needed to the following intersections with SR-126 in the City of Fillmore and community of Piru in Ventura County: "A", "B", "C", "D" and "E" Streets, Old Telegraph, Olive, Central, Santa Clara, Mountain View, El Dorado Road, and Pole Creek (Fillmore), and Main/Torrey and Center (Piru). The related costs of those intersection improvements and the project's fair share shall be estimated based upon the expected Specific Plan traffic volumes. The transportation performance evaluation shall be based on the Los Angeles County Master Plan of Highways in effect at that time and shall be approved by the Los Angeles County Department of Public Works. The applicant's total funding obligation shall be equitably distributed over the housing units and non-residential building square footage (i.e., Business Park, Visitor Center, Mixed Use, and Commercial) in the Specific Plan, and shall be a fee to be paid to the City of Fillmore and the County of Ventura at each building permit.	Applicant (Traffic Engineer)	Receipt and Review of Transportation Performance Evaluation Payment of Fee to City of Fillmore or County of Ventura	1. LACDPW 2. LACDPW 3. Prior to Recordation of the First Subdivision Map; Payment of Fee Prior to Issuance of Building Permits

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.8 TRAFFIC/ACCESS (cont.)			
FREEWAY/HIGHWAY INTERSECTIONS AND INTERCHANGES			
4.8-10. The Specific Plan is responsible to construct or fund its fair-share of the intersections and interchange improvements indicated on Table 4.8-18. Each future transportation performance evaluation required by **Mitigation Measure 4.8-2** which identifies a significant impact at these locations due to subdivision map-generated traffic shall address the need for additional capacity at each of these locations. If adequate capacity is not available at the time of subdivision map recordation, the performance evaluation shall determine the improvements necessary to carry Specific Plan generated traffic, as well as the fair share cost to construct such improvements. If the future subdivision is conditioned to construct a phase of improvements which results in an overpayment of the fair-share cost of the improvement, then an appropriate adjustment (offset) to the fees paid to Los Angeles County and/or City of Santa Clarita pursuant to **Mitigation Measure 4.8-6** above shall be made.	Applicant	Field Verification of Construction or Receipt of Fair Share Funding or Bonding	1. LACDPW 2. LACDPW 3. Prior to Issuance of Occupancy Permits
4.8-11. The applicant of the Newhall Ranch Specific Plan shall participate in an I-5 developer fee program, if adopted by the Board of Supervisors for the Santa Clarita Valley.	Applicant	Field Verification of Construction or Receipt of Fair Share Funding or Bonding	1. LACDPW 2. LACDPW 3. Prior to Issuance of Occupancy Permits
4.8-12. The applicant of the Newhall Ranch Specific Plan shall participate in a transit fee program, if adopted for the entire Santa Clarita Valley by Los Angeles County and City of Santa Clarita.	Applicant	Field Verification of Construction or Receipt of Fair Share Funding or Bonding	1. LACDPW 2. LACDPW 3. Prior to Issuance of Occupancy Permits
4.8 TRAFFIC/ACCESS (cont.)			
4.8-13. Prior to the approval of each subdivision map which permits construction, the applicant for that map shall prepare a traffic analysis approved by the Los Angeles County Department of Public Works. The analysis will assess project and cumulative development (including an existing plus cumulative development scenario under the County's Traffic Impact Analysis Report Guidelines (TIA) and its Development Monitoring System (DMS)). In response to the traffic analysis, the applicant may construct off-site traffic improvements for credit against, or in lieu of paying, the mitigation fees described in **Mitigation Measure 4.8-6** above. If future subdivision maps are developed in phases, a traffic study for each phase of the subdivision map may be submitted to determine the improvements needed to be constructed with that phase of development.	Applicant(s) (Project Traffic Engineer)	Receipt and Review of TIA and DMS Traffic Analysis Applicant Funding of or bonding of Fair Share of Improvements	1. LACDPW 2. LACDPW 3. Prior to Recordation of the Final Tract Map

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.9 NOISE			
CONSTRUCTION			
4.9-1. All construction activity occurring on the Newhall Ranch Specific Plan site shall adhere to the requirements of the "County of Los Angeles Construction Equipment Noise Standards," County of Los Angeles Ordinance No. 11743, §12.08.440 as identified in Table 4.9-3.	Applicant (Construction Contractor)	Include Measure in Specifications Field Verification With Noise Monitor	1. LA County Department of Health Services 2. LACDPW, Building and Safety 3. During Grading and Construction Activities
4.9-2. Limit all construction activities near occupied residences to between the hours of 6:30 A.M. and 8:00 P.M., and exclude all Sundays and legal holidays pursuant to County Department of Public Works, Construction Division standards.	Applicant (Construction Contractor)	Include Measure in Specifications Field Verification	1. LA County Department of Health Services 2. LACDPW, Building and Safety 3. During Grading and Construction Activities
4.9-3. When construction operations occur adjacent to occupied residential areas, implement appropriate additional noise reduction measures that include changing the location of stationary construction equipment, shutting off idling equipment, notifying adjacent residences in advance of construction work, and installing temporary acoustic barriers around stationary construction noise sources.	Applicant (Construction Contractor)	Include Measure in Specifications Field Verification and Verification that Adjacent Residents Were Notified	1. LA County Department of Health Services 2. LACDPW, Building and Safety 3. During Grading and Construction Activities
4.9-4. Locate construction staging areas on-site to maximize the distance between staging areas and occupied residential areas.	Applicant (Construction Contractor)	Include Measure in Specifications Field Verification	1. LA County Department of Health Services 2. LACDPW, Building and Safety 3. During Grading and Construction Activities

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.9 NOISE (cont.)			
OPERATION			
4.9-5. Where new single family residential buildings are to be constructed within an exterior noise contour of 60 dB(A) CNEL or greater, or where any multi-family buildings are to be constructed within an exterior noise contour of 65 dB(A) CNEL or greater, an acoustic analysis shall be completed prior to approval of building permits. The acoustical analysis shall show that the building is designed so that interior noise levels resulting from outside sources will be no greater than 45 dB(A) CNEL.	Applicant	Receipt and Review of Acoustical Analysis	1. LA County Department of Health Services 2. LACDPW, Building and Safety 3. Prior to the Issuance of Building Permits
4.9-6. For single family residential lots located within the 60 dB(A) CNEL or greater noise contour, an acoustic analysis shall be submitted prior to tentative approval of the subdivision. The acoustic analysis shall show that exterior noise in outdoor living areas (e.g., back yards, patios, etc.) will be reduced to 60 dB(A) CNEL or less.	Applicant	Receipt and Review of Acoustical Analysis	1. LA County Department of Health Services 2. LACDPW, Building and Safety 3. Prior to Tentative Approval of Subdivision
4.9-7. For multi-family residential lots located within the 65 dB(A) CNEL or greater noise contour, an acoustic analysis shall be submitted prior to tentative approval of the subdivision. The acoustic analysis shall show that exterior noise in outdoor living areas (e.g., back yards, patios, etc.) will be reduced to 65 dB(A) CNEL or less.	Applicant	Receipt and Review of Acoustical Analysis	1. LA County Department of Health Services 2. LACDPW, Building and Safety 3. Prior to Tentative Approval of Subdivision
4.9-8. For school sites located within the 70 dB(A) CNEL or greater noise contour, an acoustic analysis shall be submitted prior to tentative approval of the subdivision. The acoustic analysis shall show that noise at exterior play areas will be reduced to 70 dB(A) CNEL or less.	Applicant	Receipt and Review of Acoustical Analysis	1. LA County Department of Health Services 2. LACDPW, Building and Safety 3. Prior to Tentative Approval of Subdivision
4.9-9. All residential air conditioning equipment installed within the Newhall Ranch Specific Plan site shall adhere to the requirements of the "County of Los Angeles Residential Air Conditioning and Refrigeration Noise Standards," County of Los Angeles Ordinance No. 11743, §12.08.530.	Building Contractor	Field Verification	1. LA County Department of Health Services 2. LACDPW, Building and Safety 3. Prior to the Issuance of Occupancy Permits

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.9 NOISE (cont.)			
4.9-10. All stationary and point sources of noise occurring on the Newhall Ranch Specific Plan site shall adhere to the requirements of the County of Los Angeles Ordinance No. 11743, §12.08.390 as identified in Table 4.9-2, County of Los Angeles Exterior Noise Standards for Stationary and Point Noise Sources.	Future Owners/ Operators within project	Field Verification	1. LA County Department of Health Services 2. LA County Department of Building and Safety 3. During Life of Project
4.9-11. Loading, unloading, opening, closing, or other handling of boxes, crates, containers, building materials, garbage cans or similar objects between the hours of 10:00 P.M. and 6:00 A.M. in such a manner as to cause a noise disturbance is prohibited in accordance with the County of Los Angeles Ordinance No. 11743, §12.08.460.	Future Owners/ Operators within project	Field Verification	1. LA County Department of Health Services 2. LACDPW, Building and Safety 3. During Life of Project
4.9-12. Loading zones and trash receptacles in commercial and Business Park areas shall be located away from adjacent residential areas, or provide attenuation so that noise levels at residential uses do not exceed the standards identified in §12.08.460 of the Ordinance No. 11743.	Applicant	Plan Check Field Verification	1. LA County Department of Health Services 2. LACDPW, Building and Safety 3. Prior to Approval of Final Maps or improvement/building plans and Verify Prior to Issuance of Occupancy Permits
4.9-13. Where residential lots are located with direct lines of sight to the Magic Mountain Theme Park, an acoustic analysis shall be submitted to show that exterior noise on the residential lots generated by activities at the park do not exceed the standards identified in §12.08.390 of the Ordinance No. 11743 as identified in Table 4.9-2, County of Los Angeles Exterior Noise Standards for Stationary and Point Noise Sources.	Applicant	Receipt and Review of Acoustical Analysis	1. LA County Department of Health Services 2. LACDPW, Building and Safety 3. Prior to the Issuance of Building Permits
4.9-14. After the time that occupancy of uses on the Newhall Ranch Specific Plan site occurs, AND when noise levels at the Travel Village RV Park reach 70 dB(A) CNEL at locations where recreational vehicles are inhabited, the applicant shall construct a noise abatement barrier to reduce noise levels at the RV Park to 70 dB(A) CNEL or less.	Applicant	Receipt and Review of Acoustical Analysis Field Verification	1. LA County Department of Health Services 2. LACDPW, Building and Safety 3. Upon Occupancy of Uses on Newhall Ranch and if/when noise levels in Travel Village reach 70 dB(A) CNEL

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.9 NOISE (cont.)			
4.9-15. Despite the absence of a significant impact, applicants for all building permits of Residential, Mixed-Use, Commercial, and Business Park land uses (Project) shall pay to the Santa Clara Elementary School District, prior to issuance of building permits, the project's pro rata share of the cost of a sound wall to be located between SR-126 and the Little Red School House. The project's pro rata share shall be determined by multiplying the estimated cost of the sound wall by the ratio of the project's estimated contribution of average daily trips on SR-126 (ADT) at the Little Red School House (numerator) to the total projected cumulative ADT increase at that location (denominator).[1] The total projected cumulative ADT increase shall be determined by subtracting the existing trips on SR-126[2] from the projected cumulative trips as shown in Table 1 of Topical Response 5 - Traffic Impacts to State and Local Roads in Ventura County after adding the total Newhall Ranch ADT traveling west of the City of Fillmore.	Applicants for all Building Permits	Payment to Santa Clara Elementary School District	1. LACDRP 2. LACDPW, Building and Safety 3. Upon Issuance of Building Permits
4.9-16. Despite the absence of a significant impact, the applicant for all building permits of Residential, Mixed-Use, Commercial and Business Park land uses (Project) shall participate on a fair-share basis in noise attenuation programs developed and implemented by the City of Moorpark to attenuate vehicular noise on SR-23 just north of Casey Road for the existing single-family homes which front SR-23. The mitigation criteria shall be to reduce noise levels to satisfy State noise compatibility standards. The project's pro rata share shall be determined by multiplying the estimated cost of attenuation by the ratio of the project's estimated contribution of average daily trips on SR-23 (ADT) north of the intersection of SR-23 and Casey Road (numerator) to the total projected cumulative ADT increase at that location (denominator).[3] The total projected cumulative ADT increase shall be determined by subtracting the existing trips on SR-23 north of Casey Road[4] from the projected cumulative trips as shown in Topical Response 5 - Traffic Impacts to State and Local Roads in Ventura County after adding the total Newhall Ranch ADT traveling south of the City of Fillmore.	Applicants for all Building Permits	Payment to City of Moorpark	1. LACDRP 2. LACDPW, Building and Safety 3. Upon Issuance of Building Permits

1 Cost of Sound Wall X (Project ADT on SR-126 @ LRSH*/Total Projected Cumulative ADT Increase on SR-126 @ LRSH*) * LRSH = Little Red School House.

2 25,165 ADT using linear extrapolation from Table 1 of Topical Response 5 - Traffic Impacts to State and Local Roads in Ventura County.

3 Cost of mitigation x (Project ADT on SR-23 north of Casey Road/Total Projected cumulative ADT Increase on SR-23 north of Casey Road).

4 ADT using linear extrapolation from Table 1 of Topical Response 5 - Traffic Impacts to State and Local Roads in Ventura County.

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.9 NOISE (cont.)			
4.9-17. Prior to the approval of any subdivision map which permits construction within the Specific Plan area, the applicant for that map shall prepare an acoustical analysis assessing project and cumulative development (including an existing plus project analysis, and an existing plus cumulative development analysis including the project). The acoustical analysis shall be based upon State noise land use compatibility criteria and shall be approved by the Los Angeles County Department of Health Services. In order to mitigate any future impacts resulting from the project's contribution to significant cumulative noise impacts to development in existence as of the adoption of the Newhall Ranch Specific Plan and caused by vehicular traffic on off-site roadways, the applicant for building permits of Residential, Mixed-Use, Commercial, Visitor Serving and Business Park land uses shall, prior to issuance of building permits, pay a fee to Los Angeles County, Ventura County, the City of Fillmore or the City of Santa Clarita. The amount of the fee shall be the project's fair-share under any jurisdiction-wide or Santa Clarita Valley-wide noise programs adopted by any of the above jurisdictions.	Applicants for all Building Permits	Payment of Fee to Los Angeles County, Ventura County, City of Fillmore or the City of Santa Clarita	1. LACDRP 2. Los Angeles Co. Department of Health Services 3. Upon Issuance of Building Permits

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase

4.10 AIR QUALITY

As discussed in Draft EIR, the proposed Specific Plan includes an on-site mobility system with alternatives to automobile use. Bus transit service within the Santa Clarita Valley currently provides linkages to the MetroLink rail station located on Soledad Canyon Road in the City of Santa Clarita, as well as to major commercial and other high activity centers within the Santa Clarita Valley. As set forth in Specific Plan, bus pull-ins will be provided throughout the Newhall Ranch Specific Plan site. Transit service is expected to serve the site when the demand for service justifies the extension of service to the area. The bus transit system will serve to implement SCAQMD mitigation measures pertaining to the establishment of shuttles from the Specific Plan site to commercial core areas and to major rail transit centers.

In addition, the Specific Plan incorporates a variety of design concepts, which will reduce total vehicle miles traveled and encourage alternative modes of transportation. These features include Mixed-Use areas, the location of employment centers in proximity to residential areas, and trails, which will accommodate bicycles and pedestrians, which link employment centers and commercial areas. The Specific Plan also reserves land for a future rail right-of-way and an area has been identified for a future transit station within the Specific Plan area. The Specific Plan is designed to reduce vehicle miles traveled through encouraging alternative modes of travel and allowing for residents to work, shop, and recreate in close proximity to their homes.

The Specific Plan would be built out over an estimated 25-year period. It is unknown at this time what technological developments may take place that may affect the identification and implementation of mitigation measures; however, preliminary information is available on the direction that these developments appear to be taking. Projects planned today should be able to integrate improvements, which facilitate use of new technologies as they become commercially available. For example, several alternatives to gasoline-powered vehicles are being developed today. Fuel cells which generate little, if any, pollutant emissions are being designed and tested as means to supply energy, heat, and cooling for structures. The potential application of measures such as these to reduce emissions should be studied as they become readily available and economically viable. However, with regard to "a fuel cell program for the commercial and industrial buildings", there is no supportable evidence that such a mitigation measure is economically achievable and therefore feasible. Nor is any data available to demonstrate that such a measure would have a measurable or significant effect on reducing air emissions. In addition, Los Angeles County is not aware of any objective data demonstrating that such a measure, if implemented, would measurably reduce air emissions. SCAQMD's CEQA Air Quality Handbook does not recommend this measure for non-residential land uses. For all these reasons, Los Angeles County rejects this measure as infeasible.

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.10 AIR QUALITY (cont.)			
However, the following features have been incorporated as part of the Specific Plan to reduce motor vehicle trips:			
4.10-1. The Specific Plan will provide Commercial and Service uses in close proximity to residential subdivisions.	Applicant	Approval of Tentative Maps	1. LACDRP 2. LACDRP 3. Prior to Tentative Subdivision Map Approvals
4.10-2. The Specific Plan will locate residential uses in close proximity to Commercial uses, Mixed-Uses, and Business Parks.	Applicant	Approval of Tentative Maps	1. LACDRP 2. LACDRP 3. Prior to Tentative Subdivision Map Approvals
4.10-3. Bus pull-ins will be constructed throughout the Specific Plan site.	Applicant	Final Highway Plan Check	1. LACDPW 2. LACDPW 3. Prior to Tentative Subdivision Map Approvals
4.10-4. Pedestrian facilities, such as sidewalks, and community regional, and local trails, will be provided throughout the Specific Plan site.	Applicant	Submittal of Tentative Maps	1. LACDRP 2. LACDRP 3. Prior to Tentative Subdivision Map Approvals
4.10-5. Roads with adjacent trails for pedestrian and bicycle use will be provided throughout the Specific Plan site connecting the individual Villages and community.	Applicant	Submittal of Tentative Maps	1. LACDRP 2. LACDRP 3. Prior to Tentative Subdivision Map Approvals

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.10 AIR QUALITY (cont.)			
CONSTRUCTION IMPACTS			
4.10-6. The applicant of future subdivisions shall implement all rules and regulations adopted by the Governing Board of the SCAQMD which are applicable to the development of the subdivision (such as Rule 402 - Nuisance, Rule 403 - Fugitive Dust, Rule 1113 - Architectural Coatings) and which are in effect at the time of development. The purpose of Rule 403 is to reduce the amount of particulate matter entrained in the ambient air as a result of man-made fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. Rule 403 applies to any activity or man-made condition capable of generating fugitive dust such as the mass and remedial grading associated with the project as well as weed abatement and stockpiling of construction materials (i.e., rock, earth, gravel). Rule 403 requires that grading operations either (1) take actions specified in Tables 1 and 2 of the Rule for each applicable source of fugitive dust and take certain notification and record keeping actions; or (2) obtain an approved Fugitive Dust Control Plan. A complete copy of the SCAQMD's Rule 403 Implementation Handbook, which has been included in Appendix 4.10, provides guideline tables to demonstrate the typical mitigation program and record keeping required for grading operations (Tables 1 and 2 and sample record keeping chart). The record keeping is accomplished by on-site construction personnel, typically the construction superintendent. Each future subdivision proposed in association with the Newhall Ranch Specific Plan shall implement the following if found applicable and feasible for that subdivision:	Applicant	Plan Check Review and apply applicable rules as part of environmental document	1. LACDRP 2. LACDRP 3. Prior to Tentative Subdivision Map Approvals
GRADING a. Apply non-toxic soil stabilizers according to manufacturers' specification to all inactive construction areas (previously graded areas inactive for ten days or more). b. Replace groundcover in disturbed areas as quickly as possible.			

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.10 AIR QUALITY (cont.)			
4.10-6. (cont.)			
c. Enclose, cover, water twice daily, or apply non-toxic soil binders according to manufacturers' specifications, to exposed piles (i.e., gravel, sand, dirt) with 5 percent or greater silt content.			
d. Water active sites at least twice daily.			
e. Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 mph.			
f. Monitor for particulate emissions according to District-specified procedures.			
g. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard (i.e., minimum vertical distance between top of the load and the top of the trailer) in accordance with the requirements of CVC Section 23114.			
PAVED ROADS			
h. Sweep streets at the end of the day if visible soil material is carried onto adjacent public paved roads (recommend water sweepers with reclaimed water).			
i. Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip.			
UNPAVED ROADS			
j. Apply water three times daily, or non-toxic soil stabilizers according to manufacturers' specifications, to all unpaved parking or staging areas or unpaved road surfaces.			
k. Reduce traffic speeds on all unpaved roads to 15 mph or less.			
l. Pave construction roads that have a traffic volume of more than 50 daily trips by construction equipment, 150 total daily trips for all vehicles.			
m Pave all construction access roads at least 100 feet on to the site from the main road.			
n. Pave construction roads that have a daily traffic volume of less than 50 vehicular trips.			

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.10 AIR QUALITY (cont.)			
4.10-7. Prior to the approval of each future subdivision proposed in association with the Newhall Ranch Specific Plan, each of the construction emission reduction measures indicated below (and in Tables 11-2 and 11-3 of the SCAQMD's CEQA Air Quality Handbook, as amended) shall be implemented if found applicable and feasible for that subdivision. Tables of currently applicable measures are provided for reference in EIR Appendix 4.10.	Applicant	Field Verification and review and include applicable and feasible rules as part of environmental document	1. LACDRP 2. LACDRP 3. Prior to Tentative Subdivision Map Approvals
ON-ROAD MOBILE SOURCE CONSTRUCTION EMISSIONS: a. Configure construction parking to minimize traffic interference. b. Provide temporary traffic controls when construction activities have the potential to disrupt traffic to maintain traffic flow (e.g., signage, flag person, detours). c. Schedule construction activities that affect traffic flow to off-peak hours (e.g., between 7:00 P.M. and 6:00 A.M. and between 10:00 A.M. and 3:00 P.M.). d. Develop a trip reduction plan to achieve a 1.5 average vehicle ridership (AVR) for construction employees. e. Implement a shuttle service to and from retail services and food establishments during lunch hours. f. Develop a construction traffic management plan that includes the following measures to address construction traffic that has the potential to affect traffic on public streets: - Rerouting construction traffic off congested streets; - Consolidating truck deliveries; and - Providing temporary dedicated turn lanes for movement of construction trucks and equipment on and off of the site. g Prohibit truck idling in excess of two minutes.			
OFF-ROAD MOBILE SOURCE CONSTRUCTION EMISSIONS: h. Use methanol-fueled pile drivers. i. Suspend use of all construction equipment operations during second stage smog alerts. j. Prevent trucks from idling longer than two minutes. k. Use electricity from power poles rather than temporary diesel-powered generators. l. Use electricity from power poles rather than temporary gasoline-powered generators. m Use methanol- or natural gas-powered mobile equipment instead of diesel. n. Use propane- or butane-powered on-site mobile equipment instead of gasoline.			

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.10 AIR QUALITY (cont.)			
OPERATION IMPACTS			
The following measures based on current technology and feasibility will be implemented to reduce the operational emissions of the Specific Plan.			
4.10-8. The applicant of future subdivisions shall implement all rules and regulations adopted by the Governing Board of the SCAQMD which are applicable to the development of the subdivision (such as Rule 402 - Nuisance, Rule 1102 - Petroleum Solvent Dry Cleaners, Rule 1111 - NOx Emissions from Natural Gas-Fired, Fan-Type Central Furnaces, Rule 1146 - Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters) and which are in effect at the time of occupancy permit issuance.	Applicant	Field Verification and review and include applicable and feasible rules as part of environmental document	1. LACDRP 2. LACDRP 3. Prior to Tentative Subdivision Map Approvals
4.10-9. Prior to the approval of each future subdivision proposed in association with the Newhall Ranch Specific Plan, each of the operational emission reduction measures indicated below (and in Tables 11-6 and 11-7 of the SCAQMD's CEQA Air Quality Handbook, as amended) shall be implemented if found applicable and feasible for that subdivision. Tables of currently applicable measures are provided for reference in Appendix 4.10.	Applicant	Field Verification and review and include applicable and feasible rules as part of environmental document	1. LACDRP 2. LACDRP 3. Prior to Tentative Subdivision Map Approvals
ON-ROAD MOBILE SOURCE OPERATIONAL EMISSIONS:			
RESIDENTIAL USES a. Include satellite telecommunications centers in residential subdivisions. b. Establish a shuttle service from residential subdivisions to commercial core areas. c. Construct on-site or off-site bus stops (e.g., bus turnouts, passenger benches, and shelters). d. Construct off-site pedestrian facility improvements, such as overpasses and wider sidewalks. e. Include retail services within or adjacent to residential subdivisions. f. Provide shuttles to major rail transit centers or multi-modal stations. g. Contribute to regional transit systems (e.g., right-of-way, capital improvements, etc.). h. Synchronize traffic lights on streets impacted by development. i. Construct, contribute, or dedicate land for the provision of off-site bicycle trails linking the facility to designated bicycle commuting routes.			

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.10 AIR QUALITY (cont.)			
4.10-9. (cont.) **COMMERCIAL USES** j. Provide preferential parking spaces for carpools and vanpools and provide 7'2" minimum vertical clearance in parking facilities for vanpool access. k. Implement on-site circulation plans in parking lots to reduce vehicle queuing. l. Improve traffic flow at drive-throughs by designing separate windows for different functions and by providing temporary parking for orders not immediately available for pickup. m Provide video-conference facilities. n. Set up resident worker training programs to improve job/housing balance. o. Implement home dispatching system where employees receive routing schedule by phone instead of driving to work. p. Develop a program to minimize the use of fleet vehicles during smog alerts (for business not subject to Regulation XV (now Rule 2202) or XII). q. Use low-emissions fleet vehicles: - TLEV - ULEV - LEV - ZEV r. Reduce employee parking spaces for those businesses subject to Regulation XV (now Rule 2202). s. Implement a lunch shuttle service from a worksite(s) to food establishments. t. Implement compressed work-week schedules where weekly work hours are compressed into fewer than five days. - 9/80 - 4/40 - 3/36 u. Develop a trip reduction plan to achieve 1.5 AVR for businesses with less than 100 employees or multi-tenant worksites. v. Utilize satellite offices rather than regular worksite to reduce VMT. w. Establish a home-based telecommuting program. x. Provide on-site child care and after-school facilities or contribute to off-site development within walking distance.	Applicant	Field Verification and review and include applicable and feasible rules as part of environmental document	1. LACDRP 2. LACDRP 3. Prior to Tentative Subdivision Map Approvals

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.10 AIR QUALITY (cont.)			
4.10-9. (cont.) y. Require retail facilities or special event centers to offer travel incentives such as discounts on purchases for transit riders. z. Provide on-site employee services such as cafeterias, banks, etc. aa. Establish a shuttle service from residential core areas to the worksite. ab. Construct on-site or off-site bus stops (e.g., bus turnouts, passenger benches, and shelters). ac. Implement a pricing structure for single-occupancy employee parking and/or provide discounts to ridesharers. ad. Include residential units within a commercial project. ae. Utilize parking in excess of code requirements as on-site park-n-ride lots or contribute to construction of off-site lots. af. Any two of the following: - Construct off-site bicycle facility improvements, such as bicycle trails linking the facility to designated bicycle commuting routes, or on-site improvements, such as bicycle paths. - Include bicycle parking facilities, such as bicycle lockers and racks. - Include showers for bicycling employees' use. ag. Any two of the following: - Construct off-site pedestrian facility improvements, such as overpasses, wider sidewalks. - Construct on-site pedestrian facility improvements, such as building access which is physically separated from street and parking lot traffic and walk paths. - Include showers for pedestrian employees' use. ah. Provide shuttles to major rail transit stations and multi-modal centers. ai. Contribute to regional transit systems (e.g., right-of-way, capital improvements, etc.). aj. Charge visitors to park. ak. Synchronize traffic lights on streets impacted by development. al. Reschedule truck deliveries and pickups to off-peak hours. am. Set up paid parking systems where drivers pay at walkup kiosk and exit via a stamped ticket to reduce emissions from queuing vehicles. an. Require on-site truck loading zones. ao. Implement or contribute to public outreach programs. ap. Require employers not subject to Regulation XV (now Rule 2202) to provide commuter information area.	Applicant	Field Verification and review and include applicable and feasible rules as part of environmental document	1. LACDRP 2. LACDRP 3. Prior to Tentative Subdivision Map Approvals

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.10 AIR QUALITY (cont.)			
4.10-9. (cont.) **BUSINESS PARK USES** aq. Provide preferential parking spaces for carpools and vanpools and provide 7'2" minimum vertical clearance in parking facilities for vanpool access. ar. Implement on-site circulation plans in parking lots to reduce vehicle queuing. as. Set up resident worker training programs to improve job/housing balance. at. Implement home dispatching system where employees receive routing schedule by phone instead of driving to work. au. Develop a program to minimize the use of fleet vehicles during smog alerts (for business not subject to Regulation XV (now Rule 2202) or XII). av. Use low-emissions fleet vehicles: - TLEV - ULEV - LEV - ZEV aw. Require employers not subject to Regulation XV (now Rule 2202) to provide commuter information area. ax. Reduce employee parking spaces for those businesses subject to Regulation XV (now Rule 2202). ay. Implement compressed work-week schedules where weekly work hours are compressed into fewer than five days. - 9/80 - 4/40 - 3/36 az. Offer first right of refusal, low interest loans, or other incentives to employees who purchase or rent local residences. ba. Develop a trip reduction plan to achieve 1.5 AVR for businesses with less than 100 employees or multi-tenant worksites. bb. Provide on-site child care and after-school facilities or contribute to off-site development within walking distance. bc. Provide on-site employee services such as cafeterias, banks, etc. bd. Establish a shuttle service from residential core areas to the worksite. be. Construct on-site or off-site bus stops (e.g., bus turnouts, passenger benches, and shelters)	Applicant	Field Verification and review and include applicable and feasible rules as part of environmental document	1. LACDRP 2. LACDRP 3. Prior to Tentative Subdivision Map Approvals

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.10 AIR QUALITY (cont.)			
4.10-9. (cont.) bf. Implement a pricing structure for single-occupancy employee parking and/or provide discounts to ridesharers. bg. Utilize parking in excess of code requirements as on-site park-n-ride lots or contribute to construction of off-site lots. bh. Any two of the following: - Construct off-site bicycle facility improvements, such as bicycle trails linking the facility to designated bicycle commuting routes, or on-site improvements, such as bicycle paths. - Include bicycle parking facilities, such as bicycle lockers and racks. - Include showers for bicycling employees' use. bi. Any two of the following: - Construct off-site pedestrian facility improvements, such as overpasses, wider sidewalks. - Construct on-site pedestrian facility improvements, such as building access which is physically separated from street and parking lot traffic and walk paths. - Include showers for pedestrian employees' use. bj. Provide shuttles to major rail transit stations and multi-modal centers. bk. Contribute to regional transit systems (e.g., right-of-way, capital improvements, etc.). bl. Synchronize traffic lights on streets impacted by development. bm. Reschedule truck deliveries and pickups to off-peak hours. bn. Implement a lunch shuttle service from a worksite(s) to food establishments. bo. Require on-site truck loading zones. bp. Install aerodynamic add-on devices to heavy-duty trucks. bq. Implement or contribute to public outreach programs.	Applicant	Field Verification and review and include applicable and feasible rules as part of environmental document	1. LACDRP 2. LACDRP 3. Prior to Tentative Subdivision Map Approvals
STATIONARY SOURCE OPERATIONAL EMISSIONS			
RESIDENTIAL USES br. Use solar or low emission water heaters. bs. Use central water heating systems. bt. Use built-in energy-efficient appliances. bu. Provide shade trees to reduce building heating/cooling needs. bv. Use energy-efficient and automated controls for air conditioners. bw. Use double-paned windows. bx. Use energy-efficient low-sodium parking lot lights.			

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.10 AIR QUALITY (cont.)			
4.10-9. (cont.) **COMMERCIAL USES** by. Use lighting controls and energy-efficient lighting. bz. Use fuel cells in residential subdivisions to produce heat and electricity. ca. Orient buildings to the north for natural cooling and include passive solar design (e.g., daylighting). cb. Use light-colored roofing materials to reflect heat. cc. Increase walls and attic insulation beyond Title 24 requirements. cd. Use solar or low emission water heaters. ce. Use central water heating systems. cf. Provide shade trees to reduce building heating/cooling needs. cg. Use energy-efficient and automated controls for air conditioners. ch. Use double-paned windows. ci. Use energy-efficient low-sodium parking lot lights. cj. Use lighting controls and energy-efficient lighting. ck. Use light-colored roofing materials to reflect heat. cl. Increase walls and attic insulation beyond Title 24 requirements. cm. Orient buildings to the north for natural cooling and include passive solar design (e.g., daylighting). **BUSINESS PARK USES** cn. Provide shade trees to reduce building heating/cooling needs. co. Use energy-efficient and automated controls for air conditioning. cp. Use double-paned windows. cq. Use energy-efficient low-sodium parking lot lights. cr. Use lighting controls and energy-efficient lighting. cs. Use light-colored roofing materials to reflect heat. ct. Orient buildings to the north for natural cooling and include passive solar design (e.g., daylighting). cu. Increase walls and attic insulation beyond Title 24 requirements. cv. Improved storage and handling or source materials. cw. Materials substitution (e.g., use water-based paints, life-cycle analysis). cx. Modify manufacturing processes (e.g., reduce process stages, closed-loop systems, materials recycling). cy. Resource recovery systems that redirect chemicals to new production processes.	Applicant	Field Verification and review and include applicable and feasible rules as part of environmental document	1. LACDRP 2. LACDRP 3. Prior to Tentative Subdivision Map Approvals

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.10 AIR QUALITY (cont.)			
4.10-10. All non-residential development of 25,000 gross square feet or more shall comply with the County's Transportation Demand Management (TDM) Ordinance (Ordinance No. 93-0028M) in effect at the time of subdivision. The sizes and configurations of the Specific Plan's non-residential uses are not known at this time and the Ordinance specifies different requirements based on the size of the project under review. All current provisions of the ordinance are summarized in Appendix 4.10.	Applicant	Include Requirement in Future environmental documents and/or check at Building Permit	1. LACDPW 2. LACDRP 3. Tentative Map Approval or Building Permit, as applicable
4.10-11. Subdivisions and buildings shall comply with Title 24 of the California Code of Regulations which are current at the time of development.	Applicant	Include Requirement in Future environmental documents and/or check at Building Permit	1. LACDPW, Building and Safety 2. LACDPW, Building and Safety 3. Tentative Map Approval or Building Permit, as applicable
4.10-12. Lighting for public streets, parking areas, and recreation areas shall utilize energy efficient light and mechanical, computerized or photo cell switching devices to reduce unnecessary energy usage.	Applicant	Include Requirement in Future environmental documents and/or check at Building Permit	1. LACDPW 2. LACDPW 3. Tentative Map Approval or Building Permit, as applicable
4.10-13. Any on-site subterranean parking structures shall provide adequate ventilation systems to disperse pollutants and preclude the potential for a pollutant concentration to occur.	Applicant	Include Requirement in Future environmental documents and/or check at Building Permit	1. LACDPW 2. LACDPW 3. Tentative Map Approval or Building Permit, as applicable
4.10-14. The sellers of new residential units shall be required to distribute brochures and other relevant information published by the SCAQMD or similar organization to new homeowners regarding the importance of reducing vehicle miles traveled and related air quality impacts, as well as on local opportunities for public transit and ridesharing.	Applicant	LACDRP Review of information package and distribution records	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. Prior to Issuance of Building Permit (Package) and Occupancy Permits (Records)

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.11 WATER RESOURCES			
4.11-1. The proposed Specific Plan shall implement a water reclamation system in order to reduce the Specific Plan's demand for imported potable water. The Specific Plan shall install a distribution system to deliver non-potable reclaimed water to irrigate land uses suitable to accept reclaimed water, pursuant to Los Angeles County Department of Health Standards.	Applicant	Subdivision Map Improvement Plan Check	1. LACDRP 2. LACDPW 3. Prior to Issuance of Building Permit(s)
4.11-2. Landscape concept plans shall include a palette rich in drought-tolerant and native plants.	Applicant	Preliminary Landscape Plan Review	1. LACDPW 2. LA County Fire Department or Parks and Recreation 3. Prior to Recordation of Final Map
4.11-3. Major manufactured slopes shall be landscaped with materials that will eventually naturalize, requiring minimal irrigation.	Applicant	Preliminary Landscape Plan Review	1. LACDPW 2. LA County Fire Department or Parks and Recreation 3. Prior to Recordation of Final Map
4.11-4. Water conservation measures as required by the State of California shall be incorporated into all irrigation systems.	Applicant	Architectural Plans	1. California Department of Conservation 2. LACDPW, Building and Safety 3. Prior to Issuance of Building Permit(s)
4.11-5. The area within each future subdivision within Newhall Ranch shall be annexed to the Valencia Water Company prior to issuance of building permits.	Applicant	CPUC Annexation Approval	1. CPUC 2. LACDPW, Building and Safety 3. Prior to Issuance of Building Permit(s)

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.11 WATER RESOURCES (cont.)			
4.11-6. In conjunction with the submittal of applications for tentative tract maps or parcel maps which permit construction, and prior to approval of any such tentative maps, and in accordance with the requirements of the Los Angeles County General Plan Development Monitoring System (DMS), as amended, Los Angeles County shall require the applicant of the map to obtain written confirmation from the retail water agency identifying the source(s) of water available to serve the map concurrent with need. If the applicant of such map cannot obtain confirmation that a water source(s) is available for buildout of the map, the map shall be phased with the timing of an available water source(s), consistent with the County's DMS requirements.	Applicant	Written Confirmation of Water Availability	1. LACDPW 2. LACDPW 3. Prior to Recordation of Final Subdivision Maps
4.11-7. Prior to commencement of use, all uses of recycled water shall be reviewed and approved by the State of California Health and Welfare Agency, Department of Health Services.	Applicant	Plan Check	1. County Department of Health Services 2. LACDPW, Building and Safety 3. Prior to Issuance of Grading or Occupancy Permit(s) as applicable
4.11-8. Prior to the issuance of building permits that allow construction, the applicant of the subdivision shall finance the expansion costs of water service extension to the subdivision through the payment of connection fees to the appropriate water agency(ies).	Applicant	Payment of Connection Fees	1. CLWA/VWC 2. LACDPW, Building and Safety 3. Prior to Issuance of Building Permits

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.11 WATER RESOURCES (cont.)			
4.11-9. Pursuant to Public Resources Code §21081(a)(2), the County shall recommend that the Upper Santa Clara Water Committee (or Santa Clarita Valley Water Purveyors), made up of the Castaic Lake Water Agency, Los Angeles County Waterworks District No. 36, Newhall County Water District, Santa Clarita Water Division of CLWA and the Valencia Water Company, prepare an annual water report that will discuss the status of groundwater within the Alluvial and Saugus Aquifers, and State Water Project water supplies as they relate to the Santa Clarita Valley. The report will also include an annual update of the actions taken by CLWA to enhance the quality and reliability of existing and planned water supplies for the Santa Clarita Valley. In those years when the Committee or purveyors do not prepare such a report, the applicant at its expense shall cause the preparation of such a report that is acceptable to the County to address these issues. This annual report shall be provided to Los Angeles County who will consider the report as part of its local land use decision-making process. (To date, four such water reports have been prepared (1998, 1999, 2000 and 2001) and provided to both the County of Los Angeles and the City of Santa Clarita.)	Applicant	Receipt of Annual Report	1. Board of Supervisors 2. LACDRP 3. Prior to Recordation of Final Subdivision Maps

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.11 WATER RESOURCES (cont.)			
4.11-10. Pursuant to Public Resources Code §21081(a)(2), the County shall recommend that Castaic Lake Water Agency (CLWA), in cooperation with other Santa Clarita Valley retail water providers, continue to update the Urban Water Management Plan (UWMP) for Santa Clarita Valley once every five years (on or before December 31) to ensure that the County receives up-to-date information about the existing and planned water supplies in the Santa Clarita Valley. The County will consider the information contained in the updated UWMP in connection with the County's future local land use decision-making process. The County will also consider the information contained in the updated UWMP in connection with the County's future consideration of any Newhall Ranch tentative subdivision maps allowing construction. (see, **Mitigation Measure 4.11-15**, below.)	Applicant	Receipt of written identification of water service from retailer	1. Board of Supervisors 2. LACDRP 3. Prior to Recordation of Final Subdivision Maps
4.11-11. With implementation of the proposed Saugus ASR program, ASR wells shall be spaced so that adjacent non-project wells will not lose pumping capacity as a result of drawdown occurring during pumping of the ASR wells.	Applicant	Receipt of written report addressing proposed and existing well locations, and effects on adjacent wells	1. LACDPW 2. LACDPW 3. Concurrent with Submittal of Application for Saugus ASR Program

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.11 WATER RESOURCES (cont.)			
4.11-12. With implementation of the proposed Saugus ASR program, the ultimate number of ASR wells to be constructed shall be sufficient to inject the ultimate target injection volume of 4,500 acre-feet per year and withdraw the ultimate target withdraw volume of 4,100 acre-feet per year.	Applicant	Receipt of written report from ASR program engineer	1. LACDRPW 2. LACDRPW 3. Concurrent with Submittal of Application for Tentative Tract Maps which permit construction.
4.11-13. With implementation of the proposed Saugus ASR program, ASR wells shall be constructed in the following two general areas: (a) South of the Santa Clara River and west of Interstate 5. This location includes areas within the Newhall Ranch Specific Plan boundary. (This area is referred to as the "south ASR well field".); and (b) North of the Santa Clara River and west of Castaic Creek. (This location is referred to as the "north ASR well field.")	Applicant	Receipt of written report from ASR program engineer indicating well locations	1. LACDRPW 2. LACDRPW 3. Concurrent with Submittal of Application for Tentative Tract Maps which permit construction.
4.11-14. The Saugus Groundwater Banking / ASR program injection water must meet the water quality requirements of the State Regional Water Quality Control Board, Los Angeles Region. The water extracted for use on the Specific Plan site shall meet the Title 22 drinking water standards of the State Department of Health Services.	Applicant	Receipt of written report on water quality from ASR program engineer	1. LACDRPW 2. LACDRPW 3. Concurrent with Submittal of Application for Tentative Tract Maps which permit construction.

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.11 WATER RESOURCES (cont.)			
4.11-15. Groundwater historically and presently used for crop irrigation on the Newhall Ranch Specific Plan site and elsewhere in Los Angeles County shall be made available by the Newhall Land and Farming Company, or its assignee, to partially meet the potable water demands of the Newhall Ranch Specific Plan. The amount of groundwater pumped for this purpose shall not exceed 7,038 AFY. This is the amount of groundwater pumped historically and presently by the Newhall Land and Farming Company in Los Angeles County to support its agricultural operations. Pumping this amount will not result in a net increase in groundwater use in the Santa Clarita Valley. To monitor groundwater use, the Newhall Land and Farming Company, or its assignee, shall provide the County an annual report indicating the amount of groundwater used in Los Angeles County and the specific land upon which that groundwater was historically used for irrigation. For agricultural land located off the Newhall Ranch Specific Plan site in Los Angeles County, at the time agricultural groundwater is transferred from agricultural uses on that land to Specific Plan uses, The Newhall Land and Farming Company, or its assignee, shall provide a verified statement to the County's Department of Regional Planning that Alluvial aquifer water rights on that land will now be used to meet Specific Plan demand.	Applicant	Receipt of written identification of water service provider or applicant	1. Board of Supervisors 2. LACDRP 3. Prior to Recordation of Final Subdivision Maps
4.11-16. The agricultural groundwater used to meet the needs of the Specific Plan shall meet the drinking water quality standards required under Title 22 prior to use.	Applicant	Receipt of written report on water quality from ASR program engineer	1. LACDPW 2. LACDRP 3. Concurrent with Submittal of Application for Tentative Tract Maps which permit construction.

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.11 WATER RESOURCES (cont.)			
4.11-17. In conjunction with each project-specific subdivision map for the Newhall Ranch Specific Plan, the County shall require the applicant of that map to cause to be prepared a supplemental or subsequent Environmental Impact Report, as appropriate, pursuant to CEQA requirements. By imposing this EIR requirement on each Newhall Ranch tentative subdivision map application allowing construction, the County will ensure that, among other things, the water needed for each proposed subdivision is confirmed as part of the County's subdivision map application process. This mitigation requirement shall be read and applied in combination with the requirements set forth in revised **Mitigation Measure 4.11-6**, above.	Applicant	Preparation of supplemental or subsequent EIR	1. LACDRP 2. LACDRP 3. Concurrent with Approval of Application for Tentative Tract Maps which permit construction.
4.11-18. The storage capacity purchased in the Semitropic Groundwater Banking Project by the Newhall Ranch Specific Plan applicant shall be used in conjunction with the provision of water to the Newhall Ranch Specific Plan. The applicant, or entity responsible for storing Newhall Ranch water in this groundwater bank, shall prepare an annual status report indicating the amount of water placed in storage in the groundwater bank. This report shall be made available annually and used by Los Angeles County in its decision-making processes relating to build-out of the Newhall Ranch Specific Plan.	Applicant	Receipt of written report from applicant or entity storing Newhall Ranch water	1. LACDRP 2. LACDRP 3. Concurrent with Submittal of Application for Tentative Tract Maps which permit construction.

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.11 WATER RESOURCES (cont.)			
4.11-19. A Memorandum of Understanding (MOU) and Water Resource Monitoring Program has been entered into between United Water Conservation District and the Upper Basin Water Purveyors, effective August 20, 2001.[5] The MOU/Water Resource Monitoring Program, when executed, will put in place a joint water resource monitoring program that will be an effective regional water management tool for both the Upper and Lower Santa Clara River areas as further information is developed, consistent with the MOU. This monitoring program will result in a database addressing water usage in the Saugus and Alluvium aquifers over various representative water cycles. The parties to the MOU intend to utilize this database to further identify surface water and groundwater impacts on the Santa Clara River Valley. The applicant, or its designee, shall cooperate in good faith with the continuing efforts to implement the MOU and Water Resource Monitoring Program. As part of the MOU process, the United Water Conservation District and the applicant have also entered into a "Settlement and Mutual Release" agreement, which is intended to continue to develop data as part of an on-going process for providing information about surface and groundwater resources in the Santa Clara River Valley. In that agreement, the County and the applicant have agreed to the following: "4.3 Los Angeles County and Newhall will each in good faith cooperate with the parties to the MOU and will assist them as requested in the development of the database calibrating water usage in the Saugus and Alluvium aquifers over multi-year water cycles. Such cooperation will include, but not be limited to, providing the parties to the MOU with historical well data and other data concerning surface water and groundwater in the Santa Clara River and, in the case of Newhall, providing Valencia Water Company with access to wells for the collection of well data for the MOU.	Applicant	Review of Initial Study and subdivision maps	1. LACDRP 2. LACDRP 3. Concurrent with Submittal of Application for Tentative Tract Maps which permit construction.

[5] *See,* **Appendix F** to Final Additional Analysis [Memorandum of Understanding Between the Santa Clara River Valley Upper Basin Water Purveyors and United Water Conservation District, dated August 2001].

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.11 WATER RESOURCES (cont.)			
4.11-19. (cont.) 4.4 Los Angeles County and Newhall further agree that the County of Los Angeles will be provided with, and consider, the then-existing data produced by the MOU's monitoring program in connection with, and prior to, all future Newhall Ranch subdivision approvals or any other future land use entitlements implementing the Newhall Ranch Specific Plan. If the then-existing data produced by the MOU's monitoring program identifies significant impacts to surface water or groundwater resources in the Santa Clara River Valley, Los Angeles County will identify those impacts and adopt feasible mitigation measures in accordance with the California Environmental Quality Act."	Applicant	Review of Initial Study and subdivision maps	1. LACDRP 2. LACDRP 3. Concurrent with Submittal of Application for Tentative Tract Maps which permit construction.

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.11 WATER RESOURCES (cont.)			
4.11-20. The Specific Plan applicant, or its successors, shall assign its acquired Nickel Water rights to the Valencia Water Company or Castaic Lake Water Agency (CLWA), and, in consultation with the Valencia Water Company, CLWA or their designee(s), the applicant shall ensure that the Nickel Water is delivered to the appropriate place of use necessary to serve the Newhall Ranch Specific Plan at the time of need, as determined by the County of Los Angeles through required SB221 and/or SB610 analyses for future subdivision map applications. Upon approval of the Specific Plan, the applicant, Valencia Water Company, CLWA or a designee, will take delivery of the Nickel Water, so that such water will be used, or stored for use, for the Specific Plan in future years. To ensure that an adequate supply of water is available for the Specific Plan over the long-term, the decision of whether or not the Nickel Water agreement should be extended or otherwise canceled cannot occur without first obtaining CLWA's concurrence. If the applicant, or its designee, seeks to not extend the Nickel Water agreement beyond its initial 35-year term, or seeks to cancel said agreement prior to the expiration of its initial 35-year period, or the expiration of the 35-year option period, if exercised, then the applicant, or its designee, must obtain written concurrence and that concurrence must include findings to the effect that other equivalent water supplies are available at a comparable cost and that non-extension or cancellation of the agreement will not impact the water supplies of Newhall Ranch and the rest of the Santa Clarita Valley.	Applicant	Verify during review of Initial Study and subdivision maps	1. LACDRP 2. LACDRP 3. Concurrent with Submittal of Application for Tentative Tract Maps which permit construction.
4.11-21. The applicant, in coordination with RWQCB staff, shall select a representative location upstream and downstream of the Newhall Ranch Specific Plan and sample surface and groundwater quality. Sampling from these two locations would begin upon approval of the first subdivision map and be provided annually to the RWQCB and County for the purpose of monitoring water quality impacts of the Specific Plan over time. If the sampling data results in the identification of significant new or additional water quality impacts resulting from the Specific Plan, which were not previously known or identified, additional mitigation shall be required at the subdivision map level.	Applicant	Water quality sampling in coordination with RWQCB staff	1. LACDRP 2. LACDRP/RWQCB 3. Concurrent with Approval of the first Subdivision Map which permits construction, and annually thereafter.
4.11-22. Beginning with the filing of the first subdivision map allowing construction on the Specific Plan site and with the filing of each subsequent subdivision map allowing construction, the Specific Plan applicant, or its designee, shall provide documentation to the County of Los Angeles identifying the specific portion(s) of irrigated farmland in the County of Los Angeles proposed to be retired from irrigated production to make agricultural water available to serve the subdivision. As a condition of subdivision approval, the applicant or its designee, shall provide proof to the County that the agricultural land has been retired prior to issuance of building permits for the subdivision.	Applicant	Receipt of written report from applicant	1. LACDRP 2. LACDRP 3. Concurrent with Submittal of Application for Tentative Tract Maps which permit construction.

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.12 WASTEWATER DISPOSAL			
4.12-1. The Specific Plan shall reserve a site of sufficient size to accommodate a water reclamation plant to serve the Newhall Ranch Specific Plan.	Applicant	Specific Plan Review	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. Prior to Final Approval of Specific Plan
4.12-2. A 5.8 to 6.9 mgd water reclamation plant shall be constructed on the Specific Plan site, pursuant to County, State and Federal design standards, to serve the Newhall Ranch Specific Plan.	WRP Applicant	Review of WRP Construction Plans	1. CSDLAC 2. CSDLAC 3. Prior to Demand for First Phase or WRP Capacity
4.12-3. The Conceptual Backbone Sewer Plan shall be implemented pursuant to County, State and Federal design standards.	Applicant (Project Engineer)	Review of Tentative Map	1. LACDPW 2. LACDPW 3. Prior to Approval of Tentative Maps
4.12-4. Prior to recordation of each subdivision permitting construction, the applicant of each subdivision shall obtain a letter from the new County sanitation district stating that treatment capacity will be adequate for that subdivision.	Applicant	Review Final Subdivision Map	1. CSDLAC 2. LACDPW 3. Prior to Recordation of Each Final Subdivision Map
4.12-5. All facilities of the sanitary sewer system will be designed and constructed for maintenance by the County of Los Angeles Department of Public Works and the County Sanitation Districts of Los Angeles County, and/or the new County sanitation district or similar entity in accordance with their manuals, criteria, and requirements.	Applicant (Project Engineer)	Review Final Subdivision Plans	1. CSDLAC, LACDPW 2. CSDLAC, LACDPW 3. Prior to Recordation of Each Final Subdivision Map
4.12-6. Pursuant to Los Angeles County Code, Title 20, Division 2, all industrial waste pretreatment facilities shall, prior to the issuance of building permits, be reviewed by the County of Los Angeles Department of Public Works, Industrial Waste Planning and Control Section and/or the new County sanitation district, to determine if they would be subject to an Industrial Wastewater Disposal Permit.	Applicants for Such Industrial Facilities	Plan Check Review	1. LACDPW 2. LACDPW 3. Prior to Issuance of Building Permits
4.12-7. Each subdivision permitting construction shall be required to be annexed into the Los Angeles County Consolidated Sewer Maintenance District.	LACDPW	Review of Final Sewer Plans	1. LACDPW 2. LACDPW 3. After County Acceptance of Sewer Improvements

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.13 NATURAL GAS			
4.13-1. All development within the Specific Plan area shall comply with the Energy Building Regulations adopted by the California Energy Commission (Title 24 of the California Administrative Code), as applicable.	Applicant/Future Owners and Operators within project	Plan Check Field Verification	1. LACDPW, Building and Safety 2. LACDPW, Building and Safety 3. Prior to Issuance of Occupancy Permit(s)
4.13-2. A letter from Southern California Gas Company (SCGC)or other gas provider is to be obtained prior to recordation of all future subdivisions stating that service can be provided to the subdivision under recordation.	Applicant	Receipt of Letter from Gas Provider	1. LACDRP 2. LACDRP 3. Prior to Recordation of Final Maps
4.13-3. The Specific Plan is to meet the requirements of SCGC in terms of pipeline relocation, grading in the vicinity of gas mains, and development within SCGC easements. These requirements would be explicitly defined by SCGC at the future tentative map stage.	Applicant (Construction Contractor)	Receipt and implementation of Such Requirements from SCGC	1. LACDPW, Building and Safety 2. LACDPW, Building and Safety 3. Grading and Construction Operations
4.13-4. All potential buyers or tenants of property in the vicinity of SCGC transmission lines are to be made aware of the line's presence in order to assure that no permanent construction or grading occurs over and within the vicinity of the high-pressure gas mains.	Applicant	Include in Sale/Lease Disclosure Documents	1. LACDRP 2. LACDRP 3. Prior to Issuance of Occupancy Permits

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.14 ELECTRICITY			
4.14-1. All development within the Specific Plan area shall comply with the Energy Building Regulations adopted by the California Energy Commission (Title 24 of the California Administrative Code), as applicable.	Applicant	Plan Check Field Verification	1. LACDPW, Building and Safety 2. LACDPW, Building and Safety 3. Prior to Issuance of Occupancy Permit(s)
4.14-2. Southern California Edison (SCE)or other energy provider is to be notified of the nature and extent of future development on the Specific Plan site prior to recordation of all future subdivisions.	Applicant	Receipt of Notification to Energy Provider	1. LACDRP 2. LACDRP 3. Prior to Recordation of All Subdivisions
4.14-3. All future tract maps are to comply with SCE or other energy provider guidelines for grading, construction, and development within SCE easements.	Applicant (Construction Contractor)	Plan Check Field Verification	1. LACDPW, Building and Safety 2. LACDPW, Building and Safety 3. Prior to Final Tract Map Approvals and Verify Prior to Issuance of Occupancy Permits
4.14-4. Electrical infrastructure removals and relocations are to be coordinated between the Specific Plan engineer and SCE or other energy provider as each tract is designed and constructed.	Applicant (Specific Plan Engineer)	Receipt of Verification of Such Consultations	1. LACDPW 2. LACDPW 3. Prior to Final Tract Map Approval and During Construction
4.14-5. All future tract maps are to be reviewed by Los Angeles County to ensure adequate accessibility to SCE or other energy provider facilities as a condition of their approvals.	Applicant	Plan Check	1. LACDPW 2. LACDPW 3. Prior to Final Tract Map Approval
4.14-6. Upon transfer of the High Country Special Management Area to another entity for long-term maintenance, continued and adequate access to all SCE facilities in the High Country Special Management Area is to be ensured within the transfer agreement.	Applicant	Review of Transfer Agreement	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. Upon Transfer of High Country SMA

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.15 SOLID WASTE DISPOSAL			
4.15-1. Each future subdivision which allows construction within the Newhall Ranch Specific Plan shall meet the requirements of all applicable solid waste diversion, storage, and disposal regulations that are in effect at the time of subdivision review. Current applicable regulations include recycling areas that are: • compatible with nearby structures; • secured and protected against adverse environmental conditions; • clearly marked, and adequate in capacity, number and distribution; • in conformance with local building code requirements for garbage collection access and clearance; • designed, placed and maintained to protect adjacent developments and transportation corridors from adverse impacts, such as noise, odors, vectors, or glare; • in compliance with Federal, State, or local laws relating to fire, building, access, transportation, circulation, or safety; and • convenient for persons who deposit, collect, and load the materials.	Applicant	Include in Future Subdivision Design and/or environmental documents for Tentative Maps	1. LACDPW, Waste Management Division 2. LACDPW, Waste Management Division 3. Prior to Tentative Map Approval
4.15-2. Future multi-family, commercial, and industrial projects within the Specific Plan shall provide accessible and convenient areas for collecting and loading recyclable materials. These areas are to be clearly marked and adequate in capacity, number, and distribution to serve the development.	Applicant	Include in Future Subdivision Design and/or environmental documents for Tentative Maps	1. LACDPW, Waste Management Division 2. LACDPW, Waste Management Division 3. Prior to Tentative Map Approval
4.15-3. The first purchaser of each residential unit within the Specific Plan shall be given educational or instructional materials which will describe what constitutes recyclable and hazardous materials, how to separate recyclable and hazardous materials, how to avoid the use of hazardous materials, and what procedures exist to collect such materials.	Applicant	Review of Information Package and Distribution Records	1. LACDRP 2. LACDRP 3. Prior to Issuance of Building Permit (Package) and Occupancy Permits (Records)
4.15-4. The applicant of all subdivision maps which allow construction within the Specific Plan shall comply with all applicable future State and Los Angeles County regulations and procedures for the use, collection and disposal of solid and hazardous wastes.	Applicant	Include in Future Subdivision Design and/or environmental documents for Tentative Maps	1. LACDPW, Waste Management Division 2. LACDPW, Waste Management Division 3. Prior to Tentative Map Approval

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.16 EDUCATION			
4.16-1. The Specific Plan developer shall reserve five elementary schools sites, one junior high school site and one high school site, of 7 to 10, 20 to 25, and 40 to 45 acres in size, respectively, depending upon adjacency to local public parks and joint use agreements.	Applicant	Tentative Tract Map Subdivision Review	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. Prior to Final Approval of Tentative Tract Maps
4.16-2. The developer of future subdivisions which allow construction will comply with the terms and conditions of the School Facilities Funding Agreement between The Newhall Land and Farming Company and the Newhall School District.	Applicant	Verification of Compliance from School District	1. Newhall School District 2. LACDPW, Building and Safety 3. Prior to Issuance of Residential Building Permits
4.16-3. The developer of future subdivisions which allow construction will comply with the terms and conditions of the School Facilities Funding Agreement between The Newhall Land and Farming Company and the William S. Hart Union High School District.	Applicant	Verification of Compliance from School District	1. WSHUHSD 2. LACDPW, Building and Safety 3. Prior to Issuance of Residential Building Permits
4.16-4. The developer of future subdivisions which allow construction will comply with the terms and conditions of the School Facilities Funding Agreement between The Newhall Land & Farming Company and the Castaic Union School District.	Applicant	Verification of Compliance from School District	1. Castaic Union School District 2. LACDPW, Building and Safety 3. Prior to Issuance of Residential Building Permits
4.16-5. In the event that School District boundaries on the Specific Plan site remain unchanged, prior to recordation of all subdivision maps which allow construction, the developer of future subdivisions which allow construction is to pay to the Castaic Union School District the statutory school fee for commercial/industrial square footage pursuant to Government Code Sections 65995 and 65996, unless a separate agreement to the contrary is reached with the District.	Applicant	Payment of Fees	1. Castaic Union School District 2. LACDPW, Building and Safety 3. Prior to Issuance of Building Permits

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.17 POLICE SERVICES			
4.17-1. As subdivision maps are submitted to the County for approval in the future, the applicant shall incorporate County Sheriff's Department design requirements (such as those pertaining to site access, site security lighting, etc.) which will reduce demands for Sheriff's service to the subdivisions and which will help ensure adequate public safety features within the tract designs.	Applicant	Plan Check Field Verification	1. LA County Sheriff's Department 2. LA County Sheriff's Department 3. Prior to Final Map Approvals and Verify Prior to Issuance of Occupancy Permits

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.18 FIRE SERVICES AND HAZARDS			
4.18-1. At the time of final subdivision maps permitting construction in development areas that are adjacent to Open Area and the High Country SMA, a Wildfire Fuel Modification Plan shall be prepared and submitted for approval by the County Fire Department. The Wildfire Fuel Modification Plan shall include the following construction period requirements: (a) a fire watch during welding operations; (b) spark arresters on all equipment or vehicles operating in a high fire hazard area; (c) designated smoking and non-smoking areas; and (d) water availability pursuant to County Fire Department requirements. The wildfire fuel modification plan shall depict a fuel modification zone in conformance with the Fuel Modification Ordinance in effect at the time of subdivision. Within the zone, tree pruning, removal of dead plant material and weed and grass cutting shall take place as required by the County Forester. Fire resistant plant species containing habitat value may be planted in the fuel modification zone.	Applicant	Receipt and Review of Wildfire Fuel Modification Plan	1. LA County Fire Department 2. LA County Fire Department 3. Prior to Approval of Final Maps
4.18-2. Each subdivision and site plan for the proposed Specific Plan shall provide sufficient capacity for fire flows of 1,250 gallons per minute (gpm) at 20 pounds per square inch (psi) residual pressure for a two hour duration for single family residential units, and 5,000 gpm at 20 psi residual pressure for a five-hour duration for multi-family residential units and commercial/retail uses, or whatever fire flow requirement is in effect at the time of subdivision and site plan approval.	Applicant	Field Verification of Required Fire Flows	1. LA County Fire Department 2. LA County Fire Department 3. Prior to Issuance of Occupancy Permits
4.18-3. Each subdivision map and site plan for the proposed Specific Plan shall comply with all applicable building and fire codes and hazard reduction programs for Fire Zones 3 and 4 that are in effect at the time of subdivision map and site plan approval.	Applicant	Field Verification	1. LA County Fire Department 2. LA County Fire Department 3. Prior to Issuance of Occupancy Permits

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.18 FIRE SERVICES AND HAZARDS (cont.)			
4.18-4. The developer will provide funding for three fire stations to the Consolidated Fire Protection District of Los Angeles County (the "Fire District") in lieu of developer fees. The developer will dedicate two fire station sites for the two fire stations located in Newhall Ranch. The Fire District will dedicate the site for the fire station to be located at the Del Valle Training Facility. Each fire station site will have a building pad consisting of a net buildable area of one acre. If the cost of constructing the three fire stations, providing and dedicating the two fire station sites, and providing 3-engines, 1 paramedic squad and 63 percent of a truck company exceeds the developer's developer fee obligation for the Newhall Ranch development as determined by the Fire District, the Fire District will fund the costs in excess of the fee obligation. Two of the three fire stations to be funded by the developer will not exceed 6,000 square feet; the third fire station to be funded by the developer will not exceed 8,500 square feet. The Fire District, will fund the cost of any space/square footage of improvement in excess of these amounts as well as the cost of the necessary fire apparatus for any such excess square footage of improvements. The cost of three fire engines, a proportionate share of a truck and one squad to be provided by the developer will be determined based upon the apparatus cost at the time the apparatus is placed in service. The Fire District and the developer will mutually agree to the requirements of first-phase protection requirements based upon projected response/travel coverage. Such mutual agreement regarding first-phase fire protection requirements ("fire protection plan") and the criteria for timing the development of each of the three fire stations will be defined in a Memorandum of Understanding between the developer and the Fire District. Delivery of fire service for Newhall Ranch will be either from existing fire stations or one of the three fire stations to be provided by the developer pursuant to this section. Prior to the commencement of the operation of any of the three fire stations, fire service may be delivered to Newhall Ranch from existing fire stations or from temporary fire stations to be provided by the developer at mutually agreed-upon locations, to be replaced by the permanent stations which will be located within the Newhall Ranch development. The developer and the Fire District will annually review the fire protection plan to evaluate development and market conditions and modify the Memorandum of Understanding accordingly.	Applicant	Execute "Fire Protection Plan" Agreement Monitor Adequacy of Fire Prevention Services	1. LA County Fire Department 2. LA County Fire Department 3. Prior to Approval of First Final Subdivision Map Subdivision Map Review Process

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.19 LIBRARIES			
4.19-1. The developer will provide funding for a maximum of two libraries (including the site(s), construction, furniture, fixtures, equipment and materials) to the County Librarian. The developer will dedicate a maximum of two library sites for a maximum of two libraries located in Newhall Ranch in lieu of the land component of the County's library facilities mitigation fee, in accordance with the provisions of Section 22.72.090 of Section 2 of Ordinance No. 98-0068. The actual net buildable library site area required and provided by the developer will be determined by the actual size of the library building(s), the Specific Plan parking requirements, the County Building Code, and other applicable rules. The total library building square footage to be funded by the developer will not exceed 0.35 net square feet per person. The developer's funding of construction of the library(s) and furnishings, fixtures, equipment and materials for the library(s) will be determined based on the cost factors in the library facilities mitigation fee in effect at the time of commencement of construction of the library(s). Prior to County's issuance of the first residential building permit of Newhall Ranch to the developer, the County Librarian and the developer will mutually agree upon the library construction requirements (location, size, funding and time of construction) based upon the projected development schedule and the population of Newhall Ranch based on the applicable number of average persons per household included in the library facilities mitigation fee in effect at the time. Such mutual agreement regarding the library construction requirements ("Library Construction Plan") and the criteria for timing the completion of the library(s) will be defined in a Memorandum of Understanding between the developer and the County Librarian. Such Memorandum of Understanding shall include an agreement by the developer to dedicate sufficient land and pay the agreed amount of fees on a schedule to allow completion of the library(s) as described below. The developer's funding for library facilities shall not exceed the developer's fee obligation at the time of construction under the developer fee schedule.	Applicant	Review of Memorandum of Understanding and Library Construction Plan	1. LA County Library 2. LACDPW 3. Prior to Issuance of First Residential Building Permit
4.19 LIBRARIES (cont.)			
If two libraries are to be constructed, the first library will be completed and operational by the time of County's issuance of the 8,000th residential building permit of Newhall Ranch, and the second library will be completed and operational by the time of County's issuance of the 15,000th residential building permit of Newhall Ranch. If the County Librarian decides that only one library will be constructed, the library will be completed and operational by the time of County's issuance of the 10,000th residential building permit of Newhall Ranch.			

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
No payment of any sort with respect to library facilities will be required under Section 2.5.3.d. of the Specific Plan in order for the developer to obtain building permits for nonresidential buildings.			

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
4.20 PARKS, RECREATION AND TRAILS			
4.20-1. Development of the Newhall Ranch Specific Plan will provide the following acreages of parks and Open Area: • Ten public Neighborhood Parks totaling 55 acres; • Open Areas totaling 1,106 acres of which 186 acres are Community Parks, • High Country Special Management Area of 4,214 acres, • River Corridor Special Management Area of 819 acres, • a 15-acre Lake, • an 18-hole Golf Course, and • a trail system consisting of: - Regional River Trail, - Community Trails, and - Unimproved Trails.	Applicant	Subdivision Review for Compliance with Specific Plan	1. LA County Department of Regional Planning 2. LA County Department of Regional Planning 3. Processing of Tentative Subdivision Maps
4.20-2. Prior to the construction of the proposed trail system, the project applicant shall finalize the alignment of trails with the County Department of Parks and Recreation.	Applicant	Verification of Consultation of Department of Parks and Recreation	1. LACDRP 2. LA County Department of Parks and Recreation 3. Prior to Issuance of Grading Permit for Trails
4.20-3. Trail construction shall be in accordance with the County of Los Angeles Department of Parks and Recreation trail system standards.	Applicant	Trails Plan Review Field Verification	1. LA County Department of Parks and Recreation 2. LA County Department of Parks and Recreation 3. Prior to Approval of Trail Plans and Verify Upon Construction Completion
4.21 POPULATION, HOUSING AND EMPLOYMENT			
4.21-1. The Los Angeles County General Plan and the Santa Clarita Valley Area Plan shall be amended by Los Angeles County to accommodate the Newhall Ranch Specific Plan.	Applicant	General Plan Amendment	1. Board of Supervisors 2. LACDRP 3. Final Specific Plan Approval

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
ADDITIONAL CONDITIONS OF APPROVAL			
(a) Require the applicant to submit a signed statement, filed concurrently with the filing of any departmental development application, obligating the applicant to disclose to the Department of Regional Planning the existence of any endangered or threatened species that are known or suspected to exist on the subject property.	Applicant	Verify during review of Initial Study and subdivision maps	1. LACDRP 2. LACDRP 3. Concurrent with Submittal of Application for Tentative Tract Maps which permit construction.
(b) Require the applicant to report to the Department of Regional Planning the results of all on-site biological surveys within thirty (30) days after completion of the survey work.	Applicant	Report containing results of all on-site biological surveys within thirty (30) days after completion of the survey work.	1. LACDRP 2. LACDRP 3. As necessary
(c) Require the applicant to schedule a consultation meeting between the Department of Regional Planning, the applicant and environmental consultant(s) to discuss the results of the survey work, and to ensure public disclosure of the survey results in the required environmental documentation for the proposed project.	Applicant and Environmental Consultant(s)	Meeting after field surveys	1. LACDRP 2. LACDRP 3. As necessary
(d) Clean sediment, periodically removed from debris basins within or outside the Specific Plan, may be placed into the Santa Clara River area as approved by the Department of Public Works (DPW) and other applicable regulatory agencies, as determined by DPW.	Applicant	Verify need annually, document to LACDPW	1. LACDPW 2. LACDPW 3. As necessary after installation of buried bank stabilization
(e) Prior to approval of the first subdivision map which permits construction, a report will be provided by the applicant which evaluates methods to recharge the Saugus Aquifer within the Specific Plan, including the identification of appropriate candidate land areas for recharge. The report shall be subject to approval by the Department of Public Works (DPW) and other applicable regulatory agencies, as determined by DPW.	Applicant	Report to LADPW	1. LACDPW 2. LACDPW 3. Prior to approval of the first subdivision map which permits construction

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
ADDITIONAL CONDITIONS OF APPROVAL (cont.)			
(f) All purchasers of homes within any subdivision in the Newhall Ranch Specific Plan are to be provided with a disclosure statement in the purchase/sales documentation making the purchaser(s) aware that the parking and storage of recreational vehicles on the purchased home/lot must satisfy the standards established by the County of Los Angeles and/or as contained in the Conditions Covenants and Restrictions (CC&Rs), whichever is more restrictive.	Applicant, or seller of home/lot if not the Applicant	Provision of Disclosure Statement	1. LACDRP 2. LACDRP 3. At the time a home/lot is sold
(g) Salt Creek Condition. Upon approval of the first tract map adjacent to Ventura County in the Oak Valley Village of the Newhall Ranch Specific Plan, the applicant has agreed to grant to the public in perpetuity the approximately 1,517 acres of land encompassing the Salt Creek watershed in Ventura County. The applicant, or its designee, shall satisfy this condition by dedicating said land in fee and/or by conservation easement, as determined by the County in its sole discretion, to the joint powers authority, which is responsible for overall recreation and conservation of the Newhall Ranch High County Special Management Area (SMA). Said land shall be managed in conjunction with and in the same manner as the High Country SMA.	Applicant or its Designee	Upon approval of first tract map adjacent to Ventura County in Oak Valley Village of the Specific Plan	1. LACDRP 2. LACDRP 3. As necessary
(h) Consultant Disclosure Statements. Upon approval of the Specific Plan and in connection with the submittal of additional environmental documentation for the Newhall Ranch project, each consultant preparing, or participating in a study or investigation for, that additional documentation, shall provide a disclosure statement to the Director of Planning, signed under penalty of perjury, stating that they have disclosed to County staff all relevant environmental information and data obtained during their work, including, but not limited to, all information regarding the presence of any endangered, threatened or candidate species.	Applicant or its Designee	Upon approval of Specific Plan and in connection with submittal of additional environmental documentation for the project	1. LACDRP 2. LACDRP 3. As necessary
(i) Peer Review/Funding. Upon approval of the Specific Plan, the applicant is directed to provide sufficient funding on an annual basis to allow the Department of Regional Planning to retain a consultant(s), or to compensate its own consultant(s), for purposes of conducting a peer review, as determined necessary by the Department, of all additional environmental documentation submitted for further environmental review by the applicant's consultant(s) or sub-consultant(s).	Applicant or its Designee	Upon approval of Specific Plan and on an annual basis thereafter	1. LACDRP 2. LACDRP 3. As necessary

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
(j) Annual Staff Report Requirement. The applicant or its designee shall provide the Department of Regional Planning with an annual status report throughout the construction phases stating the number of residential units constructed, the square footage of all commercial and industrial buildings completed, the dates of dedication or completion for all required infrastructure and community amenities, the status of all tentative and approved subdivision maps and discretionary zoning applications, including associated CEQA environmental reviews filed with the County, and the status of all discretionary applications from government agencies other than Los Angeles County identified as either an Enforcement Agency or Monitoring Agency in the Mitigation Monitoring Plan for the Newhall Ranch Specific Plan. This reporting requirement shall be contained in the Newhall Ranch Specific Plan.	Applicant or its Designee	Annual report throughout all construction phases	1. LACDRP 2. LACDRP 3. As necessary
(k) Setback Standards. The Specific Plan shall contain a setback provisions requiring that, if the County's general setback standards in place at the time building permits are obtained for the Newhall Ranch project phases are more stringent than the existing standards contained in the Specific Plan, then the more stringent setback standards shall be applied.	Applicant or its Designee	County Planning staff review at issuance of building permits	1. LACDRP 2. LACDRP 3. As necessary

MITIGATION MONITORING PLAN (Water Reclamation Plant)

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.1 GEOTECHNICAL AND SOILS RESOURCES			
5.0-1. Prior to construction of the water reclamation plant, prepare a detailed geotechnical report that will outline the geotechnical performance requirements for placing and compacting the fill at the water reclamation plant site and along on-site sewer line alignments to ensure that none of the wastewater conveyance or treatment facilities would be subject to hazards caused by expansive soils. Construction of wastewater conveyance and treatment facilities shall comply with the requirements identified in the report.	WRP Operator (Geotechnical Engineer)	Grading Plan Check Field Verification	1. WRP Operator 2. WRP Operator 3. Prior to Building and Verify During WRP Construction
5.0-2. Should any expansive soils be encountered during grading operations, they shall not be placed nearer the finished surface than 8 feet below the bottom of the subgrade elevation. If expansive materials are encountered at subgrade elevation in cut areas, the soils shall be removed to a depth of 8 feet below the subgrade surface and the excavated area backfilled with nonexpansive, properly compacted soils. These depths are subject to revision depending upon the expansive potential measured during grading.	WRP Operator (Geotechnical Engineer)	Field Verification	1. WRP Operator 2. WRP Operator 3. During Grading Operations
5.0-3. Prior to grading of the WRP site and the associated sewer lines, a detailed geotechnical performance report is to be prepared and approved by the WRP Operator, which will assess liquefaction potential along sewer line alignments, and which will identify design measures for potential liquefaction hazards. WRP collection and treatment facilities construction is to comply with the measures identified in the performance report.	WRP Operator (Geotechnical Engineer)	Approval of Detailed Geotechnical Performance Report Field Verification	1. WRP Operator 2. WRP Operator 3. Prior to Grading and Verify During WRP Construction

ACOE - U.S. Army Corps of Engineers
CIWMB - California Integrated Waste Management Board
CSDLAC - County Sanitation Districts of Los Angeles County
FCD - Flood Control Division
LACFPD - Los Angeles County Fire Protection District
LACDPW - Los Angeles County Department of Public Works
RWQCBLAR - Regional Water Quality Control Board, Los Angeles Region
SCAQMD - South Coast Air Quality Management District
USFWS - U.S. Fish and Wildlife Service

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.1 GEOTECHNICAL AND SOILS RESOURCES (cont.)			
5.0-4. All water reclamation plant structures and facilities are to be constructed according to Uniform Building Code standards for the appropriate Seismic Risk Zone (Zone 4).	WRP Operator (Structural Engineer)	Plan Check Field Verification	1. WRP Operator 2. WRP Operator 3. Prior to Initial Operation
5.0-5. If the height of the fill exceeds the shear strength of such saturated soils, settlement and ground failure could occur, resulting in damage to structures and/or injury to people. Potentially consolidatible materials are to be properly removed and the fill material is to be properly compacted and protected against the erosive effects of storm and River flows.	WRP Operator (Geotechnical Engineer)	Grading Plan Check Field Verification	1. WRP Operator 2. WRP Operator 3. During Grading Operations
5.0-6. All fills, unless otherwise specifically designed, are to be compacted to at least 90 percent of the maximum dry unit weight as determined by ASTM Designation D 1557-91 Method of Soil Compaction. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	WRP Operator (Geotechnical Engineer)	Field Verification	1. WRP Operator 2. WRP Operator 3. During Grading Operations
5.0-7. No fill is to be placed until the area to receive the fill has been adequately prepared and approved by the Geotechnical Engineer. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	WRP Operator (Geotechnical Engineer)	Field Verification	1. WRP Operator 2. WRP Operator 3. During Grading Operations
5.0-8. Fill soils are to be kept free of all debris and organic material. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	WRP Operator (Geotechnical Engineer)	Field Verification	1. WRP Operator 2. WRP Operator 3. During Grading Operations

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.1 GEOTECHNICAL AND SOILS RESOURCES (cont.)			
5.0-9. Rocks or hard fragments larger than 8 inches are not to be placed in the fill without approval of the Geotechnical Engineer, and in a manner specified for each occurrence. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	WRP Operator (Geotechnical Engineer)	Field Verification	1. WRP Operator 2. WRP Operator 3. During Grading Operations
5.0-10. Rock fragments larger than 8 inches are not to be placed within 10 feet of finished pad grade or the subgrade of roadways or within 15 feet of a slope face. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	WRP Operator (Geotechnical Engineer)	Field Verification	1. WRP Operator 2. WRP Operator 3. During Grading Operations
5.0-11. When moisture content of the fill material is too low to obtain adequate compaction, water is to be added and thoroughly dispersed until the soil is approximately 2 percent over optimum moisture content. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	WRP Operator (Geotechnical Engineer)	Field Verification	1. WRP Operator 2. WRP Operator 3. During Grading Operations
5.0-12. When the moisture content of the fill material is too high to obtain adequate compaction, the fill material is to be aerated by blading or other satisfactory methods until the soil is approximately two percent over optimum moisture content. (R.T. Frankian & Associates, 19 September 1994, Appendix I)	WRP Operator (Geotechnical Engineer)	Field Verification	1. WRP Operator 2. WRP Operator 3. During Grading Operations
5.0-13. Surface runoff from the future graded areas is not to run over any natural, cut, or fill slopes. (Allan E. Seward Engineering Geology, 19 September 1994, Inc., p. 20)	WRP Operator (Civil Engineer and Construction Superintendent)	Field Verification	1. WRP Operator 2. WRP Operator 3. During Grading Operations

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.2 FLOOD			
5.0-14. Runoff from future pads and structures is to be collected and channeled to the street and/or natural drainage courses via non-erosive drainage devices. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 20)	WRP Operator (Civil Engineer and Construction Superintendent)	Field Verification	1. WRP Operator 2. WRP Operator 3. During Grading Operations
5.0-15. Water is not to stand or pond anywhere on the graded pads. (Allan E. Seward Engineering Geology, Inc., 19 September 1994, p. 20)	WRP Operator (Civil Engineer and Construction Superintendent)	Field Verification	1. WRP Operator 2. WRP Operator 3. During Grading Operations
5.0-16. Prepare and implement a County-approved erosion control plan to be implemented during the construction of the WRP.	WRP Operator (Civil Engineer)	Approval of Erosion Control Plan Field Verification	1. WRP Operator 2. WRP Operator 3. Prior to Grading and Verify During Grading Operations
5.0-17. All on- and off-site flood control improvements necessary to alleviate flood hazards and provide proper drainage controls are to be constructed to the satisfaction of the County of Los Angeles Department of Public Works, FCD.	WRP Operator (Civil Engineer)	Field Verification	1. LACDPW, FCD 2. WRP Operator 3. Prior to Issuance of Occupancy Permits
5.0-18. All necessary permits or letters of exemption from the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, California Department of Fish and Game, and the Regional Water Quality Control Board for WRP-related development are to be obtained.	WRP Applicant	Receipt of Permits	1. ACOE, CDFG, and RWQCBLAR 2. WRP Applicant 3. Prior to Grading
5.0-19. Conditional Letters of Map Revision (CLOMR) relative to adjustments to the 100-year FIA flood plain are to be obtained by the applicant after the proposed drainage facilities are constructed.	WRP Operator (Civil Engineer)	Receipt of CLOMR	1. LACDPW, FCD 2. WRP Operator 3. Upon Completion of Facilities
5.0-20. Prior to grading, a Final Hydrology Plan, a Final Drainage Plan, and a Final Grading Plan (including an Erosion Control Plan, as required) are to be prepared by the applicant and approved by the Department of Public Works, where applicable, to ensure that no significant erosion, sedimentation, or flooding impacts would occur during or after site development.	WRP Applicant (Civil Engineer)	Approval of Final Hydrology Plan, Final Drainage Plan, Final Grading Plan	1. LACDPW 2. FCD 3. Prior to Grading

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.3 CULTURAL/PALEONTOLOGICAL RESOURCES			
5.0-21. No significant impact to cultural or paleontological resources are anticipated from construction of the WRP. However, should such resources be found during site grading, a professional archaeologist or paleontologist will be retained to evaluate the significance of the finding and to identify appropriate methods of preserving or cataloguing any significant resources.	WRP Operator (Archaeologist and / or Paleontologist)	Include Measure in WRP Specifications Field Verification	1. LA County Department of Regional Planning 2. WRP Operator 3. Verify During Grading Operations
5.4 AGRICULTURAL RESOURCES			
No mitigation measures are available that could reduce the impact of conversion of prime agricultural land to an urban use to less than significant.			

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.5 ENVIRONMENTAL SAFETY			
5.0-22. Design and operate the WRP in accordance with an NPDES Permit that must be obtained from the California Regional Water Quality Control Board, Los Angeles Region.	WRP Operator	Approval of WRP Design and Operation Plans by RWQCBLAR Field Verification	1. RWQCBLAR 2. WRP Operator 3. Prior to Issuance of Construction Permits and Verify During WRP Operation
5.0-23. Prepare and implement worker safety programs in accordance with Cal-OSHA requirements.	WRP Operator	Review of Worker Safety Program Field Verification	1. Cal-OSHA 2. WRP Operator 3. Prior to and During WRP Operation
5.0-24. Prepare and implement preventive and contingency plans for controlling accidental discharges of wastewater or chemicals used and stored at the WRP, and for minimizing the effects of such events. Such plans shall be integrated into the CSDLAC's overall preventive (fail-safe) and contingency (emergency response) plans and programs.	WRP Operator	Approval of Plans Field Verification	1. Los Angeles Co. Fire Department 2. WRP Operator 3. Prior to and During WRP Operation
5.0-25. A Stormwater Pollution Prevention Plan (SWPPP) shall be prepared and implemented, in accordance with the U.S. Environmental Protection Agency's Industrial Stormwater Permit.	WRP Operator	Review of SWPPP Field Verification	1. RWQCBLAR 2. WRP Operator 3. Prior to and During WRP Operation

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.5 ENVIRONMENTAL SAFETY (cont.)			
5.0-26. Any industrial wastewater that may be produced from manufacturing, commercial processing operations, acute care medical facilities and laboratories, etc., that would be allowed in the Commercial, Mixed-Use or Business Park land use designations as regulated by the Specific Plan, shall comply with the Wastewater Ordinance of the County Sanitation Districts of Los Angeles County (April 1, 1972, as amended November 1, 1989). A permit from the CSDLAC would be required for any such facility to allow discharge into the Newhall Ranch sewer system.	Business Owners in Commercial, Mixed Use, or Business Park Land Use Designations	Review of Building Plans	1. WRP Operator 2. WRP Operator 3. Prior to Issuance of Building Permit
5.0-27. Prepare and implement an "Integrated Emergency Response Plan" (IERP). The IERP provides procedures for personnel medical emergencies, evacuation procedures and mitigation and abatement procedures for hazardous chemicals. The plan must conform to multiple regulatory requirements, including Title 8 §3220, Emergency Action Plan, §3221, Fire Prevention Plan, §5192 Emergency Response to Hazardous Substances Releases, and Title 22, §66265.50-66265.56, Contingency Plan and Emergency Procedures.	WRP Operator	Review of IERP Field Verification	1. Los Angeles Co. Fire Department 2. WRP Operator 3. Prior to and During WRP Operation
5.0-28. Biosolids treatment and disposal methods shall meet California Title 22, Division 4.5, Chapter 11, Article 3, which contains Toxicity Characteristic Leaching Procedure (TCLP) and Soluble Threshold Limit Concentration (STLC) limits.	WRP Operator	Review of Construction Plans Laboratory Testing	1. RWQCBLAR 2. WRP Operator 3. Prior to and During WRP Operation
5.0-29. Obtain permits to construct and operate all new sources of air toxic emissions, at each stage of WRP development, and whenever any new sources are added or replaced, pursuant to SCAQMD Regulation XIV.	WRP Operator	Review of SCAQMD Permits	1. SCAQMD 2. WRP Operator 3. Prior to Issuance of Construction Permits and During WRP Operation

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.6 BIOTA			
5.0-30. Comply with permit requirements established by the California Department of Fish and Game, the U.S. Army Corps of Engineers, and/or the U.S. Fish and Wildlife Service, relative to removal and replacement of riparian habitat.	WRP Applicant	Obtain Required Permits Field Verification	1. CDFG, ACOE 2. WRP Operator 3. During Monitoring Period Specified in Permits
5.0-31. Obtain and implement an NPDES construction permit to avoid significant erosion or sedimentation impacts.	WRP Operator	Receipt of NPDES Permit(s) Field Verification	1. RWQCBLAR 2. WRP Operator 3. Prior to and During Grading and Construction
5.0-32. Comply with permit requirements of Federal, State and regional agencies with jurisdiction over discharge of reclaimed water to the Santa Clara River relative to potential impacts on the River's biological values.	WRP Operator	Field Verification Laboratory Testing	1. RWQCBLAR 2. WRP Operator 3. During WRP Operation

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.7 VISUAL QUALITIES			
5.0-33. To soften views of the reclamation plant from SR-126, provide vegetation, walls, fencing, and/or other appropriate techniques and combinations of techniques. Walls and fencing shall comply with the Specific Plan Design Guidelines.	WRP Operator	Field Verification	1. LA County Department of Regional Planning 2. WRP Operator 3. Prior to Operation
5.0-34. Landscaping themes shall be consistent with the themes developed for adjacent Business Park development to provide visual continuity and minimize contrast between the WRP facilities and their surroundings.	WRP Operator	Field Verification	1. LA County Department of Regional Planning 2. WRP Operator 3. Prior to Operation
5.0-35. Place, orient and shield light fixtures to illuminate only those areas where it is needed and to prevent stray light from spilling off site.	WRP Operator	Field Verification	1. LA County Department of Regional Planning 2. WRP Operator 3. Prior to Operation

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.8 TRAFFIC/ACCESS			
5.0-36. If SR-126 is still a two-lane highway at the time of WRP construction, a construction traffic management plan shall be prepared and implemented. This plan shall address site access, staging and storage areas, hours of construction, work crew parking, warning and traffic control signs and devices, flag men, temporary detouring, etc., as appropriate, to avoid a significant impact on SR-126.	WRP Operator (Construction Superintendent)	Approval of Construction Traffic Management Plan Field Verification	1. WRP Operator 2. WRP Operator 3. Prior to and During Grading and Construction Activities
5.0-37. An encroachment permit shall be obtained from Caltrans, for access to the plant site from SR-126.	WRP Applicant	Receipt of Encroachment Permit(s)	1. Caltrans 2. WRP Applicant 3. Prior to Grading
5.9 NOISE			
5.0-38. All construction activity occurring on the water reclamation plant site shall adhere to the requirements of the "County of Los Angeles Construction Equipment Noise Standards", County of Los Angeles Ordinance No. 11743.	WRP Operator	Field Verification Using Noise Monitor	1. LA County Dept. of Health Services 2. WRP Operator 3. During Grading and Construction
5.0-39. Limit all construction activities occurring near occupied residences to between the hours of 6:30 A.M. and 8:00 P.M., and exclude all Sundays and legal public holidays, pursuant to County Construction Section standards.	WRP Operator	Field Verification	1. LA County Dept. of Health Services 2. WRP Operator 3. During Grading and Construction
5.0-40. All operational activity occurring on the water reclamation plant site shall adhere to the requirements of the "County of Los Angeles Exterior Noise Standards for Stationary and Point Noise Sources," pursuant to §12.08.390 of County of Los Angeles Ordinance No. 11743.	WRP Operator	Periodic Field Verification Using Noise Monitor	1. LA County Dept. of Health Services 2. WRP Operator 3. During WRP Operation

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.10 AIR QUALITY			
CONSTRUCTION IMPACTS			
The proposed WRP would be subject to SCAQMD Rule 403, which prohibits emissions of fugitive dust from any active operation, open storage pile, or disturbed surface areas from remaining in the atmosphere beyond the property line of the emission source. The builder of the plant would be required to implement dust control measures for each fugitive dust source type, to prevent visible roadway dust from being deposited more than 50 feet from any property access road, and to remove all visible roadway dust deposited upon public paved roadways as a result of active operations at the conclusion of each work day. The following mitigation measure is recommended to implement this rule:			
5.10 AIR QUALITY (cont.)			
5.0-41. Prepare and implement a fugitive dust emission control plan which conforms to the requirements of SCAQMD Rule 403. The plan shall include the following specific measures and be submitted to the SCAQMD for review and approval: a. Apply approved non-toxic chemical soil stabilizers according to manufacturer specifications to all inactive construction areas (previously graded areas inactive for four days or more). b. Replace ground cover in disturbed areas as quickly as possible c. Enclose, cover, water twice daily, or apply approved soil binders to exposed piles (i.e., gravel, sand, dirt) according to manufacturer's specifications. d. Water active grading sites at least twice daily. e. Suspend all excavating and grading operations when wind speeds (as instantaneous gusts exceed 25 mph). f. Provide temporary wind fencing with 50 percent or less porosity along the perimeter of sites that have been cleared or are being graded. g. All trucks hauling dirt, sand, soil or other loose materials are to be covered or should maintain at least two feet of freeboard (i.e., minimum vertical distance between top of the load and the top of the trailer), in accordance with Sections 23114 of the California Vehicle Code. h. Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip. i. Sweep streets at the end of the day if visible soil material is carried over to adjacent roads, (recommend water sweepers using reclaimed water if readily available). j. Apply water three times daily or chemical soil stabilizers according to manufacturer's specifications to all unpaved parking or staging areas or unpaved road surfaces k. Enforce maximum traffic speed limits of 15 mph on all unpaved roads. l. Where appropriate, pave all construction access roads at least 100 feet onto the site from the main road.	WRP Operator	Approval of Fugitive Dust Emission Control Plan Field Verification	1. SCAQMD 2. WRP Operator 3. Prior to Grading and During Construction

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.10 AIR QUALITY (cont.)			
The proposed WRP would be subject to SCAQMD Rule 1113 which prohibits persons from supplying, selling, applying, or soliciting the application of architectural coatings which do not meet specific emissions thresholds. The following mitigation measures address this rule:			
5.0-42. Building materials, architectural coatings, and cleaning solvents used in developing the WRP shall comply with all applicable SCAQMD rules and regulations.	WRP Operator	Provide List of Materials, Coating, Solvents That Comply with SCAQMD Rules and Regulations Field Verification	1. SCAQMD 2. WRP Operator 3. Prior to Issuance of Permit to Construct and Verify During Construction
5.0-43. The application of architectural coatings shall occur via hand application or spray equipment that emits volatile organic compound emissions at rates which are comparable to High Volume, Low Pressure (HVLP) spray equipment (i.e., equipment which is operated at an air pressure between 0.1 and 10 pounds per square inch).	WRP Operator	Field Verification	1. SCAQMD 2. WRP Operator 3. During Construction

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.10 AIR QUALITY (cont.)			
5.0-44. Building construction shall utilize low-polluting construction materials and coatings (i.e., bricks, stones, pre-coated or naturally colored materials, water-based paints or similar types of coating materials containing relatively low levels of volatile organic compounds) to the greatest extent feasible.	WRP Operator	Provide List of Construction Materials and Coatings with VOC Ratings Field Verification	1. SCAQMD 2. WRP Operator 3. Prior to Permit to Construct and Verify During Construction

Emission reductions resulting from the imposition of the mitigation measures listed above have been quantified wherever possible pursuant to the methodology in the SCAQMD's CEQA Air Quality Handbook. The following discussion provides a quantification of emission reductions associated with the grading of the WRP site. A quantification of emission reductions due to the remaining construction measures have not been completed since the information necessary to conduct such an analysis, per SCAQMD methodologies, is not available at this time. However, substantial emission reductions would also result from these non-quantified construction mitigation measures.

Grading activities associated with the WRP are predicted to generate approximately 1,744.0 pounds of PM_{10} per day. The application of non-toxic soil stabilizers, the replacement of ground cover, and the wetting down of graded areas, as identified above in Mitigation Measure 5.0-41 would each reduce these emission by approximately 30 percent, 15 percent, and 34 percent, respectively. The combined percentage reduction for these measures is calculated by progressively applying the percentage reduction attributable to an individual mitigation measure to the net emissions resulting from the application of the preceding mitigation measure. When this occurs, the reduction that these three measures would provide is 60.7 percent, which equates to 1,058.6 pounds of dust per day. Net emissions of approximately 685.4 pounds per day would continue to exceed the SCAQMD's recommended threshold of 150.0 pounds per day.

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.10 AIR QUALITY (cont.)			
OPERATION IMPACTS			
5.0-45. Comply with SCAQMD Regulation IX, Subpart O, which establishes specific air quality performance standards for wastewater treatment plants.	WRP Operator	Periodic Field Verification	1. SCAQMD 2. WRP Operator 3. During WRP Operation
5.0-46. Provide odor control equipment, covers, seals, etc., at all locations where odorous gases could be released into the atmosphere; implement managerial controls, including routine monitoring of control equipment and regular field surveys of surrounding areas; and conduct a complaint response program that achieves resolution to odor complaints within thirty minutes of receiving a complaint.	WRP Operator WRP Operator	Plan Check Approval of Complaint Response Program Field Verification	1. SCAQMD 2. WRP Operator 3. During WRP Design and Operation
5.0-47. Obtain permits to construct and operate all new sources of criteria air pollutants, at each stage of WRP development, and whenever any new sources are added or replaced, pursuant to SCAQMD Regulation XIII.	WRP Operator	Receipt of SCAQMD Permits	1. SCAQMD 2. WRP Operator 3. Prior to Issuance of Building Permits and Whenever New Sources are Added or Replaced
5.0-48. Obtain permits to construct and operate all new sources of air toxic emissions at each stage of WRP development, and whenever any new sources are added or replaced, pursuant to SCAQMD Regulation XIV.	WRP Operator	Receipt of SCAQMD Permits	1. SCAQMD 2. WRP Operator 3. Prior to Issuance of Permit to Construct and Whenever New Sources are Added or Replaced
5.0-49. Comply with the provisions of Title V of the Federal Clean Air Act, relative to maximum, facility-side toxic air emissions.	WRP Operator	Field Verification	1. SCAQMD 2. WRP Operator 3. During WRP Operation

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.11 WATER RESOURCES			
5.0-50. The site of the proposed water reclamation plant shall be annexed to the Valencia Water Company prior to issuance of building permits for the WRP.	WRP Operator	Annexation	1. CPUC 2. WRP Operator 3. Prior to Water Reclamation Plant Construction
5.0-51. Prior to construction of the proposed water reclamation plant, the WRP operator shall demonstrate water availability for both construction and operation demands.	WRP Operator	Receipt of VWC Will-Serve Letter	1. LA County Department of Regional Planning 2. WRP Operator 3. Prior to Grading

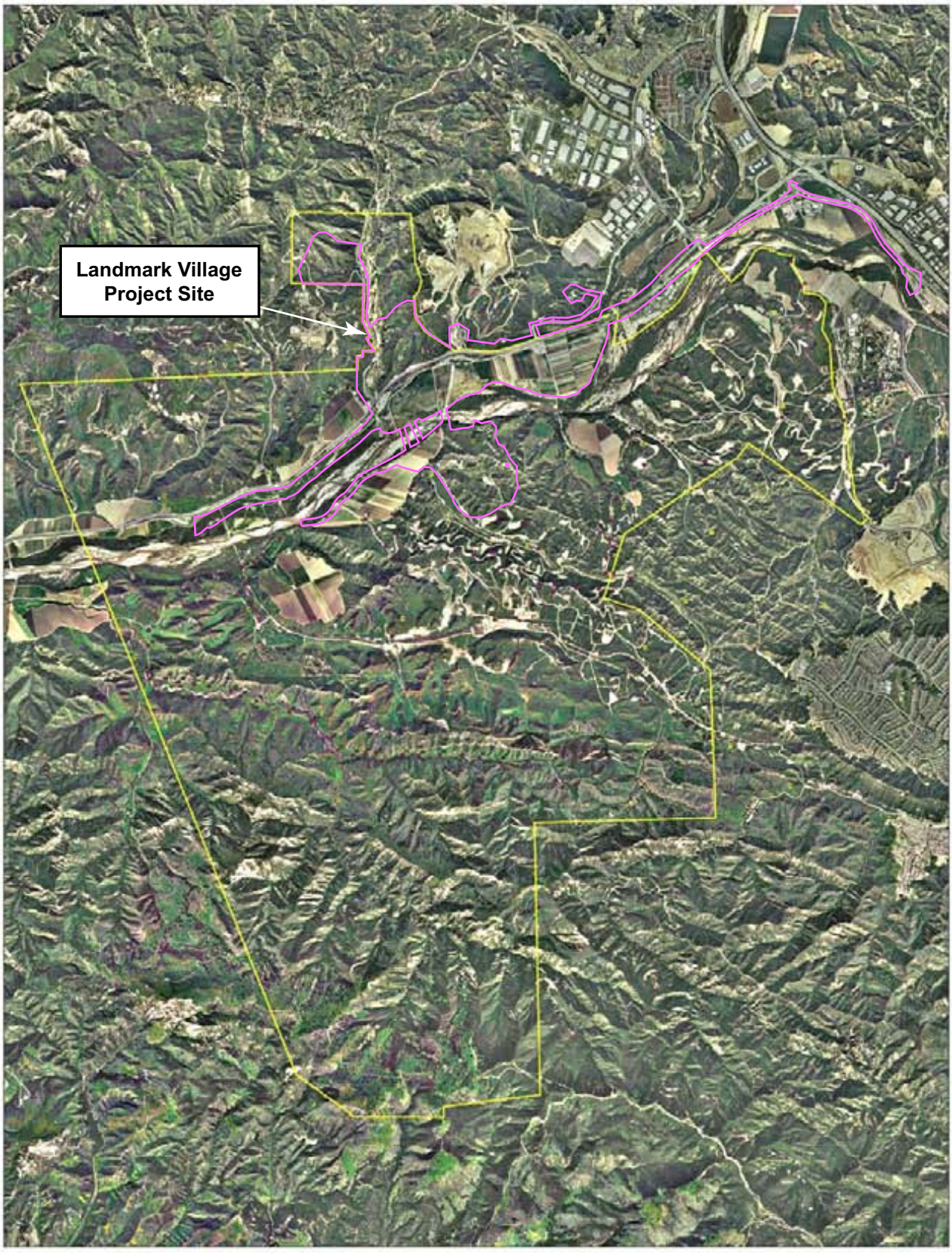
Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.12 WASTEWATER DISPOSAL			
5.0-52. A new County sanitation district shall be formed to administer operation of the Newhall Ranch water reclamation plant. The district shall encompass the entire Newhall Ranch Specific Plan site.	WRP Operator	Approval of District Formation	1. Los Angeles County Board of Supervisors 2. WRP Operator 3. Prior to Issuance of WRP Grading Permit
5.0-52(b) The applicant shall initiate a request to the new County sanitation district formed for the Newhall Ranch Specific Plan site to adopt an ordinance prohibiting the installation and use of self-regenerating water softeners within the new sanitation district prior to connection of the first residential unit to the sanitary sewer system.	Specific Plan Applicant	Upon Filing of Construction Permit(s) for Water Reclamation Plant	1. Los Angeles County Board of Supervisors 2. Los Angeles County Department of Regional Planning 3. Prior to Issuance of WRP Grading Permit
5.0-53. The Newhall Ranch water reclamation plant shall be designed and operated to satisfy the requirements of Title 22 of the California Administrative Code, which regulates reuse of reclaimed water.	WRP Operator	Plan Check Field Verification	1. RWQCBLAR 2. WRP Operator 3. Prior to Issuance of Construction Permits and Verify During WRP Operation
5.0-54. The Newhall Ranch water reclamation plant shall be designed and operated to satisfy the California Regional Water Quality Control Board, Los Angeles Region discharge limits for reclaimed water discharged to the Santa Clara River and for the irrigation of landscaped areas.	WRP Operator	Plan Check Field Verification	1. RWQCBLAR 2. WRP Operator 3. Prior to Issuance of Construction Permits and Verify During WRP Operation
5.0-55. The Newhall Ranch water reclamation plant shall obtain a National Pollutant Discharge Elimination System permit from the California Regional Water Quality Control Board, Los Angeles Region for reclaimed water discharged to the Santa Clara River and for the irrigation of landscaped areas.	WRP Operator	Receipt of NPDES Permit(s)	1. RWQCBLAR 2. WRP Operator 3. Prior to Issuance of Construction Permits
5.0-56. All facilities of the sanitary sewer system will be designed and constructed for maintenance by the County of Los Angeles Department of Public Works and County Sanitation Districts of Los Angeles County, and/or the new County sanitation district or similar entity in accordance with their manuals, criteria, and requirements.	Applicant (Civil Engineer)	Review of Final Sewer Plans Field Verification	1. LACDPW and WRP Operator 2. LACDPW and WRP Operator 3. Prior to Acceptance for Maintenance

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.13 NATURAL GAS			
5.0-57. WRP design shall comply with the Energy Building Regulations adopted by the California Energy Commission (Title 24 of the California Administrative Code).	WRP Operator	Plan Check	1. WRP Operator 2. WRP Operator 3. Prior to Water Reclamation Plant Construction
5.14 ELECTRICITY			
5.0-58. Plant design shall comply with the Energy Building Regulations adopted by the California Energy Commission (Title 24 of the California Administrative Code).	WRP Operator	Plan Check	1. WRP Operator 2. WRP Operator 3. Prior to Water Reclamation Plant Construction
5.15 SOLID WASTE DISPOSAL			
5.0-59. The operators of the water reclamation plant shall ensure that all solid waste diversion, storage, and disposal requirements that are in effect at the time the WRP is constructed, including AB 939 and all others, will be implemented so that the waste generated by the WRP will not impede the County's waste reduction and diversion requirements during construction and operation.	WRP Operator	Field Verification	1. WRP Operator 2. WRP Operator 3. During WRP Construction and Operation
5.16 EDUCATION			
No impact on schools would result from construction or operation of the WRP; therefore, no mitigation measures are required or recommended.			

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.17 POLICE SERVICES			
5.0-60. If construction of the WRP occurs while SR-126 is still a two-lane highway, a construction traffic management plan shall be prepared and implemented. This plan shall address site access, staging and storage areas, hours of construction, work crew parking, warning and traffic control signs and devices, flag men, temporary detouring, etc., as appropriate.	WRP Applicant (Construction Superintendent)	Approval of Construction Traffic Management Plan Field Verification	1. WRP Operator 2. WRP Operator 3. Prior to and During Grading and Construction Activities
5.0-61. Consult with the CHP and the Sheriff's Department to incorporate measures into the risk management and prevention plan to optimize their abilities to provide assistance in the event of a hazardous materials incident at the operating WRP site.	WRP Operator	Incorporate CHP and Sheriff's Department Comments in RMPP	1. Cal-EPA 2. WRP Operator 3. Prior to Water Reclamation Plant Operation
5.0-62. Prepare and implement worker safety programs in accordance with Cal-OSHA requirements.	WRP Operator	Review of Worker Safety Program Field Verification	1. Cal-OSHA 2. WRP Operator 3. Prior to and During WRP Operation
5.0-63. Prepare and implement an "Integrated Emergency Response Plan" (IERP). The IERP provides procedures for personnel medical emergencies, evacuation procedures and mitigation and abatement procedures for hazardous chemicals. The plan must conform to multiple regulatory requirements, including Title 8 §3220, Emergency Action Plan, §3221, Fire Prevention Plan, §5192 Emergency Response to Hazardous Substances Releases, and Title 22, §66265.50-66265.56, Contingency Plan and Emergency Procedures.	WRP Operator	Review of IERP Field Verification	1. Los Angeles Co. Fire Department 2. WRP Operator 3. Prior to and During WRP Operation

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.18 FIRE SERVICES AND HAZARDS			
5.0-64. If construction of the WRP occurs while SR-126 is still a two-lane highway, a construction traffic management plan shall be prepared and implemented. This plan shall address site access, staging and storage areas, hours of construction, work crew parking, warning and traffic control signs and devices, flag men, temporary detouring, etc., as appropriate.	WRP Applicant (Construction Superintendent)	Approval of Construction Traffic Management Plan Field Verification	1. WRP Operator 2. WRP Operator 3. Prior to and During Grading and Construction Activities
5.0-65. Consult with the Fire Department and its Hazardous Materials Unit to incorporate measures into the risk management and prevention plan, to optimize its abilities to respond to a hazardous materials incident at the operating WRP site.	WRP Site Designer/ Engineer	Incorporate Fire Department Comments in RMPP	1. Cal-EPA 2. WRP Operator 3. Prior to Water Reclamation Plant Operation
5.0-66. Prepare and implement worker safety programs in accordance with Cal-OSHA requirements.	WRP Operator	Review of Worker Safety Program Field Verification	1. Cal-OSHA 2. WRP Operator 3. Prior to and During WRP Operation
5.0-67. Prepare and implement an "Integrated Emergency Response Plan" (IERP). The IERP provides procedures for personnel medical emergencies, evacuation procedures and mitigation and abatement procedures for hazardous chemicals. The plan must conform to multiple regulatory requirements, including Title 8 §3220, Emergency Action Plan, §3221, Fire Prevention Plan, §5192 Emergency Response to Hazardous Substances Releases, and Title 22, §66265.50-66265.56, Contingency Plan and Emergency Procedures.	WRP Operator	Review of IERP Field Verification	1. Los Angeles Co. Fire Department 2. WRP Operator 3. Prior to and During WRP Operation

Mitigation Measures/Conditions of Approval	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
5.19 LIBRARIES			
No adverse library impacts have been identified; therefore no mitigation measures are required.			
5.20 PARKS, RECREATION AND TRAILS			
5.0-68. A fence shall be constructed along the southern perimeter of the WRP site to prevent access to the WRP from the Regional River Trail.	WRP Operator	Field Verification	1. Los Angeles Co. Department of Regional Planning 2. WRP Operator 3. Prior to Water Reclamation Plant Operation
5.21 POPULATION, HOUSING AND EMPLOYMENT			
No significant population, housing, or employment impacts have been identified; therefore, no mitigation measures are required.			



Attachment 1: Mammalian Survey Locations Map

Legend

- Terrestrial Mammal Camera Locations
- 2003 Mammal Tracking Stations (A-M)
- 2004 Mammal Tracking Stations (1-104)
- Anabat Survey Locations (1-29)
- Small Mammal Trapping Grids (1-34)
- Kuehnel Ranch Specific Plan Boundary

0.5 0.25 0 0.5 Miles

APPENDIX D

Species Matrices

Sensitive Species Impacts Matrix

Species *Scientific Name* **Common Name**	San Diego fairy shrimp *Branchinecta sandiegoensis*	Monarch butterfly *Danaus plexippus*	Quino checkerspot *Euphydryas editha quino*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	No	No	No
Species impacted directly by habitat loss? (Yes/No)	No	No	No
Habitat loss substantial? (Yes/No)	No	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	No	No	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	No	No	No
Mitigation	No	No	No

Species *Scientific Name* **Common Name**	San Emigdio blue *Plebulina emigdionis*	Riverside fairy shrimp *Streptocephalus wootoni*	Santa Ana sucker *Catostomus santaanae*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	No	No	Yes
Species impacted directly by habitat loss? (Yes/No)	No	No	Yes
Habitat loss substantial? (Yes/No)	No	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	No	No	Yes
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	Yes
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	No	No	Yes
Mitigation	No	No	Yes

Species ***Scientific Name*** **Common Name**	Unarmored three-spine stickleback *Gasterosteus aculeatus williamsoni*	Arroyo chub *Gila orcutti*	Steelhead trout *Oncorhynchus mykiss*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	Yes	Yes	No
Species impacted directly by habitat loss? (Yes/No)	Yes	Yes	No
Habitat loss substantial? (Yes/No)	No	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	Yes	Yes	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	Yes	Yes	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	Yes	No
Mitigation	Yes	Yes	No

Species *Scientific Name* **Common Name**	Arroyo toad *Bufo californicus*	California red-legged frog *Rana draytonii*	Western spadefoot *Spea hammondii*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	Yes	No	Yes
Species impacted directly by habitat loss? (Yes/No)	Yes	No	Yes
Habitat loss substantial? (Yes/No)	No	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	Yes	No	Yes
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	No	Yes
Mitigation	Yes	No	Yes

Species **Common Name** *Scientific Name*	Silvery legless lizard *Anniella pulchra pulchra*	Coastal western whiptail *Aspidoscelis tigris stejnegeri*	Rosy boa *Charina trivirgata*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	Yes	Yes	Yes
Species impacted directly by habitat loss? (Yes/No)	Yes	Yes	Yes
Habitat loss substantial? (Yes/No)	Yes	Yes	Yes
Species impacted directly on adjacent lands by edge effects? (Yes/No)	No	No	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	Yes	Yes	Yes
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	Yes	Yes
Mitigation	Yes	Yes	Yes

Species **Common Name** *Scientific Name*	Southwestern pond turtle *Clemmys marmorata pallida*	San Bernardino ringneck snake *Diadophis punctatus modestus*	Coast horned lizard *Phrynosoma coronatum*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	Yes	Yes	Yes
Species impacted directly by habitat loss? (Yes/No)	Yes	Yes	Yes
Habitat loss substantial? (Yes/No)	No	Yes	Yes
Species impacted directly on adjacent lands by edge effects? (Yes/No)	Yes	No	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	Yes	Yes
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	Yes	Yes
Mitigation	Yes	Yes	Yes

Species **Common Name** *Scientific Name*	Coast patch-nosed snake *Salvadora hexalepis virgultea*	Two-striped garter snake *Thamnophis hammondii*	Cooper's hawk *Accipiter cooperii*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	Yes	Yes	Yes
Species impacted directly by habitat loss? (Yes/No)	Yes	Yes	Yes
Habitat loss substantial? (Yes/No)	Yes	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	No	Yes	Yes
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	Yes	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	Yes	Yes
Mitigation	Yes	Yes	Yes

Species **Common Name** *Scientific Name*	Sharp-shinned hawk *Accipiter striatus*	Tricolored blackbird *Agelaius tricolor*	Southern California rufous-crowned sparrow *Aimophila ruficeps canescens*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	No (i.e., nesting habitat)	Yes	Yes
Species impacted directly by habitat loss? (Yes/No)	No	Yes	Yes
Habitat loss substantial? (Yes/No)	No	No	Yes
Species impacted directly on adjacent lands by edge effects? (Yes/No)	No	Yes	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	Yes
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	No	Yes	Yes
Mitigation	No	Yes	Yes

Species **Common Name** *Scientific Name*	Bell's sage sparrow *Amphispiza belli belli*	Great egret *Ardea alba*	Great blue heron *Ardea herodias*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	Yes	No (i.e. rookery)	No (i.e. rookery)
Species impacted directly by habitat loss? (Yes/No)	Yes	No	No
Habitat loss substantial? (Yes/No)	Yes	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	No	No	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	Yes	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	No	No
Mitigation	Yes	No	No

Species **Common Name** *Scientific Name*	Long-eared owl *Asio otus*	Western burrowing owl *Athene cunicularia*	Ferruginous hawk *Buteo regalis*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	Yes	Yes	No (i.e. nesting)
Species impacted directly by habitat loss? (Yes/No)	Yes	Yes	No
Habitat loss substantial? (Yes/No)	No	Yes	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	Yes	No	No
Potential to eliminate species on site? (Yes/No)	No	Yes	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	Yes	No
Mitigation	Yes	Yes	No

Species **Common Name** *Scientific Name*	Lawrence's goldfinch *Carduelis lawrencei*	Northern harrier *Circus cyaneus*	Western yellow-billed cuckoo *Coccyzus americanus occidentalis*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	Yes	Yes	Yes
Species impacted directly by habitat loss? (Yes/No)	Yes	Yes	Yes
Habitat loss substantial? (Yes/No)	No	Yes	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	Yes	No	Yes
Potential to eliminate species on site? (Yes/No)	No	Yes	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	Yes	Yes
Mitigation	Yes	Yes	Yes

Species **Common Name** *Scientific Name*	Yellow warbler *Dendroica petechia brewsteri*	White-tailed kite *Elanus leucurus*	Southwestern willow flycatcher *Empidonax traillii extimus*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	Yes	Yes	Yes
Species impacted directly by habitat loss? (Yes/No)	Yes	Yes	Yes
Habitat loss substantial? (Yes/No)	No	Yes	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	Yes	Yes	Yes
Potential to eliminate species on site? (Yes/No)	No	Yes	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	Yes	Yes
Mitigation	Yes	Yes	Yes

Species **Common Name** *Scientific Name*	California horned lark *Eremophila alpestris actia*	Merlin *Falco columbarius*	Prairie falcon *Falco mexicanus*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	Yes	No (i.e., nesting)	No (i.e., nesting)
Species impacted directly by habitat loss? (Yes/No)	Yes	No	No
Habitat loss substantial? (Yes/No)	Yes	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	Yes	No	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	Yes	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	No	No
Mitigation	Yes	No	No

Species **Common Name** *Scientific Name*	Yellow-breasted chat *Icteria virens*	Least bittern *Ixobrychus exilis*	Loggerhead shrike *Lanius ludovicianus*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	Yes	No (i.e., nesting)	Yes
Species impacted directly by habitat loss? (Yes/No)	Yes	No	Yes
Habitat loss substantial? (Yes/No)	No	No	Yes
Species impacted directly on adjacent lands by edge effects? (Yes/No)	Yes	No	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	No	Yes
Mitigation	Yes	No	Yes

Species **Common Name** *Scientific Name*	Summer tanager *Piranga rubra*	Coastal California gnatcatcher *Polioptila californica californica*	Bank swallow *Riparia riparia*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	Yes	No	No (i.e., nesting habitat)
Species impacted directly by habitat loss? (Yes/No)	Yes	No	No
Habitat loss substantial? (Yes/No)	No	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	Yes	No	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	No	No
Mitigation	Yes	No	No

Species **Common Name** *Scientific Name*	Least bell's vireo *Vireo bellii pusillus*	Pallid bat *Antrozous pallidus*	Pale big-eared bat *Corynorhinus townsendii pallescens*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	Yes	Yes (i.e., foraging)	Yes
Species impacted directly by habitat loss? (Yes/No)	Yes	No	Yes
Habitat loss substantial? (Yes/No)	No	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	Yes	No	Yes
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	No	Yes
Mitigation	Yes	No	Yes

Species **Common Name** *Scientific Name*	Spotted bat *Euderma maculata*	Western mastiff bat *Eumops perotis californicus*	Mountain lion *Felis concolor*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	No	Yes	Yes
Species impacted directly by habitat loss? (Yes/No)	No	Yes	Yes
Habitat loss substantial? (Yes/No)	No	No	Yes
Species impacted directly on adjacent lands by edge effects? (Yes/No)	No	Yes	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	No	Yes	Yes
Mitigation	No	Yes	No

Species **Common Name** *Scientific Name*	San Diego black-tailed jackrabbit *Lepus californicus bennettii*	Fringed myotis *Myotis thysanodes*	Yuma myotis *Myotis yumanensis*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	Yes	Yes	Yes
Species impacted directly by habitat loss? (Yes/No)	Yes	Yes	Yes
Habitat loss substantial? (Yes/No)	Yes	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	No	Yes	Yes
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	Yes	Yes
Mitigation	Yes	Yes	Yes

Species **Common Name** *Scientific Name*	San Diego desert woodrat *Neotoma lepida intermedia*	Southern grasshopper mouse *Onychomys torridus ramona*	Los Angeles pocket mouse *Perognathus longimembris brevinasus*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	Yes	No	No
Species impacted directly by habitat loss? (Yes/No)	Yes	No	No
Habitat loss substantial? (Yes/No)	Yes	No	No
Species impacted directly on adjacent lands by edge effects? (Yes/No)	No	No	No
Potential to eliminate species on site? (Yes/No)	No	No	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No	No	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	Yes	No	No
Potential restriction of range of rare or endangered species? (Yes/No)	No	No	No
Impacts significant? (Yes/No)	Yes	No	No
Mitigation	Yes	No	No

Species **Common Name** ***Scientific Name***	American badger *Taxidea taxus*
Habitat present and species is reasonably expected to occur on-site? (Yes/No)	Yes
Species impacted directly by habitat loss? (Yes/No)	Yes
Habitat loss substantial? (Yes/No)	Yes
Species impacted directly on adjacent lands by edge effects? (Yes/No)	No
Potential to eliminate species on site? (Yes/No)	No
Potential to reduce population size below self-sustaining levels? (Yes/No)	No
Potential for substantial reduction in numbers of individuals? (Yes/No)	No
Potential restriction of range of rare or endangered species? (Yes/No)	No
Impacts significant? (Yes/No)	Yes
Mitigation	Yes

Wildlife Matrix

Wildlife Species Observed on the Newhall Ranch or Occurring in the Region

Scientific Name	Common Name	Habitat	Wi	Sp	Su	Au
BIRDS						
PODICIPEDIDAE	GREBES					
Podilymbus podiceps	Pied-billed Grebe	Aq	C	C	U?	C
ARDEIDAE	HERONS and EGRETS					
Ixobrychus exilis hesperis	Least Bittern	Aq,Gr/OS,RW	U	U	U	U
Ardea herodias herodias	Great Blue Heron	Aq,Gr/OS,RW	C	C	C*	C
Casmerodius albus	Great Egret	Aq,Gr/OS,RW	U	U	R	U
Egretta thula thula	Snowy Egret	Aq,Gr/OS,RW	U	U	R	U
Bubulcus ibis	Cattle Egret	Gr/OS	R	R		R
Butorides virescens	Green Heron	Aq,OR,RW	U	U	U	U
Nycticorax nycticorax hoactli	Black-crowned Night-heron	Aq,OR,RW	C	C	C	C
ANATIDAE	GEESE and DUCKS					
Dendrocygna bicolor	Fulvous Whistling-duck	Aq/RW	U	U		
Anas crecca	Green-winged Teal	Aq,RW	C	C	R	C
Anas cyanoptera	Cinnamon Teal	Aq,RW	C	C	U	C
Anas platyrhynchos platyrhynchos	**Mallard**	Aq,RW	C	C	C?	C
Anas americana	American Wigeon	Aq,RW	C	C	Ca	C
Oxyura jamaicensis	Ruddy Duck	Aq,RW	C	C	U	C
CATHARTIDAE	VULTURES					

KEY:
Bold type indicates that the species has been observed on or adjacent to the Landmark Village project site.
* Idicates non-native species.
Seasonal occurrence, known or expected breeding status and abundance:
Sp = Spring migrant (March 1- May 31) in the project region
Su = Summer resident (June 1 - July 31) occurs only as a spring-summer breeder; migrates out of the region for the winter
Wi = Winter visitor (August 31 - February 28) occurs only as a winter visitor and is not known to breed in the project region
Au = Fall migrant (August 1 - November 30). The species occurs within the given habitat types as a fall migrant
* = Known breeding (known or expected to breed) in the project region
? = Breeding status uncertain; the species may nest in the project region where suitable habitat exists.
A = Abundant: nearly always encountered, generally in moderate to large numbers in the habitat(s) indicated
C = Common: usually found in the habitat(s) indicated during the indicated season, but usually not in large numbers
U = Uncommon: occurs in small numbers, and is not always observed in the indicated habitat
R = Rare: may occur in the indicated habitat, but only in very small numbers
Ca = Casual: not of regular occurrence, although the project region is within the range of the species.
Habitat(s) typically used by the species:
Aq= Aquatic habitats: open water, stream and marsh
DR = Disturbed/ruderal: roadsides, agricultural fields, disked/weed-abated areas
Gr/OS = Grassland/oak savannah
OR = Open riverbed and bank
RW = Riparian woodland: cottonwood/willow forest & woodland, willow thicket and mule fat scrub
Sc = Scrub habitats: coastal sage scrub to low chaparral.

Scientific Name	Common Name	Habitat	Wi	Sp	Su	Au
BIRDS						
Cathartes aura	**Turkey Vulture**	RW,Gr/OS,Sc	C	C	C?	U
ACCIPITRIDAE	HAWKS, KITES, and EAGLES					
Elanus leucurus	**White-tailed Kite**	RW,Gr/OS,OR. Sc	U	U	U?	U
Circus cyaneus	**Northern Harrier**	RW,Gr/OS,OR	U	U	R?	U
Accipiter striatus	Sharp-shinned Hawk	RW,Gr/OS,Sc	U	U		U
Accipiter cooperii	**Cooper's Hawk**	RW,Gr/OS,Sc	U	U	R*	U
Buteo lineatus elegans	**Red-shouldered Hawk**	RW,Gr/OS,Sc,OR	U	U	U?	U
Buteo jamaicensis	**Red-tailed Hawk**	RW,GR/OS,Sc	U	U	U?	U
Buteo swainsoni	Swainson's Hawk	RW,Gr/OS,OR		Ca		Ca
ACCIPITRIDAE (cont.)	HAWKS and EAGLES					
Buteo regalis	Ferruginous Hawk	Gr/OS	R		R	
Aquila chrysaetos	Golden Eagle	Gr/OS,Sc	R	R	U	R
Falco sparverius	**American Kestrel**	RW,Gr/OS,OR,Sc	C	C	C*	C
Falco columbarius	Merlin	Gr/OS,OR,Sc	U			U
Falco mexicanus	Prairie Falcon	Gr/OS,OR,Sc	R	R	R?	R
Falco peregrinus anatum	American Peregrine Falcon	Gr/OS,OR	R	R	R	R
PHASIANIDAE	QUAIL					
Callipepla californica	**California Quail**	RW,Gr/OS,Sc	C	C	C*	C
RALLIDAE	RAILS and COOTS					

KEY:
Bold type indicates that the species has been observed on or adjacent to the Landmark Village project site.
* Idicates non-native species.
Seasonal occurrence, known or expected breeding status and abundance:
Sp = Spring migrant (March 1- May 31) in the project region
Su = Summer resident (June 1 - July 31) occurs only as a spring-summer breeder; migrates out of the region for the winter
Wi = Winter visitor (August 31 - February 28) occurs only as a winter visitor and is not known to breed in the project region
Au = Fall migrant (August 1 - November 30). The species occurs within the given habitat types as a fall migrant
* = Known breeding (known or expected to breed) in the project region
? = Breeding status uncertain; the species may nest in the project region where suitable habitat exists.
A = Abundant: nearly always encountered, generally in moderate to large numbers in the habitat(s) indicated
C = Common: usually found in the habitat(s) indicated during the indicated season, but usually not in large numbers
U = Uncommon: occurs in small numbers, and is not always observed in the indicated habitat
R = Rare: may occur in the indicated habitat, but only in very small numbers
Ca = Casual: not of regular occurrence, although the project region is within the range of the species.
Habitat(s) typically used by the species:
Aq= Aquatic habitats: open water, stream and marsh
DR = Disturbed/ruderal: roadsides, agricultural fields, disked/weed-abated areas
Gr/OS = Grassland/oak savannah
OR = Open riverbed and bank
RW = Riparian woodland: cottonwood/willow forest & woodland, willow thicket and mule fat scrub
Sc = Scrub habitats: coastal sage scrub to low chaparral.

Scientific Name	Common Name	Habitat	Wi	Sp	Su	Au
BIRDS						
Porzana carolina	Sora	Aq	U	U		U
Fulica americana	American Coot	Aq	C	C	C*	C
CHARADRIIDAE	PLOVERS					
Charadrius vociferus	Killdeer	Aq,RW,OR	C	C	C*	C
Charadrius montanus	Mountain Plover	OS	U			
SCOLOPACIDAE	SANDPIPERS					
Calidris minutilla	Least Sandpiper	Aq,OR	U	U		
Tringa hypoleucos	Spotted sandpiper	Aq,OR	U	U	R	
COLUMBIDAE	PIGEONS and DOVES					
Columba livia	**Rock Dove**	Gr/OS,DR	C	C	C*	C
Columba fasciata	Band-tailed Pigeon	RW,Gr/OS	R	R		R
*Columba livia**	Domestic Pigeon	RW, Gr/OS,DR	Ca	Ca	Ca	Ca
Streptopelia chinensis	Spotted Dove	RW,DR	Ca	Ca	Ca?	Ca
Zenaida macroura	**Mourning Dove**	RW,Gr/OS,Sc,DR	C	C	C*	C
CUCULIDAE	CUCKOOS					
Coccyzus americanus occidentalis	Western Yellow-billed Cuckoo	RW		Ca	Ca*	Ca
Geococcyx californianus	Greater Roadrunner	Sc,RW	U	U	U*	U
TYTONIDAE	BARN OWLS					
Tyto alba	Barn Owl	RW,Gr/OS,Sc,DR	U	U	U*	U

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BIRDS						
STRIGIDAE	OWLS					
Bubo virginianus	Great Horned Owl	RW,Gr/OS,Sc,OR	U	U	U*	U
Athene cunicularia	Western Burrowing Owl	Gr/OS,Sc	R	R	R?	R
Asio otus	Long-eared Owl	RW	R		Ca?	
Asio flammeus	Short-eared Owl	Gr/OS	U			
APODIDAE	SWIFTS					
Aeronautes saxatalis	**White-throated Swift**	Aq,RW,OR,Sc,DR	C	C	C*	C
TROCHILIDAE	HUMMINGBIRDS					
Archilochus alexandri	Black-chinned Hummingbird	RW,OR,Sc		U	U*	R
Calypte anna	Anna's Hummingbird	RW,Gr/OS,Sc,DR	C	C	C*	C
Calypte costae	Costa's Hummingbird	RW,OR,Sc		C	C*	U
Selasphorus rufus	Rufous Hummingbird	RW,Gr/OS,Sc		U		U
Selasphorus sasin	Allen's Hummingbird	RW,Gr/OS,Sc		C	C*	U
ALCEDINIDAE	KINGFISHERS					
Ceryle alcyon	Belted Kingfisher	Aq	U	R		R
PICIDAE	WOODPECKERS					
Melanerpes formicivorus	Acorn Woodpecker	Gr/OS,RW	C	C	C*	C
Sphyrapicus ruber	Red-breasted Sapsucker	Gr/OS,RW	U	R		U
Picoides nuttallii	Nuttall's Woodpecker	RW,Gr/OS,Sc	C	C	C*	C

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BIRDS						
Picoides pubescens	Downy Woodpecker	RW,Gr/OS	C	C	C*	C
Picoides villosus	Hairy Woodpecker	RW,Gr/OS	U	U	U*	U
Colaptes auratus	Northern Flicker	RW,Gr/OS,Sc	C	C	U*	C
TYRANNIDAE	FLYCATCHERS					
Contopus borealis	Olive-sided Flycatcher	RW,Gr/OS	R	R		
Contopus sordidulus	Western Wood-pewee	RW,Gr/OS		U	R*	U
Empidonax traillii	Willow Flycatcher	RW		R		U
Empidonax hammondii	Hammond's Flycatcher	RW,Gr/OS,Sc		R		R
Empidonax difficilis	Pacific-slope Flycatcher	RW,Gr/OS		C	C*	C
Sayornis nigricans	**Black Phoebe**	RW,OR,Gr/OS	C	C	C*	C
Sayornis saya	Say's Phoebe	Gr/OS,Sc	C	C	R?	C
Pyrocephalus rubinus flammeus	Vermilion Flycatcher	RW		Ca		Ca
Myiarchus cinerascens cinerascens	**Ash-throated Flycatcher**	RW,Gr/OS,Sc		Ca	C?	Ca
Tyrannus vociferans vociferans	Cassin's Kingbird	Gr/OS,Sc	U	U	U?	U
Tyrannus verticalis	Western Kingbird	RW,Gr/OS,Sc	U	U	U*	U
ALAUDIDAE	LARKS					
Eremophila alpestris actia	**California Horned Lark**	Gr/OS	C	C	U*	C
HIRUNDINIDAE	SWALLOWS					
Tachycineta bicolor	**Tree Swallow**	Aq,RW,Gr/OS, OR	R	C	U	R

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BIRDS						
Tachycineta thalassina	**Violet-green Swallow**	Aq,RW,Gr/OS, OR,Sc	R	C	U	R
Stelgidopteryx serripennis	Northern Rough-winged Swallow	RW,Gr/OS,OR,Sc	U	C	C	R
Petrochelidon pyrrhonota	**Cliff Swallow**	Aq,RW,Gr/OS, OR,Sc	R	C	C	R
Hirundo rustica	Barn Swallow	RW,Gr/OS,OR,Sc	R	A	C	R
CORVIDAE	JAYS, CROWS, and RAVENS					
Aphelocoma coerulescens	**Scrub Jay**	RW,Gr/OS,Sc,DR	C	C	C*	C
Pica nuttalli	Yellow-billed Magpie	Gr/OS	U	U	U*	U
Corvus brachyrhynchos hesperis	**American Crow**	RW,Gr/OS,DR,Sc	C	C	C*	C
Corvus corax clarionensis	**Common Raven**	Gr/OS,Sc,DR,OR	U	U	U?	U
PARIDAE	CHICKADEES and TITMICE					
Baeolophus inornatus	Oak Titmouse	RW,Gr/OS,Sc	C	C	C*	C
AEGITHALIDAE	BUSHTITS					
Psaltriparus minimus	**Bushtit**	RW,Sc,Gr/OS,DR	C	C	C*	C
SITTIDAE	NUTHATCHES					
Sitta canadensis	Red-breasted Nuthatch	RW,Gr/OS	R	Ca		R
Sitta carolinensis	White-breasted Nuthatch	RW,Gr/OS	U	U	U*	U
TROGLODYTIDAE	WRENS					
Salpinctes obsoletus	**Rock Wren**	DR,Sc	R	R	R*	R

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BIRDS						
Salpinctes mexicanus	**Canyon Wren**	Sc	R	R	R	R
Thryomanes bewickii	**Bewick's Wren**	RW,Sc	C	C	C*	C
Troglodytes aedon	**House Wren**	RW,Gr/OS,Sc		U	U*	U
Cistothorus palustris	Marsh Wren	RW,OR	U	U	U*	U
MUSCICAPIDAE	THRUSHES, GNATCATCHERS, and WRENTIT					
Regulus calendula	Ruby-crowned Kinglet	RW,Gr/OS,Sc	C	C		C
Polioptila caerulea	Blue-gray Gnatcatcher	RW,Sc		U	U?	U
Sialia mexicana	Western Bluebird	RW,Gr/OS,Sc	U	U	U*	U
Catharus guttatus	**Hermit Thrush**	RW,Gr/OS,Sc	C	C		C
Catharus ustulatus	Swainson's Thrush	RW,Sc		C	U?	C
Turdus migratorius	**American Robin**	Aq,RW,Gr/OS,Sc, DR	C	C	U*	C
Chamaea fasciata	**Wrentit**	RW,Sc	C	C	C*	C
MIMIDAE	MOCKINGBIRDS and THRASHERS					
Mimus polyglottos	**Northern Mockingbird**	RW,Gr/OS,Sc,DR	U	U	U*	U
Toxostoma redivivum	**California Thrasher**	RW,Sc	C	C	C*	C
MOTACILLIDAE	PIPITS					
Anthus rubescens	American Pipit	Gr/OS,OR,DR	U	U		U
BOMBYCILLIDAE	WAXWINGS					

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BIRDS						
Bombycilla cedrorum	Cedar Waxwing	RW,Gr/OS,Sc	U	U		U
PTILOGONATIDAE	PHAINOPEPLAS					
Phainopepla nitens	Phainopepla	RW,GR/OS,Sc	U	U	U	U
LANIIDAE	SHRIKES					
Lanius ludovicianus	Loggerhead Shrike	RW,Gr/OS,Sc,DR	C	C	U*	C
STURNIDAE	STARLINGS					
Sturnus vulgaris*	**European Starling**	RW,Gr/OS,DR	A	A	A*	A
VIREONIDAE	VIREOS					
Vireo bellii pusillus	**Least Bell's Vireo**	RW		R	R*	R
Vireo solitarius	Solitary Vireo	RW,Gr/OS		R		R
Vireo huttoni	Hutton's Vireo	RW,Gr/OS	C	C	C*	C

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Vireo gilvus	Warbling Vireo	RW,Gr/OS		C	C*	C
EMBERIZIDAE	WARBLERS, SPARROWS, and ORIOLES					
Vermivora celata	**Orange-crowned Warbler**	RW,Gr/OS,Sc	C	C	U*	C
Vermivora ruficapilla	Nashville Warbler	RW,GR/OS		U		U
Dendroica coronata	**Yellow-rumped Warbler**	RW,Gr/OS,Sc,DR	A	C		C
Dendroica nigrescens	Black-throated Gray Warbler	RW,Gr/OS,Sc	U	U	U	U
Dendroica petechia	**Yellow Warbler**	RW,Gr/OS,Sc		C	U*	C
Dendroica townsendi	Townsend's Warbler	RW,Gr/OS,Sc	U	C		C
Oporornis tolmiei	MacGillivray's Warbler	RW,GR/OS, SC	U			U
Geothlypis trichas	**Common Yellowthroat**	Aq,RW,OR	C	C	C*	C
Wilsonia pusilla	**Wilson's Warbler**	RW,Gr/OS,Sc	R	C	U*	C
Icteria virens	**Yellow-breasted Chat**	RW		U	U*	U
Piranga rubra	Summer Tanager	RW	U	U		U
Piranga ludoviciana	Western Tanager	RW,Gr/OS,Sc		C		U
Pheucticus melanocephalus	Black-headed Grosbeak	RW,Sc,Gr/OS		C	C*	U
Guiraca caerulea salicaria	Blue Grosbeak	RW,Sc,Gr/OS,DR		U	U*	Ca
EMBERIZIDAE (cont.)	WARBLERS, SPARROWS, and ORIOLES					
Passerina amoena	Lazuli Bunting	RW,Sc,Gr/OS		U	U*	U
Pipilo erythrophthalmus megalonyx	Rufous-sided Towhee	RW,Sc	C	C	C*	C

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Pipilo crissalis	**California Towhee**	RW,Sc	C	C	C*	C
Aimophila ruficeps canescens	**Southern California Rufous-crowned Sparrow**	Sc	C	C	U*	C
Spizella passerina	Chipping Sparrow	Sc	R	R	R*	
Spizella atrogularis	Black-chinned Sparrow	Sc		Ca	Ca?	
Pooecetes gramineus	Vesper Sparrow	Gr/OS,Sc		R		R
Chondestes grammacus	Lark Sparrow	Gr/OS,OR,Sc	C	C	U*	C
Amphispiza belli	Bell's Sage Sparrow	Sc	R	R	R?	R
Passerculus sandwichensis	**Savannah Sparrow**	Aq,RW,Gr/OS,DR	C	C	C*	C
Melospiza melodia	Song Sparrow	RW,Sc,Aq,OR	C	C	C*	C
Melospiza lincolnii	Lincoln's Sparrow	RW,Sc	C	C		C
Zonotrichia atricapilla	Golden-crowned Sparrow	RW,Sc	C	C		C
Zonotrichia leucophrys	White-crowned Sparrow	RW,Gr/OS,Sc,DR	A	C		C
Junco hyemalis	Dark-eyed Junco	RW,Gr/OS,Sc	C	C	U*	C
Agelaius phoeniceus	**Red-winged Blackbird**	Aq,RW,Gr/OS,DR	C	C	C*	C
Agelaius tricolor	Tricolored Blackbird	Aq,RW,Gr/OS	U	U	R?	U
Sturnella neglecta	Western Meadowlark	Gr/OS	C	C	C*	C
Xanthocephalus xanthocephalus	Yellow-headed Blackbird	RW		U		U
Euphagus cyanocephalus	**Brewer's Blackbird**	RW,Gr/OS,Sc,DR	C	C	C*	C

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Molothrus ater	**Brown-headed Cowbird**	RW,Gr/OS,Sc,DR	C	C	C*	C
Icterus cucullatus	Hooded Oriole	Gr/OS,RW		R	R?	R
Icterus galbula	Northern Oriole	Gr/OS,RW		U	U*	U
FRINGILLIDAE	FINCHES					
Carpodacus purpureus	Purple Finch	RW,Gr/OS	U	U	U*	U
Carpodacus mexicanus	**House Finch**	RW,Sc,Gr/OS,DR	A	A	C*	A
Carduelis pinus	Pine Siskin	RW,Gr/OS,Sc	U	R		R
Carduelis psaltria	Lesser Goldfinch	RW,Gr/OS,Sc	C	C	C*	C
Carduelis lawrencei	**Lawrence's Goldfinch**	RW,Gr/OS,Sc	R	U	U	U
Carduelis tristis	American Goldfinch	RW,Gr/OS,Sc	C	C	C*	C
PASSERIDAE	WEAVERS					
Passer domesticus*	**House Sparrow**	RW,Gr/OS,Sc,DR	C	C	C*	C

		Habitat	Abundance
FISH			
Gasterosteus aculeatus williamsoni	**Unarmored Threespine Stickleback**	SCR	R
Cottus asper	Prickly Sculpin	SCR	C
Catostomus santaanae	**Santa Ana Sucker**	SCR	R
Gila orcutti	**Arroyo Chub**	SCR	R
Gambusia affinis*	**Mosquitofish**	SCR	A

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AMPHIBIANS							
CAUDATA	SALAMANDERS						
Aneides lugubris	Arboreal Salamander		U			U	
Batrachoseps nigriventris	Black-bellied Slender Salamander		C		U	C	
ANURA	FROGS & TOADS						
Bufo californicus	Arroyo Toad	R	R	R			
Bufo boreas	**Western Toad**	U	Ca	Ca		Ca	
Pseudacris regilla	**Pacific chorus frog**	A	C	C	U	U	
Rana aurora draytoni	California Red-legged Frog	Ca					
Scaphiopus hammondii	Western Spadefoot Toad	Ca					
Xenopus laevis*	**African Clawed Frog**	Ca					
REPTILES							
TESTUDINES	TURTLES						
Clemmys marmorata pallida	**Southwestern Pond Turtle**	Ca	Ca				
SQUAMATA	LIZARDS						
Anniella pulchra pulchra	**Silvery Legless Lizard**				U		
Gambelia wislizenii	Long-nosed Leopard Lizard				Ca		
Xantusia vigilis	Desert Night Lizard				U		
Elgaria multicarinatus webboo	**San Diego Alligator Lizard**		C	C	A	A	
Eumeces skiltonianus	**Western Skink**		U		U	C	

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Scientific Name	Common Name	Aq	R	OR	Sc	Gr/OS	DR
REPTILES							
Uta stansburiana	**Side-Blotched Lizard**			C	U	U	C
Sceloporus occidentalis	**Western Fence Lizard**		U	R	U	A	C
Aspidoscelis tigris stejnegeri	Coastal Western Whiptail		U	C	C	U	
Phrynosoma coronatum	Coast Horned Lizard			R	R		
SQUAMATA	SNAKES						
Salvadora hexalepis virgultea	Coast Patch-nosed Snake				Ca		
Diadophis punctatus modestus	San Bernardino Ringneck Snake		U			U	
Hypsiglena torquata	Night Snake				U	U	
Thamnophis hammondii hammondii	**Two-striped Garter Snake**	R	R				
Lampropeltis getulus	**Common Kingsnake**		U		U	C	R
Pituophis melanoleucus annectens	**San Diego Gopher Snake**		U	U	C	C	R
Coluberr mormon	Racer				U	U	
Masticophis flagellum piceus	**Red Coachwhip**			R	U	U	
Crotalus viridis helleri	**Southern Pacific Rattlesnake**		Ca	R	C	R	R

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MAMMALS							
DIDELPHIDAE	OPOSSUMS						
Didelphis virginiana	Virginia Oppossum	U	C	C	U	U	R
SORICIDAE	SHREWS						
Sorex ornatus	Ornate Shrew		U		U		
Notiosorex crawfordi	Desert Shrew				Ca		
TALPIDAE	MOLES						
Scapanus latimanus	Broad-footed Mole		C	U	U	U	
VESPERTILIONIDAE	VESPERTILIONID BATS						
Myotis californicus	**California Myotis**		U	U	C	C	U
Myotis thysanodes	Fringed Myotis		Ca	Ca	Ca	Ca	
Myotis yumanensis	Yuma Myotis		U	U	U	C	
Lasiurus cinereus	Hoary Bat		U	U	U	U	
Pipistrellus hesperus	**Western Pipistrelle**		U	U	U	U	
Eptesicus fuscus	**Big Brown Bat**		U	U	U	U	
Euderma maculatum	Spotted Bat		Ca	Ca	Ca	R	
Corynorhinus townsendii pallescens	Pale Big-eared Bat		R	R	R	U	
Antrozous pallidus	**Pallid Bat**		U	U	U	C	
MOLOSSIDAE	MOLOSSID BATS						
Tadarida brasiliensis	**Brazilian Free-tailed Bat**		C	C	C	C	U

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MAMMALS							
Eumops perotis californicus	Western Mastiff-bat		R	R	R	R	
LEPORIDAE	HARES and RABBITS						
Sylvilagus audubonii	**Desert Cottontail**		U	C	C	C	U
Sylvilagus bachmani	Brush Rabbit		C		U		
Lepus californicus bennettii	San Diego Black-tailed Jackrabbit		U	C	C	C	R
SCIURIDAE	SQUIRRELS and CHIPMUNKS						
Tamias merriami	Merriam's Chipmunk				U		
Spermophilus beecheyi	**California Ground Squirrel**			U	C	A	C
Sciurus griseus	Western Gray Squirrel		U				
GEOMYIDAE	POCKET GOPHERS						
Thomomys bottae	**Botta's Pocket Gopher**		A	C	C	A	C
HETEROMYIDAE	KANGAROO RATS & POCKET MICE						
Perognathus longimembris brevinasus	Los Angeles Pocket Mouse				R	R	
Chaetodipus californicus	**California Pocket Mouse**		R		C		
Dipodomys agilis	**Pacific Kangaroo Rat**				U		
MURIDAE	MICE, RATS, and VOLES						
Reithrodontomys megalotis	**Western Harvest Mouse**		U		U	C	R
Peromyscus boylii	Brush Mouse		C		U		
Peromyscus californicus	**California Mouse**		C		U		

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MAMMALS							
Peromyscus maniculatus	**Deer Mouse**		U	U	C	U	R
Onychomys torridus	Grasshopper Mouse				R	R	
Neotoma fuscipes	**Dusky-footed Woodrat**		C		U	R	
Neotoma lepida intermedia	**San Diego Desert Woodrat**				C		
*Rattus rattus**	Black Rat						C
*Mus musculus**	House Mouse					U	C
Microtus californicus	**California Vole**	U	C	U	U	A	R
CANIDAE	CANIDS						
Canis latrans	**Coyote**		C	C	C	C	U
*Vulpes vulpes**	Red Fox		U	U	U	U	U
Urocyon cinereoargenteus	**Gray Fox**		R	R	C	U	
PROCYONIDAE	PROCYONIDS						
Procyon lotor	**Raccoon**	C	C	C	U	U	U
MUSTELIDAE	MUSTELIDS						
Mustela frenata	Long-tailed Weasel		U	R	R	C	
Taxidea taxus	American Badger				R	U	
Spilogale gracilis	Western Spotted Skunk				U	U	
Mephitis mephitis	**Striped Skunk**		C	U	U	C	U
FELIDAE	CATS						

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MAMMALS							
Felis concolor	Mountain Lion		Ca	Ca	Ca		Ca
Lynx rufus	**Bobcat**		U	U	U	U	
CERVIDAE	CERVIDS						
Odocoileus hemionus	**Mule Deer**		C	U	C	C	U

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Plant Matrix

PLANT SPECIES OCCURRING OR POTENTIALLY OCCURRING ON OR ADJACENT TO NEWHALL RANCH

LYCOPODIAE

SELAGINELLACEAE - SPIKE-MOSS FAMILY

Selaginella bigelovii - Bigelow's spike-moss

EQUISETAE

EQUISETACEAE - HORSETAIL FAMILY

Equisetum hyemale – common scouring-rush
Equisetum laevigatum - smooth scouring-rush
Equisetum telmateia - giant horsetail

FILACEAE

AZOLLACEAE - MOSQUITO FERN FAMILY

Azolla c.f. filiculoides - duckweed fern

DENNSTAEDTIACEAE - BRAKEN FAMILY

Adiantum jordani - California maiden-hair
Pellaea andromedifolia - coffee fern
Pellaea mucronata var. *mucronata* - bird's-foot fern
Pentagramma triangularis - goldenback fern

POLYPODIACEAE - POLYPODY FAMILY

Polypodium californicum - California polypody

CONIFERAE

CUPRESSACEAE - CYPRESS FAMILY

* *Cedrus deodara* - Deodar cedar
Juniperus californica - California juniper

PINACEAE - PINE FAMILY

* *Pinus halepensis* - Aleppo pine
* *Pinus pinea* – stone pine

ANGIOSPERMAE (DICOTYLEDONES)

AIZOACEAE - FIG-MARIGOLD FAMILY

* *Aptenia cordifolia* - baby sun-rose
* *Carpobrotus* sp. - sea-fig

AMARANTHACEAE - AMARANTH FAMILY

* *Amaranthus albus* - tumbleweed
Amaranthus blitoides - prostrate amaranth
* *Amaranthus hybridus* - amaranth
Amaranthus palmeri – Palmer's amaranth
Amaranthus powellii – Powell's amaranth
* *Amaranthus retroflexus* - rough pigweed

ANACARDIACEAE - SUMAC FAMILY

Malosma laurina - laurel sumac
Rhus ovata - sugar-bush
Rhus trilobata - squaw bush
* *Schinus molle* - Peruvian pepper-tree
Toxicodendron diversilobum - poison-oak

APIACEAE - CARROT FAMILY

* *Anethum graveolens* - dill
Apiastrum angustifolium - wild celery
* *Apium graveolens* - celery
Berula erecta - cutleaf water-parsnip
Bowlesia incana – American Bowlesia
* *Conium maculatum* – poison hemlock
* *Coriandrum sativum* - cilantro
* *Daucus carota* – Queen Anne's lace
Daucus pusillus – rattlesnake weed
Lomatium utriculatum - common lomatium
Sanicula bipinnata – poison sanicle

APOCYNACEAE - DOGBANE FAMILY

Apocynum cannabinum - Indian hemp
* *Vinca major* - periwinkle

ASCLEPIADACEAE - MILKWEED FAMILY

Asclepias californica – California milkweed
Asclepias fascicularis - narrow-leaf milkweed

ASTERACEAE - SUNFLOWER FAMILY

Achillea millefolium – yarrow
Achyrachaena mollis – blow-wives
Acourtia microcephala – sacapellote
Agoseris grandiflora – large-flowered agoseris
Ambrosia acanthicarpa - annual burweed
Ambrosia confertifolia - weak-leaved burweed
Ambrosia psilostachya - western ragweed
Artemisia californica - coastal sagebrush
Artemisia douglasiana - California mugwort
Artemisia dracunculus - tarragon
Artemisia tridentata - Great Basin sagebrush
Baccharis douglasii - marsh baccharis
Baccharis emoryi – Emory's baccharis
Baccharis pilularis - coyote brush
Baccharis salicifolia - mule fat
Baccharis sarothroides - chaparral broom
Brickellia californica - California brickellbush
Brickellia nevinii - Nevin's brickellbush
* *Carduus pycnocephalus* - Italian thistle
* *Centaurea melitensis* - star thistle
Chaenactis glabriuscula - yellow pincushion
* *Chrysothamnus nauseosus* - rubber rabbitbrush
Cirsium occidentale var. *californicum*- California thistle
Cirsium occidentale var. *occidentale*- cobwebby thistle
* *Cirsium vulgare* - bull thistle
* *Cnicus benedictus* - blessed thistle
Conyza canadensis - horseweed
Conyza coulteri - Coulter's conyza
Coreopsis bigelovii – Bigelow's coreopsis
* *Coreopsis tinctoria* – calliopsis
Corethrogyne filaginifolia - virgate cudweed aster
* *Cotula coronopifolia* - African brass-buttons
Encelia actoni - Acton's encelia
Encelia californica - California bush sunflower
Encelia farinosa - brittlebush, incensio
Ericameria palmeri var. *pachylepis* - goldenbush
Ericameria pinifolia - pine-bush

Erigeron foliosus - leafy daisy
Eriophyllum confertiflorum - long-stem golden yarrow
Euthamia occidentalis - western goldenrod
Filago californica - California fluffweed
* *Filago gallica* - narrow-leaf filago
* *Gazania linearis* - gazania
Gnaphalium bicolor - bicolor cudweed
Gnaphalium californicum - California everlasting
Gnaphalium canescens ssp. *microcephalum* - white everlasting
Gnaphalium leucocephalum – Sonora everlasting
Gnaphalium luteo-album - white cudweed
Gnaphalium sp. *nova* - everlasting
Gnaphalium palustre - lowland cudweed
Hazardia squarrosa ssp. *grindelioides* - saw-toothed goldenbush
Helianthus annuus - common sunflower
Helianthus nuttallii c.f. ssp. *parishii* - Los Angeles sunflower
Hemizonia fasciculata - fascicled tarweed
Hemizonia kelloggii – Kellogg's tarweed
Heterotheca grandiflora - telegraph weed
Heterotheca sessiliflora - golden aster
Isocoma menziesii - goldenbush
Iva axillaris - poverty weed
* *Lactuca saligna* – willowleaf lettuce
* *Lactuca serriola* - prickly lettuce
Lagophylla ramosissima – common hareleaf
Lasthenia californica - coast goldfields
Lepidospartum squamatum - scale-broom
Lessingia filaginifolia – California aster
Lessingia glandulifera – lessingia
Malacothrix saxatilis - cliff malacothrix
* *Matricaria matricarioides* - pineapple weed
Micropus californicus - slender cottonweed
Pluchea odorata - marsh-fleabane
Pluchea sericea - arrow weed
* *Pulicaria paludosa* - Spanish sunflower
Rafinesquia californica - California chicory
Senecio californicus – California butterweed
Senecio flaccidus var. *douglasii* - butterweed
* *Senecio vulgaris* - common groundsel
Silybum marianum - milk thistle

* *Sonchus asper* - prickly sow-thistle
* *Sonchus oleraceus* - common sow-thistle
Stebbinoseris heterocarpa [*Microseris heterocarpa*] – brown puffs
Stephanomeria exigua - small wreathplant
Stephanomeria pauciflora - wire-lettuce
Stephanomeria virgata - twiggy wreathplant
Stylocline gnaphaloides - everlasting nest-straw
Uropappus lindleyi [*Microseris lindleyi*] – silver puffs
Wyethia ovata - mule ears
Xanthium spinosum - spiny cocklebur
Xanthium strumarium – cocklebur

BETULACEAE – BIRCH FAMILY

Alnus rhombifolia – white alder

BORAGINACEAE - BORAGE FAMILY

Amsinckia menziesii var. *intermedia* - yellow fiddleneck
Amsinckia menziesii var. *menziesii* - yellow fiddleneck
Amsinckia tessellata – devil's lettuce
Cryptantha sp. - forget-me-not
Cryptantha intermedia - common forget-me-not
Cryptantha micrantha – redroot cryptantha
Cryptantha microstachys – tejon cryptantha
Cryptantha muricata – prickly cryptantha
Heliotropium curassavicum - wild heliotrope
Pectocarya linearis - slender pectocarya
Pectocarya penincillata - pectocarya
Pectocarya setosa - pectocarya
Plagiobothrys arizonicus - popcorn flower
Plagiobothrys canescens - rusty popcorn flower
Plagiobothrys collinus - California popcorn flower
Plagiobothrys fulvus - *common popcorn flower*

BRASSICACEAE - MUSTARD FAMILY

Athysanus pusillus – dwarf athysanus
* *Brassica nigra* - black mustard
* *Capsella bursa-pastoris* - shepard's purse
Caulanthus lasiophyllus – California mustard
Descurainia pinnata ssp. *halictorum* – tansy mustard
* *Hirschfeldia incana* - short-podded mustard

Lepidium lasiocarpum - peppergrass
* *Lepidium latifolium* - peppergrass
Lepidium virginicum - wild peppergrass
* *Lobularia maritime* – sweet-alyssum
* *Raphanus sativus* - wild radish
* *Rorippa nasturtium-aquaticum* - water cress
* *Sisymbrium altissimum* - tumble mustard
* *Sisymbrium irio* - London rocket
* *Sisymbrium officinale* - hedge mustard
* *Sisymbrium orientale* - Oriental mustard
Stanleya pinnata var. *pinnata*– Prince's plume
Thysanocarpus curvipes – fringepod
Tropidocarpum gracile – slender dobie-pod

CACTACEAE - CACTUS FAMILY

* *Cereus peruvianus* - Peruvian apple cactus
Opuntia basilaris var. *ramosa* – beaver-tail cactus
Opuntia californica var. *parkeri* - cane cholla
Opuntia littoralis - coastal prickly-pear
Opuntia X vaseyi - prickly-pear cactus
* *Trichocereus spachianus* - golden torch cactus

CAPPARACEAE - CAPER FAMILY

Isomeris arborea - bladderpod

CAPRIFOLIACEAE - HONEYSUCKLE FAMILY

Lonicera subspicata - southern honeysuckle
Sambucus mexicana - Mexican elderberry
Symphoricarpos sp. - snowberry
Symphoricarpos c.f. mollis - spreading snowberry

CARYOPHYLLACEAE - PINK FAMILY

* *Cerastium glomeratum* - sticky mouse-ear
* *Herniaria cinerea* - gray herniaria
Loeflingia squarrosa - no common name
* *Silene gallica* - common catchfly
Spergularia sp. - stickwort, starwort
* *Spergularia rubra* - sand-spurrey
* *Spergularia c.f. villosa* - villous sand-spurrey
* *Stellaria media* - common chickweed

CASURINACEAE – SHEET OAK FAMILY

* *Casuarina cunninghamiana* - Austrailian Pine

CHENOPODIACEAE - GOOSEFOOT FAMILY

Atriplex canescens - four-winged saltbush
* *Atriplex heterosperma* - weedy orache
Atriplex lentiformis- big saltbush, quail brush
* *Atriplex rosea* - tumbling oracle
* *Atriplex semibaccata* - Australian saltbush
Atriplex serenana var. *serenana* - bractscale
Atriplex suberecta - Australian saltbush
Atriplex triangularis – spearscale
* *Bassia hyssopifolia* - five-hooked bassia
* *Beta vulgaris* – garden beet
* *Chenopodium album* - lamb's-quarters
* *Chenopodium ambrosioides* - Mexican tea
Chenopodium berlandieri - pitseed goosefoot
* *Chenopodium botrys* - goosefoot
Chenopodium californicum - California goosefoot
* *Chenopodium murale* - nettle-leaved goosefoot
Chenopodium rubrum - red goosefoot
* *Salsola tragus* - Russian-thistle
* *Spinacia oleracea* – spinach

CONVOLVULACEAE - MORNING-GLORY FAMILY

Calystegia macrostegia ssp. *cyclostegia* – morning-glory
Calystegia peirsonii - Peirson's morning-glory
* Convolvulus arvensis - bindweed

CRASSULACEAE - STONECROP FAMILY

Crassula connata - dwarf stonecrop
Dudleya cymosa - unidentified dudleya
Dudleya lanceolata - lanceleaf dudleya

CUCURBITACEAE - GOURD FAMILY

Cucurbita foetidissima - coyote-melon, calabazilla
Marah macrocarpus - wild cucumber

CUSCUTACEAE - DODDER FAMILY

Cuscuta californica - California dodder
Cuscuta pentagona – five-angled dodder
Cuscuta subinclusa – canyon dodder

DATISCACEAE - DASTICA FAMILY

Dastica glomerata - Durango root

ERICACEAE - HEATH FAMILY

Arctostaphylos glauca - bigberry manzanita

EUPHORBIACEAE - SPURGE FAMILY

Chamaesyce albomarginata - rattlesnake spurge
* *Chamaesyce maculata* – spotted spurge
Chamaesyce polycarpa - small-seed sand mat
Chamaesyce serpyllifolia – thyme-leafed spurge
Croton californicus - California croton
Eremocarpus setigerus - doveweed

Euphorbia spathulata - reticulate-seed spurge
* *Ricinus communis* - castor-bean
Stillingia linearifolia - linear-leaved stillingia

FABACEAE - PEA FAMILY

* *Acacia baileyana* - golden wattle
Astragalus didymocarpus – white dwarf locoweed
Astragalus gambelianus – Gambel's locoweed
Astragalus trichopodus - Santa Barbara locoweed
Glycyrrhiza lepidota - wild licorice
Lathyrus laetiflorus - wild sweet pea
Lathyrus vestitus - wild pea
Lotus corniculatus - bird's-foot lotus
Lotus hamatus – grab lotus
Lotus humistratus - lotus
Lotus purshianus - Spanish-clover
Lotus salsuginosus - coastal lotus
Lotus scoparius var. *scoparius* - deerweed
Lotus strigosus - strigose deerweed
Lupinus bicolor - Lindley's annual lupine
Lupinus excubitus – Mountain Springs bush lupine
Lupinus excubitus var. *hallii* - grape soda lupine
Lupinus hirsutissimus - stinging lupine
Lupinus microcarpus var. *densiflorus* - chick lupine
Lupinus microcarpus var. *microcarpus* - chick lupine
Lupinus sparsiflorus - Coulter's lupine
Lupinus succulentis - arroyo lupine
Lupinus truncatus - collar lupine
* *Medicago polymorpha* - California burclover
* *Medicago polymorpha* var. *brevispina* - short-spined California burclover
* *Medicago sativa* - alfalfa
* *Melilotus alba* - white sweet-clover
* *Melilotus indica* - yellow sweet-clover
* *Robinia pseudoacacia* - black locust
Trifolium sp. – clover
Trifolium albopurpureum – rancheria clover
Trifolium ciliolatum- tree clover
* *Trifolium fragiferum* - strawberry clover

Trifolium gracilentum – pin-point clover
* *Trifolium hirtum* - rose clover
Trifolium microcephalum – maiden clover
* *Trifolium repens* - white clover
Trifolium willdenovii – valley clover
Vicia hassei – Hesse's vetch
* *Vicia villosa* ssp. *villosa* – winter vetch

FAGACEAE - BEECH FAMILY

Quercus agrifolia - coast live oak
Quercus berberidifolia - scrub oak
Quercus douglasii - blue oak
Quercus lobata - valley oak

GERANIACEAE - GERANIUM FAMILY

* *Erodium brachycarpum* – shortfruit stork's bill
* *Erodium botrys* – long-beaked filaree
* *Erodium cicutarium* - red-stemmed filaree
* *Erodium moschatum* – white-stemmed filaree

GROSSULARIACEAE - CURRANT FAMILY

Ribes aureum - golden currant
Ribes malvaceum - chaparral currant

HYDROPHYLLACEAE - WATERLEAF FAMILY

Emmenanthe penduliflora - whispering bells
Eriodictyon crassifolium var. *nigrescens* - yerba santa
Eucrypta chrysanthemifolia - common eucrypta
Nemophila menziesii – baby blue-eyes
Nemophila parviflora var. *quercifolia* – oak-leaved nemophila
Phacelia cicutaria - caterpillar phacelia
Phacelia cicutaria var. *hispida* – caterpillar phacelia
Phacelia distans - blue fiddleneck
Phacelia imbricata ssp. *imbricata* - imbricate phacelia
Phacelia minor - wild canterbury-bell
Phacelia ramosissima - shrubby phacelia

JUGLANDACEAE - WALNUT FAMILY

Juglans californica - southern California black walnut

LAMIACEAE - MINT FAMILY

* *Marrubium vulgare* - horehound
Mentha citrata – orange mint
Salvia apiana - white sage
Salvia columbariae - chia
Salvia leucophylla - purple sage
Salvia mellifera - black sage
Stachys ajugoides – bugle hedge-nettle
Stachys ajugoides var. *rigida* - rigid hedge-nettle
Stachys albens - white hedge-nettle
Trichostema lanceolatum - vinegar weed

LAURACEAE - LAUREL FAMILY

Umbellularia californica - California laurel

LOASACEAE - STICK-LEAF FAMILY

Mentzelia sp. – blazing star
Mentzelia laevicaulis - blazing star
Mentzelia micrantha - small-flowered stick-leaf

LYTHRACEAE - LOOSESTRIFE FAMILY

Lythrum californicum - California loosestrife

MALVACEAE - MALLOW FAMILY

Malacothamnus fasciculatus ssp. *laxiflorus* – chaparral bush mallow
Malacothamnus fremontii – bush mallow
Malacothamnus marrubioides - bush mallow
* *Malva neglecta* - common mallow
* *Malva parviflora* - cheeseweed

MELIACEAE - MAHOGANY FAMILY

* *Melia azedarach* - China berry

MORACEAE - FIG FAMILY

* *Ficus carica* – edible fig

MYRTACEAE - MYRTLE FAMILY

* *Eucalyptus* sp. - eucalyptus
* *Eucalyptus camaldulensis* – red gum
* *Eucalyptus globulus* - blue gum
* *Eucalyptus leucoxylon* - white ironbark
* *Eucalyptus polyanthemos* – silver dollar gum
* *Eucalyptus sideroxylon* - red ironbark

NYCTAGINACEAE - FOUR O'CLOCK FAMILY

Mirabilis laevis var. *crassifolia* [*M. californica*]- California wishbone-bush

OLEACEAE - OLIVE FAMILY

Fraxinus dipetala - California ash
* *Fraxinus uhdei* – tropical ash
Fraxinus velutina – velvet ash
* *Ligustrum lucidum* - glossy privet
* *Olea europaea* - mission olive

ONAGRACEAE - EVENING-PRIMROSE FAMILY

Camissonia bistorta – southern sun cup
Camissonia boothii - sun cup
Camissonia boothii ssp. *decorticans* – shredding evening primrose
Camissonia californica - mustard primrose
Camissonia hirtella - sun cup
Camissonia strigulosa - sun cup
Clarkia purpurea - winecup clarkia
Clarkia speciosa - clarkia
Clarkia unguiculata - elegant clarkia
Epilobium brachycarpum - willow herb
Epilobium canum ssp. *canum* - California fuchsia
Epilobium ciliatum - California cottonweed
Ludwigia peploides - yellow waterweed

Ludwigia repens - water primrose
Oenothera elata - evening primrose
* *Oenothera laciniata* - evening primrose

OROBANCHACEAE - BROOM-RAPE FAMILY
Orobanche parishii ssp. *parishii* - broom-rape

PAEONIACEAE - PEONY FAMILY
Paeonia californica - California peony

PAPAVERACEAE - POPPY FAMILY
Argemone corymbosa – prickly poppy
Eschscholzia californica - California poppy
Platystemon californicus – California creamcups

PLANTAGINACEAE - PLANTAIN FAMILY
Plantago erecta - dot-seed plantain
* *Plantago indica* - plantain
* *Plantago lanceolata* - English plantain
* *Plantago major* - common plantain

PLATANACEAE - SYCAMORE FAMILY
Platanus racemosa - western sycamore

POLEMONIACEAE - PHLOX FAMILY
Allophyllum divaricatum - purple false gillyflower
Allophyllum glutinosum – sticky false gillyflower
Eriastrum densifolium – woollystar
Eriastrum densifolium ssp. *elongatum* - elongate eriastrum
Eriastrum densifolium ssp. *mohavense* - Mohave eriastrum
Eriastrum sapphirinum - sapphire eriastrum
Gilia angelensis - angel gilia
Gilia capitata – globe gilia
Leptodactylon californicum - prickly phlox
Linanthus androsaceus – common linanthus

Linanthus pygmaeus - linanthus
Navarretia atractyloides - holly-leaf skunkweed
Phlox gracilis – slender phlox

POLYGONACEAE - BUCKWHEAT FAMILY

Chorizanthe parryi var. *fernandina* - San Fernando Valley spineflower
Chorizanthe staticoides - turkish rugging
Eriogonum angulosum - angle-stem buckwheat
Eriogonum baileyi – Bailey's buckwheat
Eriogonum brachyanthum – short-flowered buckwheat
Eriogonum elongatum - long-stemmed buckwheat
Eriogonum fasciculatum ssp. *foliolosum* - California buckwheat
Eriogonum fasciculatum ssp. *polifolium* - California buckwheat
Eriogonum gracile var. gracile - slender woolly buckwheat
Eriogonum gracillimum – rose and white buckwheat
Eriogonum maculatum – spotted buckwheat
Eriogonum c.f. viridescens - buckwheat
Lastarriaea coriacea - lastarriaea
* *Polygonum arenastrum* - common knotweed
* *Polygonum argyrocoleon* - smartweed
Polygonum lapathifolium - willow weed
Polygonum punctatum - perennial smartweed
Pterostegia drymarioides - pterostegia
* *Rumex conglomeratus* - whorled dock
* *Rumex crispus* - curly dock
Rumex hymenosepalus - wild rhubarb
Rumex maritimus – golden dock
Rumex obtusifolius - dock
Rumex salicifolius - willow dock

PORTULACACEAE - PURSLANE FAMILY

Calandrinia ciliata - redmaids
Claytonia parviflora - small-leaved montia
Claytonia perfoliata – miner's lettuce
* *Portulaca oleracea* - common purslane

RANUNUCULACEAE - BUTTERCUP FAMILY

Clematis ligusticifolia - yerba de chiva
Delphinium parryi ssp. *parryi* – Parry's larkspur

RHAMNACEAE - BUCKTHORN FAMILY

Ceanothus crassifolius - hoary-leaved ceanothus
Ceanothus tomentosus - woolyleaf ceanothus
Rhamnus crocea - redberry
Rhamnus ilicifolia - holly-leaf redberry

ROSACEAE - ROSE FAMILY

Adenostoma fasciculatum – chamise
Cercocarpus betuloides – mountain-mahogany
Cercocarpus betuloides var. *betuloides* - birch-leaf mountain-mahogany
Cercocarpus betuloides var. *blancheae* - island mountain-mahogany
Heteromeles arbutifolia - toyon
Prunus ilicifolia - holly-leaf cherry
Rosa californica - California rose
Rubus ursinus - California blackberry
* *Sangwisorba minor* – garden burnet

RUBIACEAE - MADDER FAMILY

Galium angustifolium - narrow-leaved bedstraw
* *Galium aparine* - goose grass
Galium nuttallii ssp. *nuttallii* – San Diego bedstraw
Galium porrigens - climbing bedstraw

SALICACEAE - WILLOW FAMILY

Populus fremontii - Fremont's cottonwood
Salix exigua - narrow-leaved willow
Salix gooddingii - black willow
Salix laevigata - red willow
Salix lasiolepis - arroyo willow
Salix lucida ssp. *lasiandra* - golden willow

SAURURACEAE - LIZARD'S-TAIL FAMILY

Anemopsis californica - yerba mansa

SCROPHULARIACEAE - FIGWORT FAMILY

Antirrhinum coulterianum - white snapdragon
Antirrhinum multiflorum – withered snapdragon
Castilleja affinis - coast paintbrush
Castilleja densiflora - dense-flowered owl's-clover
Castilleja exserta - common owl's-clover
Castilleja foliolosa - woolly Indian paintbrush
Collinsia heterophylla – purple Chinese houses
Cordylanthus rigidus – bird's beak
Keckiella cordifolia - heart-leaf penstemon
Linaria canadensis - toadflax
Mimulus aurantiacus - bush monkeyflower
Mimulus aurantiacus var. *pubescens* - bush monkeyflower
Mimulus guttatus - seep monkeyflower
Mimulus pilosus – downy monkeyflower
Penstemon centranthifolius - scarlet bugler
* *Verbascum thapsus* - woolly mullein
* *Verbascum virgatum* - wand mullein
* *Veronica anagallis-aquatica* - water speedwell

SIMAROUBACEAE - QUASSIA FAMILY

* *Ailanthus altissima* - tree of heaven

SOLANACEAE - NIGHTSHADE FAMILY

Datura wrightii - western jimsonweed
* *Nicotiana glauca* - tree tobacco
Nicotiana quadrivalvis – Indian tobacco
* *Solanum americanum* - small-flowered nightshade
Solanum douglasii - white nightshade
* *Solanum eleagnifolium* - silver leaf horse-nettle
* *Solanum sarrachoides* - hairy nightshade
Solanum xanti - chaparral nightshade

TAMARICACEAE - TAMARISK FAMILY

* *Tamarix* sp. – tamarisk

* *Tamarix ramoissima* - tamarisk

ULMACEAE - ELM FAMILY

* *Ulmus pumila* - Siberian elm

URTICACEAE - NETTLE FAMILY

Hesperocnide tenella – western nettle

Parietaria hespera – western pellitory

Urtica dioica - giant creek nettle

* *Urtica urens* - dwarf nettle

VERBENACEAE - VERVAIN FAMILY

Verbena lasiostachys - western verbena

VIOLACEAE – VIOLET FAMILY

Viola pedunculata – Johnny jump-ups

VISCACEAE - MISTLETOE FAMILY

Phoradendron macrophyllum - big leaf mistletoe

Phoradendron villosum - oak mistletoe

VITACEAE - GRAPE FAMILY

Parthenocissus vitacea - woodbine, Virginia creeper

Vitis girdiana - desert wild grape

ZYGOPHYLLACEAE - CALTROP FAMILY

* *Tribulus terrestris* - puncture vine

ANGIOSPERMAE (MONOCOTYLEDONES)

ARECACEAE - PALM FAMILY

* *Washingtonia robusta* - Mexican fan palm

CYPERACEAE - SEDGE FAMILY

Carex alma – sturdy sedge

Carex praegracilis – clustered field sedge

Carex sp. - sedge

Cyperus eragrostis - tall cyperus

Cyperus esculentus - yellow nut-grass
* *Cyperus involucratus* - nutsedge
Cyperus odoratus - coarse cyperus
Eleocharis montevidensis - slender creeping spike-rush
Eleocharis parishii – Parish's spikerush
Eleocharis rostellata – beaked spikerush
Scirpus acutus - hard-stemmed bulrush
Scirpus americanus - winged three-square
Scirpus maritimus – alkali bulrush
Scirpus microcarpus - bulrush
Scirpus robustus - Pacific coast bulrush

JUNCACEAE - RUSH FAMILY

Juncus sp. - rush
Juncus acutus ssp. *leopoldii* – southwestern spiny rush
Juncus balticus - wire rush
Juncus bufonius - toad rush
Juncus longistylis – rush
Juncus mexicanus – Mexican rush
Juncus rugulosus - wrinkled rush
Juncus textilis - Indian rush
Juncus torreyi – rush
Juncus triformis - Yosemite dwarf rush
Juncus xiphioides - iris-leaved rush

LEMNACEAE - DUCKWEED FAMILY

Lemna miniscula - duckweed
Lemna valdiviana - duckweed

LILIACEAE - LILY FAMILY

* *Allium cepa* - onion
Allium porrum - onion
* *Amaryllis bella-donna* - naked lady
* *Asparagus officinalis* – asparagus
Bloomeria crocea – common goldenstar
Brodiaea terrestris ssp. *kernensis* – dwarf brodiaea
Calochortus clavatus var. *gracilis*- slender mariposa lily
Calochortus venustus - mariposa lily

Dichelostemma capitatum - blue dicks
Muilla maritima - common muilla
Yucca whipplei -- Our Lord's candle

POACEAE - GRASS FAMILY

Achnatherum coronatum - giant needlegrass
* *Agrostis* sp. - bentgrass
* *Agrostis viridis* - water bent
* *Arundo donax* - giant reed
* *Avena barbata* - slender oat
* *Avena fatua* - wild oat
Avena sativa – cultivated oat
Bromus catharticus - California brome
Bromus catharticus var. *catharticus* - California brome
* *Bromus diandrus* - ripgut grass
* *Bromus hordeaceus* - soft chess
* *Bromus madritensis* ssp. *rubens* - foxtail chess
* *Bromus sterilis* – sterile brome
* *Bromus tectorum* - cheat grass
* *Cortaderia jubata* - pampas grass
* *Crypsis schoenoides* - prickle grass
* *Cynodon dactylon* - Bermuda grass
* *Digitaria sanguinalis* - hairy crabgrass
Distichlis spicata - salt grass
* *Echinochloa colonum* - jungle-rice
Echinochloa crus-galli - barnyard grass
* *Eleusine indica* – goose grass
Elymus glaucus - western wild-rye
Elymus multisetus – big squirreltail
Eragrostis mexicana - lovegrass
* *Festuca arundinacea* - tall fescue
* *Hordeum marinum* - Mediterranean barley
* *Hordeum murinum* - glaucous foxtail barley
* *Lamarckia aurea* - goldentop
* *Leptochloa uninerva* - Mexican sprangletop
Leymus condensatus - giant ryegrass
Leymus triticoides - beardless wild rye
Leptichloa uninervia - Mexican sprangletop
* *Lolium multiflorum* – Italian ryegrass
* *Lolium perenne* - perennial ryegrass

Melica imperfecta - California melic
Muhlenbergia asperifolia – scratch-grass
Muhlenbergia microsperma - littleseed muhly
Nassella cernua – nodding needlegrass
Nassella lepida – foothill needlegrass
Nassella pulchra – purple needlegrass
Panicum capillare – western witchgrass
* *Panicum miliaceum* – broom corn millet
* *Parapholis incurve* – sickle grass
Paspalum distichum – knotgrass
* *Phalaris aquatica* – Harding grass
* *Phalaris minor* - Mediterranean canary grass
* *Piptatherum miliaceum* - smilo grass
* *Poa annua* - annual bluegrass
Poa secunda - Malpais bluegrass
* *Polypogon interruptus* - ditch beard grass
* *Polypogon monspeliensis* - rabbit's-foot grass
Schismus barbatus – abumashi
Sorghum bicolor – sorghum
Sorghum halepense – Johnsongrass
Sporobolus airoides – alkali scation
* *Triticum aestivum* – cultivated wheat
Vulpia microstachys - fescue
* *Vulpia myuros* - rattail fescue
Vulpia octoflora - six-weeks fescue

POTAMOGETONACEAE - PONDWEED FAMILY

Potamogeton foliosus - leafy pondweed

TYPHACEAE - CATTAIL FAMILY

Typha domingensis - slender cattail
Typha latifolia - broad-leaved cattail

* signifies introduced (non-native) species

Minutes of the SEATAC Meeting on August 1, 2005

MINUTES OF THE SIGNIFICANT ECOLOGICAL AREA TECHNICAL ADVISORY COMMITTEE (SEATAC) MEETING OF AUGUST 1, 2005

PERSONS IN ATTENDANCE

SEATAC MEMBERS

Jonathon Baskin, PhD
Janet Fahey, PhD
Ty Garrison

REGIONAL PLANNING STAFF

Joe Decruyenaere
Daniel Fierros
Daryl Koutnik
Susan Tae

Project CUP 00-196/VTTM 53108 Representatives

Glenn Adamick	(661) 255-4003
Sherri Miller	(760) 479-4244
Josh Phillips	(805) 437-1900
Tom Worthington	(805) 437-1900
Steve Zimmer	(661) 255-4029

MINUTES
August 1, 2005

AGENDA ITEMS

1. Garrison moved and Fahey seconded to approve the July 11, 2005 SEATAC meeting minutes as amended.

NEW BUSINESS

2. **Project CUP 00-196/VTTM 53108** – See Attachment Item 2.

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NOTE: SEATAC MEETINGS ARE INFORMAL WORKING SESSIONS. MEMBERS ARE APPOINTED VOLUNTEERS IN AN ADVISORY CAPACITY. MINUTES ARE PREPARED BY PLANNING STAFF PRIMARILY FROM NOTES. SESSIONS ARE ALSO TAPE RECORDED BUT THE TAPES ARE PRIMARILY FOR BACK-UP USE BY STAFF. VISITORS ARE ADVISED TO TAKE PROPER NOTES AND/OR RECORD THE SESSION. ISSUES NOT DISCUSSED BY SEATAC DO NOT IMPLY TACIT APPROVAL. NEW OR CLARIFIED INFORMATION PRESENTED IN SUBSEQUENT SUBMITTALS MAY RAISE NEW ISSUES AND MAY REQUIRE FURTHER ANALYSIS. MINUTES ARE GENERALLY APPROVED AT THE NEXT SEATAC MEETING. DRAFT MINUTES MAY BE REQUESTED BUT ARE SUBJECT TO REVISION.

SEATAC REPORT AND COMMENTS

PROJECT CUP 00-196/VTTM 53108

SEATAC MEETING DATE AUGUST 1, 2005, ITEM 2

Biota Report Prepared by Impact Sciences, Incorporated, Dated July 2005

Initial SEATAC Meeting for Biota Report

PROPOSED PROJECT CUP 00-196/VTTM 53108 – An application to subdivide the subject property into 418 lots, to include a maximum of 1,444 residential units, a maximum of 1,353,000 square feet of non-residential mixed-used space, an elementary school, a community park, three private recreational facilities, open space and river trail uses. Off-site improvements include buried bank stabilization and the Long Canyon Road Bridge to be developed in conjunction with the tract development. Two borrow sites (one located south of the Santa Clara River and the other north of State Route 126 of unspecified acreage) and possible haul routes will be located outside of the tract map boundary but within the Newhall Ranch Specific Plan area. The domestic water system will be connected to existing facilities within the Valencia Commerce Center to the northeast). The proposed project site is partially within the Santa Clara River SEA (SEA 23) and is the first phase of the Riverwood Village Planning Area development of the Newhall Ranch Specific Plan, located north of the Santa Clara River, west of Interstate 5 and south of State Route 126, between the intersection of Chiquito Canyon Road and Castaic Creek.

SEA DESCRIPTION: Soledad Canyon and the Santa Clara River (**SEA No. 23**) possess several populations of the unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*). This species was formerly found in the Los Angeles, San Gabriel, and Santa Ana Rivers, but is now restricted to the Santa Clara River and San Francisquito Canyon. For these reasons and due to threats to its habitat, the fish species has been placed on the state and federal endangered species lists. In the Santa Clara River, the unarmored threespine stickleback is limited to permanent streams and pools from the mouth of San Francisquito Canyon west to the Ventura-Los Angeles County line, and from near Lang Station east to Arrastre Canyon.

The reason the unarmored threespine stickleback has been able to survive in the Santa Clara River is that its remaining habitat has been relatively undisturbed. The Santa Clara River is unique in being the only major river draining the San Gabriel Mountains that has not been extensively channelized. The vegetation consists of fresh water marsh, coastal sage scrub, oak woodland, and riparian woodland communities. The broad wash association is unlike that found in steeper mountain canyons, and is increasingly rare in Los Angeles County. The trees serve as habitat for many raptorial bird species. The red-shouldered hawk is restricted to woodland communities, and the species is becoming increasingly uncommon in southern California due to habitat destruction. The National Audubon Society and others have expressed concern for the hawk's welfare.

The primary concern for the survival of the unarmored threespine stickleback is the loss of suitable habitat. The species requires clean, free-flowing, perennial streams and ponds surrounded by native vegetation. Intermittent areas connecting perennial streams are also important during the wet season when surface water is present. The natural vegetation and stream course slow heavy runoff during the rainy season, decrease destruction and siltation of habitat in downstream areas, and provide habitat for stickleback migration between populations.

SEATAC COMMENTS AND RECOMMENDATIONS FOR PROJECT CUP 00-196/VTTM 53108:

1. Review the document for consistent use of terms such as 'project,' 'site,' 'on-site,' 'off-site,' *et cetera*. The descriptions of the scope of the report given on page three and the project area on page 9 are unclear.
2. Clarify the necessity of the various bank-stabilization methodologies presented in Figures 6 and 7.
3. Organize Table 2 systematically; herps and birds are shuffled and a superficial scan of the table may lend the impression that amphibians are not covered; Mitigation Measures must be proposed for cumulative biological impacts.
4. Table 5: the discussion of survey methods for fish suggests that on-site surveys have not been conducted; assume that unarmored three-spine stickleback is present in the Santa Clara River above Piru Creek any time surface water is flowing.
5. Section 6.1.14 and elsewhere, as appropriate: the variety of Great Basin sagebrush present on site is likely to be *Artemisia tridentata* var. *parishii*. Revise the identification accordingly throughout the document. The presence of this taxon is noteworthy and SEATAC recommends mitigation for losses to this taxon.
6. Figure 12: provide polygons for relevant open space areas.
7. Page 53, first paragraph: the discussion of mitigation is inappropriate in this section; avoid indecisive language (e.g. "…often can be partially or largely mitigated…").
8. Figure 13 is very conceptual and lacks practical information; revise the base map to provide a better context for potential movement pathways.
9. Provide a discussion of the trapping methodologies used for rodent surveys.
10. Soil cement shall not be used in the bank stabilization design; ungrouted rip-rap is preferred. Accommodations for streambed braiding and tributary flow must be a part of the drainage plan for the project; this type of complexity helps stickleback escape stochastic hazards.
11. There are many steep canyons within the project area that may support jurisdictional areas not present on the jurisdictional areas map; confirm the completeness of the jurisdictional delineation.
12. Expand section 6.2; discuss habitats used by the various wildlife species.
13. Section 8 – provide references to movement studies for known wildlife movement.
14. Clarify the term 'major drainage' in the Resource Management Plan.
15. Provide information on the release characteristics referred to in the discussion of the County Sanitation District Facilities Plan on pages 126 and 127.
16. Increased base flow in the Santa Clara River must be avoided to maintain dry conditions down stream; reclaimed water may be sequestered during the dry season and released later in the year. Address impacts of potential flow increases in the Santa Clara River.

ACTION TAKEN: Review of the current version of the Biota Report will be continued at a future SEATAC meeting. Prepare a table of impacted vegetation types for review at that meeting.

Further SEATAC review of the project will be required subsequent to completion of the current review. A revised Biota Report addressing the above SEATAC comments and recommendations will be requested

MINUTES OF THE SIGNIFICANT ECOLOGICAL AREA TECHNICAL ADVISORY COMMITTEE (SEATAC) MEETING OF SEPTEMBER 12, 2005

PERSONS IN ATTENDANCE

SEATAC MEMBERS

Ty Garrison
Frank Hovore
Mickey Long
Ruben Ramirez

REGIONAL PLANNING STAFF

Joe Decruyenaere
Richard Guizado
Ron Hoffman
Daryl Koutnik
Julie Lowry

ADDITIONAL ATTENDEES

Steve Nelson
Joseph Platt, PhD

Project CUP 00-196/VTTM 53108 Representatives

Glenn Adamick	(661) 255-4003
Keith Babcock	(916) 652-6300
Sherri Miller	(760) 479-4244
Josh Phillips	(510) 267-0494
Tom Worthington	(805) 437-1900

MINUTES
September 12, 2005

AGENDA ITEMS

1. The Draft Minutes for August 1, 2005 could not be approved due to the absence of a sufficient number of SEATAC members who attended the August meeting. It was agreed that the approval of the minutes would be done via email.

DISCUSSION ITEM

2. The SEA/General Plan Update, including proposed changes to SEA boundaries, the SEA-CUP ordinance and SEATAC procedures.

   SEATAC emphasized that Los Angeles County is the only county in southern California not to have a large-scale habitat conservation program, that, within the life of the General

Plan, areas designated as SEAs may become the final relatively functional habitat areas remaining in the county, which would not be recoverable if fully developed; SEATAC suggested implementing a development fee as part of the SEA process that could be used to buy lands within SEAs, concentrating development on lands outside of SEAs.

3. **Project CUP 00-196/VTTM 53108** – See Attachment Item 3.

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SEATAC REPORT AND COMMENTS

PROJECT CUP 00-196/VTTM 53108

SEATAC MEETING DATE SEPTEMBER 12, 2005, ITEM 3

Biota Report Prepared by Impact Sciences, Incorporated, Dated July 2005

First Continuation from August 1, 2005 of Initial SEATAC review for Biota Report

PROPOSED PROJECT CUP 00-196/VTTM 53108 – An application to subdivide the subject property into 418 lots, to include a maximum of 1,444 residential units, a maximum of 1,353,000 square feet of non-residential mixed-use space, an elementary school, a community park, three private recreational facilities, open space and river trail uses. Off-site improvements include buried bank stabilization and the Long Canyon Road Bridge to be developed in conjunction with the tract development. Two borrow sites, one located south of the Santa Clara River (215 acres) and the other north of State Route 126 (120 acres), and haul routes will be located outside of the tract map boundary but within the Newhall Ranch Specific Plan area. The domestic water system will be connected to existing facilities within the Valencia Commerce Center to the northeast). The proposed project site is partially within the Santa Clara River SEA (SEA 23) and is the first phase of the Riverwood Village Planning Area development of the Newhall Ranch Specific Plan, located north of the Santa Clara River, west of Interstate 5 and south of State Route 126, between the intersection of Chiquito Canyon Road and Castaic Creek.

SEA DESCRIPTION: Soledad Canyon and the Santa Clara River (**SEA No. 23**) possess several populations of the unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*). This species was formerly found in the Los Angeles, San Gabriel, and Santa Ana Rivers, but is now restricted to the Santa Clara River and San Francisquito Canyon. For these reasons and due to threats to its habitat, the fish species has been placed on the state and federal endangered species lists. In the Santa Clara River, the unarmored threespine stickleback is limited to permanent streams and pools from the mouth of San Francisquito Canyon west to the Ventura-Los Angeles County line, and from near Lang Station east to Arrastre Canyon.

The reason the unarmored threespine stickleback has been able to survive in the Santa Clara River is that its remaining habitat has been relatively undisturbed. The Santa Clara River is unique in being the only major river draining the San Gabriel Mountains that has not been extensively channelized. The vegetation consists of fresh water marsh, coastal sage scrub, oak woodland, and riparian woodland communities. The broad wash association is unlike that found in steeper mountain canyons, and is increasingly rare in Los Angeles County. The trees serve as habitat for many raptorial bird species. The red-shouldered hawk is restricted to woodland communities, and the species is becoming increasingly uncommon in southern California due to habitat destruction. The National Audubon Society and others have expressed concern for the hawk's welfare.

The primary concern for the survival of the unarmored threespine stickleback is the loss of suitable habitat. The species requires clean, free-flowing, perennial streams and ponds surrounded by native vegetation. Intermittent areas connecting perennial streams are also important during the wet season when surface water is present. The natural vegetation and stream course slow heavy runoff during the rainy season, decrease destruction and siltation of habitat in downstream areas, and provide habitat for stickleback migration between populations.

SEATAC COMMENTS AND RECOMMENDATIONS FOR PROJECT CUP 00-196/VTTM 53108 (Note: comments for the September 12, 2005 SEATAC meeting begin with Section 10 of the Biota Report):

1. Page 79, second paragraph: include a linkages map, incorporating the corridors discussed in this paragraph.
2. Provide details on the quantity, type and quality of coastal sage scrub to be retained in the High Country SMA. Adequacy of mitigation for losses of habitats within the project site will be based on functional similarity of preserved and impacted habitats.
3. Use of the High Country SMA as a mitigation area must incorporate accounting of impacts and mitigation. SEATAC disagrees with the assumption that the Specific Plan EIR provides adequate mitigation for habitat losses; the Tract Map EIR must address the mitigation required, and if mitigation areas as delineated in the Specific Plan EIR are used, an accounting of "mitigation credits" must be made and kept up to date.
4. Mitigation Measure 4.6-43 is inadequate due to the phrase "may be used;" Mitigation Measures beyond 4.6-80 are not included in the MMP provided with the report.
5. Page 86, first paragraph: vegetation rehabilitation/replacement is unlikely to provide full mitigation for losses of wildlife habitat.
6. Page 87, third and fourth paragraphs: provide more specificity in the discussion of setbacks from riparian resources. Details are needed as to the requirements of species likely to occur on the project site. A minimum buffer of 100 ft. may not be suitable for some species. Provide a reference for the "previous studies" noted in the fourth paragraph.
7. Figure 16: include a grading overlay to provide context.
8. Page 92, third paragraph: include a statement that impacts to 887 individual slender mariposa lilies is likely to be an underestimate.
9. Page 98 and 99: mitigation is needed for losses of general habitat values beyond nesting resources to sensitive birds, and "Bio-2, Wildlife Habitat Loss" will apply to all of the bird species.
10. Page 102: the May 13, 2005 rule concerning the critical habitat designation for arroyo toad is not final; include details of the management of releases from Castaic Lake and possible consequences in the discussion of western spadefoot toad and other sensitive fish and amphibian species.
11. Page 113 – 115: provide details of sampling methodology for water quality monitoring; explain why selenium and mercury are not of concern in the Santa Clara River watershed.
12. Page 116, third paragraph: include a mitigation measure to prohibit irrigation of perimeter landscaping.
13. Page 117, last paragraph: indicate what BMPs will be used to achieve the mitigation for construction and grading impacts.
14. Page 118, second paragraph: provide details as to where least Bell's vireo and arroyo toad occur within Castaic Creek.
15. Page 119 – 128: the depth of discussions is inconsistent among the projects; provide an equivalent level of detail for each.

16. Page 143: Mitigation Measure 4.6-81 does not provide mitigation for any impacts; Mitigation measure 4.6-83 needs further detail: provide information on seasonal restrictions to mitigation activities and methodology on how fish are to be cleared.
17. Page 144: revise Mitigation Measure to state that 1/8-inch mesh will be used, rather than ¼-inch.
18. Page 146: Include language in Mitigation Measure 4.6-91 to require locally indigenous species in the landscaping plan.

ACTION TAKEN: Review of the current version of the Biota Report will be continued at a future SEATAC meeting.

Further SEATAC review of the project will be required subsequent to completion of the current review. A revised Biota Report addressing the above, previous and forthcoming SEATAC comments and recommendations will be requested.

MINUTES OF THE SIGNIFICANT ECOLOGICAL AREA TECHNICAL ADVISORY COMMITTEE (SEATAC) MEETING OF OCTOBER 3, 2005

(Approved as written via email, November 8, 2005)

PERSONS IN ATTENDANCE

SEATAC MEMBERS

Ty Garrison
Mickey Long
Ruben Ramirez

REGIONAL PLANNING STAFF

Joe Decruyenaere
Daryl Koutnik

Project CUP 00-196/VTTM 53108 Representatives

Glenn Adamick	(661) 255-4003
Keith Babcock	(916) 652-6300
Matt Carpenter	(661) 255-4259
Josh Phillips	(510) 267-0494

Project RCUPT200500088/ROAKT200500039/TR53653 Representatives

Vince Daly	(805) 889-7252
Jasch Janowicz	(805) 889-7252
David Magney	(805) 646-6045
Rick Zeilenga	(805) 446-1496

MINUTES
October 3, 2005

AGENDA ITEMS

1. Garrison moved and Ramirez seconded to approve the September 12, 2005 SEATAC meeting minutes as written.

2. **Project CUP 00-196/VTTM 53108** – See Attachment Item 2.

3. **Project RCUPT200500088/ROAKT200500039/TR53653** – See Attachment Item 3.

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FROM NOTES. SESSIONS ARE ALSO TAPE RECORDED BUT THE TAPES ARE PRIMARILY FOR BACK-UP USE BY STAFF. VISITORS ARE ADVISED TO TAKE PROPER NOTES AND/OR RECORD THE SESSION. ISSUES NOT DISCUSSED BY SEATAC DO NOT IMPLY TACIT APPROVAL. NEW OR CLARIFIED INFORMATION PRESENTED IN SUBSEQUENT SUBMITTALS MAY RAISE NEW ISSUES AND MAY REQUIRE FURTHER ANALYSIS. MINUTES ARE GENERALLY APPROVED AT THE NEXT SEATAC MEETING. DRAFT MINUTES MAY BE REQUESTED BUT ARE SUBJECT TO REVISION.

SEATAC REPORT AND COMMENTS

PROJECT CUP 00-196/VTTM 53108

SEATAC MEETING DATE OCTOBER 3, 2005, ITEM 2

Biota Report Prepared by Impact Sciences, Incorporated, Dated July 2005

Second Continuation from August 1, and September 12, 2005 of Initial SEATAC review of Biota Report

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PROPOSED PROJECT CUP 00-196/VTTM 53108 – An application to subdivide the subject property into 418 lots, to include a maximum of 1,444 residential units, a maximum of 1,353,000 square feet of non-residential mixed-use space, an elementary school, a community park, three private recreational facilities, open space and river trail uses. Off-site improvements include buried bank stabilization and the Long Canyon Road Bridge to be developed in conjunction with the tract development. Two borrow sites, one located south of the Santa Clara River (215 acres) and the other north of State Route 126 (120 acres), and haul routes will be located outside of the tract map boundary but within the Newhall Ranch Specific Plan area. The domestic water system will be connected to existing facilities within the Valencia Commerce Center to the northeast). The proposed project site is partially within the Santa Clara River SEA (SEA 23) and is the first phase of the Riverwood Village Planning Area development of the Newhall Ranch Specific Plan, located north of the Santa Clara River, west of Interstate 5 and south of State Route 126, between the intersection of Chiquito Canyon Road and Castaic Creek.

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The reason the unarmored threespine stickleback has been able to survive in the Santa Clara River is that its remaining habitat has been relatively undisturbed. The Santa Clara River is unique in being the only major river draining the San Gabriel Mountains that has not been extensively channelized. The vegetation consists of fresh water marsh, coastal sage scrub, oak woodland, and riparian woodland communities. The broad wash association is unlike that found in steeper mountain canyons, and is increasingly rare in Los Angeles County. The trees serve as habitat for many raptorial bird species. The red-shouldered hawk is restricted to woodland communities, and the species is becoming increasingly uncommon in southern California due to habitat destruction. The National Audubon Society and others have expressed concern for the hawk's welfare.

The primary concern for the survival of the unarmored threespine stickleback is the loss of suitable habitat. The species requires clean, free-flowing, perennial streams and ponds surrounded by native vegetation. Intermittent areas connecting perennial streams are also important during the wet season when surface water is present. The natural vegetation and stream course slow heavy runoff during the rainy season, decrease destruction and siltation of habitat in downstream areas, and provide habitat for stickleback migration between populations.

SEATAC COMMENTS AND RECOMMENDATIONS FOR PROJECT CUP 00-196/VTTM 53108 (Note: comments for the October 3, 2005 SEATAC meeting are limited to Volume III of the Biota Report):

1. The revised Biota Report must provide a better accounting of impacts at the project site and mitigations in the High Country.
2. Water quality and hydrology, including intermittency of flows, in the river and tributaries must be maintained to ensure long term sustainability of biological resources.
3. Arroyo toad habitat is present, and populations may have been blown out by large releases from Castaic Lake. Proper management of flows from Castaic may permit reintroduction of arroyo toad.
4. Maps on pages 334 and 337 of Volume III are not clear and legends/captions are confusing.
5. Griffin (1999) reports a high level of use by arroyo toads of agricultural fields as aestivation sites. There is good potential for high-value, low-cost aestivation habitat restoration within the project site. Include clearance surveys for arroyo toad within agricultural fields as a mitigation measure.
6. SEATAC reiterates their concern that buried bank stabilization must be rough-sided.
7. SEATAC requests a field trip to see the sites of proposed buried bank stabilization.

ACTION TAKEN: Further SEATAC review of the project is required; prepare a revised Biota Report addressing the SEATAC comments and recommendations detailed above and in the minutes of the August 1 and September 12, 2005 minutes.

SEATAC REPORT AND COMMENTS

PROJECT RCUP200500088/ROAK200500039/TR53653

SEATAC MEETING DATE OCTOBER 3, 2005, ITEM 3

Biological Constraints Analysis Prepared by David Magney Environmental Consulting, Dated September 2005

Initial SEATAC review for Biological Constraints Analysis

PROPOSED PROJECT: RCUP200500088/ROAK200500039/TR53653 – A Tentative Tract Map application to subdivide the 232 acre subject property into 112 lots consisting of 100 single-family lots, 1 condominium lot (10.25 ac.) for 95 senior housing units, 1 fire station lot (1.26 ac.), 4 open space lots, 5 debris basin lots, and 1 active park lot. Both primary and secondary means of access are from The Old Road. The project also includes an Oak Tree Permit to remove/encroach on oak trees (*Quercus agrifolia* and *Q. lobata*) and a Conditional Use Permit for development within an SEA and hillside management area and for a density bonus request. The proposed project is located west of I-5 Freeway in the Pico Canyon Area, south of Stevenson Ranch and Sagecrest Circle and northwest of Calgrove Boulevard, partially within SEA No. 20 (Santa Susanna Mountains) and SEA No. 63 (Lyon Canyon).

SEA DESCRIPTIONS: The Santa Susana Mountains (**SEA No. 20**) are one of several relatively small ridge systems that form the Transverse Ranges and blend eastward into the larger San Gabriel and San Bernardino Mountains. The Santa Monica Mountains are also part of this system and form a coastal barrier shielding the interior ridges from the direct influences of moist marine air, making these interior ridges drier than the coastal ones. The vegetation of the Santa Susana Mountains consists of coastal sage scrub on south-facing slopes, dense chaparral on north-facing slopes, and oak, walnut and riparian woodlands in valleys. The oak woodland communities are extremely diverse, supporting six species of oak. These include coast live oak (*Quercus agrifolia*), valley oak (*Q. lobata*), canyon live oak (*Q. chrysolepis*), scrub oak (*Q. berberidifolia*), interior live oak (*Q. wislizenii*), and a single known location of Palmer's oak (*Q. palmeri*). The latter species is known in Los Angeles County only from this area. The walnut woodlands are frequently found in canyons supporting intermittent streams and consist primarily of southern California black walnut (*Juglans californica* var. *californica*), flowering ash (*Fraxinus dipetala*), Mexican elderberry (*Sambucus mexicana*), and coast live oak. Fires appear to promote the expansion of walnut woodlands within this area. Unusual southern California black walnut-flowering ash woodlands occur at mid-elevations within canyons of the north-facing slopes. This community appears to be unique to the Santa Susana Mountains. The bigcone spruce (*Pseudotsuga macrocarpa*)-canyon live oak forest at higher elevations represents one of the northwestern-most examples of this community.

The Santa Susana Mountains are the main representative of these small low, dry interior mountain ranges in Los Angeles County. The core of this range is in good condition and has not been heavily disturbed by human use. These mountains are becoming isolated from surrounding natural areas by continued urban expansion in the San Fernando, Simi, and Santa Clarita Valleys. As this isolation occurs the Santa Susana Mountains are becoming an important wildlife corridor for gene flow and species movement between the San Gabriel and Santa Monica Mountains via the Simi Hills.

The interior areas of the Santa Susana Mountains, away from peripheral development, support healthy, natural biotic communities. Some encroachment has taken place in the form of unimproved roads, ranches, and a limited number of oil extraction sites. The majority of the land is privately owned.

Lyon Canyon (**SEA No. 63**) is relatively narrow, supporting oak woodland surrounded by extensive chaparral and coastal sage scrub communities. The oak woodland is found in the southerly portion of the area and contains both coast live oak (*Quercus agrifolia*) and valley oak (*Q. lobata*). Higher elevations in the canyon support chaparral and scrub communities consisting of sugarbush (*Rhus ovata*), California lilac (*Ceanothus* spp.), black sage (*Salvia mellifera*), and chamise (*Adenostoma fasciculatum*), which is the dominant shrub. Drainages are dominated by mulefat (*Baccharis salicifolia*) scrub and riparian woodlands consisting of coast live oak, western sycamore (*Platanus racemosa*) and willows (*Salix laevigata* and *S. lasiolepis*); marsh assemblages, dominated by saltgrass (*Distichlis spicata*), occur where drainages merge with the flat bottomlands.

At present, Lyon Canyon is largely undeveloped, except for the remains of ranch outbuildings found at the mouth of the canyon, just outside of the SEA. The site has been grazed and was used for filming in the 1970's and 1980's. Thus, large areas of the bottomlands are disturbed, with a heavy cover of native and non-native ruderal species, and ornamental trees remain surrounding the former ranch buildings.

SEATAC COMMENTS AND RECOMMENDATIONS FOR PROJECT RCUP200500088/ ROAK200500039/TR53653:

1) SEATAC commends David Magney on a very good, thorough Biological Constraints Analysis.
2) The vegetation map is excellent; however, it may be overwhelmingly detailed to some readers. A reference to the habitat map in discussions of vegetation may help to clarify aspects such as physiognomy of the various vegetation types to the lay reader.
3) Explain the concept of vegetation alliances with the use of an alternate terminology.
4) Use a 'common name (*scientific name*)' format for nomenclature, and refer to species by common name following its initial reference.
5) Provide updated photos as the area recovers from recent fires.
6) Bat surveys in trees and cliffs are recommended.

ACTION TAKEN: Further SEATAC review of the project is required; prepare a Biota Report addressing the above SEATAC Comments and Recommendations.

MINUTES OF THE SIGNIFICANT ECOLOGICAL AREA TECHNICAL ADVISORY COMMITTEE (SEATAC) MEETING OF DECEMBER 5, 2005

PERSONS IN ATTENDANCE

SEATAC MEMBERS

Jonathan Baskin, PhD
Janet Fahey, PhD
Ty Garrison
Mickey Long

REGIONAL PLANNING STAFF

Joe Decruyenaere
Daniel Fierros
Daryl Koutnik

Project CUP 00-196/VTTM 53108 Representatives

Glenn Adamick	(661) 255-4003
Keith Babcock	(916) 652-6300
Josh Phillips	(510) 267-0494
Tom Worthington	(805) 437-1900

Project TR53653/RCUPT200500088/ROAKT200500039 Representatives

Russ Baggerly	(805) 646-6045
Vince Daly	(805) 889-7252
Jasch Janowicz	(815) 889-7252
David Magney	(805) 646-6045

MINUTES
December 5, 2005

AGENDA ITEMS

1. Long moved and Fahey seconded to approve the November 7, 2005 SEATAC meeting minutes as written.

OLD BUSINESS

2. **Project CUP 00-196/VTTM 53108** – See Attachment Item 2.

NEW BUSINESS

3. **Project RCUPT200500088/ROAKT200500039/TR53653** – See Attachment Item 3.

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SEATAC REPORT AND COMMENTS

CUP 00-196/VTTM 53108 – CONDITIONAL USE PERMIT and VESTING TENTATIVE TRACT MAP

SEATAC MEETING DATE DECEMBER 5, 2005, ITEM 2

Revised Biota Report prepared by Impact Sciences, Incorporated, Dated November, 2005

Previous SEATAC Meetings for Biota Report August 1, September 12, and October 3, 2005.

PROPOSED PROJECT CUP 00-196/VTTM 53108 – An application to subdivide the subject property into 418 lots, to include a maximum of 1,444 residential units, a maximum of 1,353,000 square feet of non-residential mixed-use space, an elementary school, a community park, three private recreational facilities, open space and river trail uses. Off-site improvements include buried bank stabilization and the Long Canyon Road Bridge to be developed in conjunction with the tract development. Two borrow sites, one located south of the Santa Clara River (215 acres) and the other north of State Route 126 (120 acres), and haul routes will be located outside of the tract map boundary but within the Newhall Ranch Specific Plan area. The domestic water system will be connected to existing facilities within the Valencia Commerce Center to the northeast). The proposed project site is partially within the Santa Clara River SEA (SEA 23) and is the first phase of the Riverwood Village Planning Area development of the Newhall Ranch Specific Plan, located north of the Santa Clara River, west of Interstate 5 and south of State Route 126, between the intersection of Chiquito Canyon Road and Castaic Creek.

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SEATAC COMMENTS AND RECOMMENDATIONS FOR PROJECT 00-196/VTTM 53108:

1. The hydrological assessments are too presumptive; a more in-depth analysis of hydrology is needed.
2. The maintenance of roughness in flow within the Santa Clara River is the biggest biological issue for this project, as channel roughness is the driving force behind encouraging heterogeneity in habitats within the floodplain. Bank stabilization designs that have been presented to SEATAC are fundamentally smooth-sided. Given the fact that they will be buried, they may be expected to remain unexposed in the short term; nevertheless, buried banks will be exposed with time (as other buried bank structures have been exposed in the region within several years of their emplacement), and a genuinely long-term approach to maintaining roughness of flow must be incorporated in the overall project design. This roughness may be accommodated at the banks or within the channel itself and may be facilitated through the used of large rip-rap in the overburden used to bury the stabilization or through the use of A-Jacks or similar interlocking modular units.
3. SEATAC is skeptical that otherwise mitigable impacts of this project are being improperly referred back to the Specific Plan which did not adequately address such impacts. The table on page 149 needs to be qualified in terms of what mitigations are possible in regard to habitat impacts and which are not. A fuller discussion of overriding considerations relative to the Specific Plan is needed to properly understand which impacts of Landmark village may justifiably require mitigation.
4. Provide information on ACOE and CDFG requirements for the project through the pending master permit so that SEATAC can have a context in which to view the mitigation responsibilities of the County (including mitigation for impacts to spineflower and water quality).
5. References to flooding as an 'infrequent' event minimize its ecological importance. Infrequent events may be extremely important in determining the future course of ecological developments.
6. An aggressive invasive species management plan is needed.

ACTION TAKEN: Further SEATAC review is required; incorporate the above SEATAC comments in the Biota Report.

SEATAC REPORT AND COMMENTS

PROJECT RCUP200500088/ROAK200500039/TR53653

SEATAC MEETING DATE DECEMBER 5, 2005, ITEM 3

Biota Report Prepared by David Magney Environmental Consulting, Dated November 2005

Initial SEATAC review for Biota Report

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The Santa Susana Mountains are the main representative of these small low, dry interior mountain ranges in Los Angeles County. The core of this range is in good condition and has not been heavily disturbed by human use. These mountains are becoming isolated from surrounding natural areas by continued urban expansion in the San Fernando, Simi, and Santa Clarita Valleys. As this isolation occurs the Santa Susana Mountains are becoming an important wildlife corridor for gene flow and species movement between the San Gabriel and Santa Monica Mountains via the Simi Hills.

The interior areas of the Santa Susana Mountains, away from peripheral development, support healthy, natural biotic communities. Some encroachment has taken place in the form of unimproved roads, ranches, and a limited number of oil extraction sites. The majority of the land is privately owned.

Lyon Canyon (**SEA No. 63**) is relatively narrow, supporting oak woodland surrounded by extensive chaparral and coastal sage scrub communities. The oak woodland is found in the southerly portion of the area and contains both coast live oak (*Quercus agrifolia*) and valley oak (*Q. lobata*). Higher elevations in the canyon support chaparral and scrub communities consisting of sugarbush (*Rhus ovata*), California lilac (*Ceanothus* spp.), black sage (*Salvia mellifera*), and chamise (*Adenostoma fasciculatum*), which is the dominant shrub. Drainages are dominated by mulefat (*Baccharis salicifolia*) scrub and riparian woodlands consisting of coast live oak, western sycamore (*Platanus racemosa*) and willows (*Salix laevigata* and *S. lasiolepis*); marsh assemblages, dominated by saltgrass (*Distichlis spicata*), occur where drainages merge with the flat bottomlands.

At present, Lyon Canyon is largely undeveloped, except for the remains of ranch outbuildings found at the mouth of the canyon, just outside of the SEA. The site has been grazed and was used for filming in the 1970's and 1980's. Thus, large areas of the bottomlands are disturbed, with a heavy cover of native and non-native ruderal species, and ornamental trees remain surrounding the former ranch buildings.

SEATAC COMMENTS AND RECOMMENDATIONS FOR PROJECT RCUP200500088/ ROAK200500039/TR53653:

1) The grading and fuel modification footprints do not accommodate the BCA-recognized constraints.
2) SEATAC recommends a larger suite of mitigation methods for impacts to sensitive plants in addition to the proposed emphasis placed on translocation.
3) Indicate whether small mammal trapping was configured for sensitive species or for general purposes.
4) Animal movement routes appear to converge on graded areas; provide mitigation measures or explain how developed areas will continue to foster the movement of wildlife.

ACTION TAKEN: Further SEATAC review of the project is required; revise the Biota Report addressing the above SEATAC Comments and Recommendations.

MINUTES OF THE SIGNIFICANT ECOLOGICAL AREA TECHNICAL ADVISORY COMMITTEE (SEATAC) MEETING OF JANUARY 9, 2006

PERSONS IN ATTENDANCE

SEATAC MEMBERS

Frank Hovore
Mickey Long
Ruben Ramirez

REGIONAL PLANNING STAFF

Joe Decruyenaere

Project CUP 00-196/VTTM 53108 Representatives

Glenn Adamick	(661) 255-4003
Keith Babcock	(916) 652-6300
Josh Phillips	(510) 267-0494
Tom Worthington	(805) 437-1900

Project TR53653/RCUPT200500088/ROAKT200500039 Representatives

Russ Baggerly	(805) 646-6045
Jasch Janowicz	(815) 889-7252
David Magney	(805) 646-6045

Project CUP 04-069/TR061037/RCUPT200500011 Representatives

R. Mitchel Beauchamp	(619) 477-5333
Travis Cullen	(818) 879-4700
Adam Gile	(818) 879-4700
Nick Ni	(909) 481-6388

Project CUP 02-109 Representatives and Interested Parties

Ray Anderson	(626) 712-0735
George Bayse	(714) 577-9146
Tony Bomkamp	(949) 837-0404
Ingrid Chlup	(949) 837-0404
Bob Henderson (observing)	(562) 698-9644
Michael Huff	(619) 992-9161
Claire Schlotterbeck (observing)	(714) 996-0502

MINUTES
January 9, 2006

AGENDA ITEMS

1. Fahey moved and _____ seconded to approve via email the December 5, 2005 SEATAC meeting minutes as _____.

OLD BUSINESS

2. **Project CUP 00-196/VTTM 53108 –** See Attachment Item 2.

3. **Project RCUPT200500088/ROAKT200500039/TR53653** – See Attachment Item 3.

4. **Project CUP 04-069/TR061037/RCUPT200500011 –** See Attachment Item 4.

NEW BUSINESS

5. **Project CUP 02-109** – See Attachment Item 5.

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NOTE: SEATAC MEETINGS ARE INFORMAL WORKING SESSIONS. MEMBERS ARE APPOINTED VOLUNTEERS IN AN ADVISORY CAPACITY. MINUTES ARE PREPARED BY PLANNING STAFF PRIMARILY FROM NOTES. SESSIONS ARE ALSO TAPE RECORDED BUT THE TAPES ARE PRIMARILY FOR BACK-UP USE BY STAFF. VISITORS ARE ADVISED TO TAKE PROPER NOTES AND/OR RECORD THE SESSION. ISSUES NOT DISCUSSED BY SEATAC DO NOT IMPLY TACIT APPROVAL. NEW OR CLARIFIED INFORMATION PRESENTED IN SUBSEQUENT SUBMITTALS MAY RAISE NEW ISSUES AND MAY REQUIRE FURTHER ANALYSIS. MINUTES ARE GENERALLY APPROVED AT THE NEXT SEATAC MEETING. DRAFT MINUTES MAY BE REQUESTED BUT ARE SUBJECT TO REVISION.

SEATAC REPORT AND COMMENTS

CUP 00-196/VTTM 53108 – CONDITIONAL USE PERMIT and VESTING TENTATIVE TRACT MAP

SEATAC MEETING DATE JANUARY 9, 2006, ITEM 2

Revised Biota Report prepared by Impact Sciences, Incorporated, Dated November, 2005

Previous SEATAC meeting for Revised Biota Report December 5, 2005.

PROPOSED PROJECT CUP 00-196/VTTM 53108 – An application to subdivide the subject property into 418 lots, to include a maximum of 1,444 residential units, a maximum of 1,353,000 square feet of non-residential mixed-use space, an elementary school, a community park, three private recreational facilities, open space and river trail uses. Off-site improvements include buried bank stabilization and the Long Canyon Road Bridge to be developed in conjunction with the tract development. Two borrow sites, one located south of the Santa Clara River (215 acres) and the other north of State Route 126 (120 acres), and haul routes will be located outside of the tract map boundary but within the Newhall Ranch Specific Plan area. The domestic water system will be connected to existing facilities within the Valencia Commerce Center to the northeast). The proposed project site is partially within the Santa Clara River SEA (SEA 23) and is the first phase of the Riverwood Village Planning Area development of the Newhall Ranch Specific Plan, located north of the Santa Clara River, west of Interstate 5 and south of State Route 126, between the intersection of Chiquito Canyon Road and Castaic Creek.

SEA DESCRIPTION: Soledad Canyon and the Santa Clara River (**SEA No. 23**) possess several populations of the unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*). This species was formerly found in the Los Angeles, San Gabriel, and Santa Ana Rivers, but is now restricted to the Santa Clara River and San Francisquito Canyon. For these reasons and due to threats to its habitat, the fish species has been placed on the state and federal endangered species lists. In the Santa Clara River, the unarmored threespine stickleback is limited to permanent streams and pools from the mouth of San Francisquito Canyon west to the Ventura-Los Angeles County line, and from near Lang Station east to Arrastre Canyon.

The reason the unarmored threespine stickleback has been able to survive in the Santa Clara River is that its remaining habitat has been relatively undisturbed. The Santa Clara River is unique in being the only major river draining the San Gabriel Mountains that has not been extensively channelized. The vegetation consists of fresh water marsh, coastal sage scrub, oak woodland, and riparian woodland communities. The broad wash association is unlike that found in steeper mountain canyons, and is increasingly rare in Los Angeles County. The trees serve as habitat for many raptorial bird species. The red-shouldered hawk is restricted to woodland communities, and the species is becoming increasingly uncommon in southern California due to habitat destruction. The National Audubon Society and others have expressed concern for the hawk's welfare.

The primary concern for the survival of the unarmored threespine stickleback is the loss of suitable habitat. The species requires clean, free-flowing, perennial streams and ponds surrounded by native vegetation. Intermittent areas connecting perennial streams are also important during the wet season when surface water is present. The natural vegetation and stream course slow heavy runoff during the rainy season, decrease destruction and siltation of habitat in downstream areas, and provide habitat for stickleback migration between populations.

SEATAC COMMENTS AND RECOMMENDATIONS FOR PROJECT 00-196/VTTM 53108:

1. The High Country dedication shall be made prior to the issuance of the grading permit for Landmark Village, rather than subsequent to recordation of the 2,500th unit, as originally proposed in the Newhall Ranch Specific Plan.
2. Monitoring reports submitted to the County as part of the Mitigation/Monitoring Program shall also be submitted to SEATAC members for their review and comment.

ACTION TAKEN: No further SEATAC review of the Biota report is required; incorporate the above SEATAC comments in the Draft EIR.

SEATAC REPORT AND COMMENTS

PROJECT RCUP200500088/ROAK200500039/TR53653

SEATAC MEETING DATE JANUARY 9, 2006, ITEM 3

Biota Report Prepared by David Magney Environmental Consulting, Dated November 2005

Previous SEATAC meeting for Biota Report December 5, 2005

PROPOSED PROJECT: RCUP200500088/ROAK200500039/TR53653 – A Tentative Tract Map application to subdivide the 232 acre subject property into 112 lots consisting of 100 single-family lots, 1 condominium lot (10.25 ac.) for 95 senior housing units, 1 fire station lot (1.26 ac.), 4 open space lots, 5 debris basin lots, and 1 active park lot. Both primary and secondary means of access are from The Old Road. The project also includes an Oak Tree Permit to remove/encroach on oak trees (*Quercus agrifolia* and *Q. lobata*) and a Conditional Use Permit for development within an SEA and hillside management area and for a density bonus request. The proposed project is located west of I-5 Freeway in the Pico Canyon Area, south of Stevenson Ranch and Sagecrest Circle and northwest of Calgrove Boulevard, partially within SEA No. 20 (Santa Susanna Mountains) and SEA No. 63 (Lyon Canyon).

SEA DESCRIPTIONS: The Santa Susana Mountains (**SEA No. 20**) are one of several relatively small ridge systems that form the Transverse Ranges and blend eastward into the larger San Gabriel and San Bernardino Mountains. The Santa Monica Mountains are also part of this system and form a coastal barrier shielding the interior ridges from the direct influences of moist marine air, making these interior ridges drier than the coastal ones. The vegetation of the Santa Susana Mountains consists of coastal sage scrub on south-facing slopes, dense chaparral on north-facing slopes, and oak, walnut and riparian woodlands in valleys. The oak woodland communities are extremely diverse, supporting six species of oak. These include coast live oak (*Quercus agrifolia*), valley oak (*Q. lobata*), canyon live oak (*Q. chrysolepis*), scrub oak (*Q. berberidifolia*), interior live oak (*Q. wislizenii*), and a single known location of Palmer's oak (*Q. palmeri*). The latter species is known in Los Angeles County only from this area. The walnut woodlands are frequently found in canyons supporting intermittent streams and consist primarily of southern California black walnut (*Juglans californica* var. *californica*), flowering ash (*Fraxinus dipetala*), Mexican elderberry (*Sambucus mexicana*), and coast live oak. Fires appear to promote the expansion of walnut woodlands within this area. Unusual southern California black walnut-flowering ash woodlands occur at mid-elevations within canyons of the north-facing slopes. This community appears to be unique to the Santa Susana Mountains. The bigcone spruce (*Pseudotsuga macrocarpa*)-canyon live oak forest at higher elevations represents one of the northwestern-most examples of this community.

The Santa Susana Mountains are the main representative of these small low, dry interior mountain ranges in Los Angeles County. The core of this range is in good condition and has not been heavily disturbed by human use. These mountains are becoming isolated from surrounding natural areas by continued urban expansion in the San Fernando, Simi, and Santa Clarita Valleys. As this isolation occurs the Santa Susana Mountains are becoming an important wildlife corridor for gene flow and species movement between the San Gabriel and Santa Monica Mountains via the Simi Hills.

The interior areas of the Santa Susana Mountains, away from peripheral development, support healthy, natural biotic communities. Some encroachment has taken place in the form of unimproved roads, ranches, and a limited number of oil extraction sites. The majority of the land is privately owned.

Lyon Canyon (**SEA No. 63**) is relatively narrow, supporting oak woodland surrounded by extensive chaparral and coastal sage scrub communities. The oak woodland is found in the southerly portion of the area and contains both coast live oak (*Quercus agrifolia*) and valley oak (*Q. lobata*). Higher elevations in the canyon support chaparral and scrub communities consisting of sugarbush (*Rhus ovata*), California lilac (*Ceanothus* spp.), black sage (*Salvia mellifera*), and chamise (*Adenostoma fasciculatum*), which is the dominant shrub. Drainages are dominated by mulefat (*Baccharis salicifolia*) scrub and riparian woodlands consisting of coast live oak, western sycamore (*Platanus racemosa*) and willows (*Salix laevigata* and *S. lasiolepis*); marsh assemblages, dominated by saltgrass (*Distichlis spicata*), occur where drainages merge with the flat bottomlands.

At present, Lyon Canyon is largely undeveloped, except for the remains of ranch outbuildings found at the mouth of the canyon, just outside of the SEA. The site has been grazed and was used for filming in the 1970's and 1980's. Thus, large areas of the bottomlands are disturbed, with a heavy cover of native and non-native ruderal species, and ornamental trees remain surrounding the former ranch buildings.

SEATAC COMMENTS AND RECOMMENDATIONS FOR PROJECT RCUP200500088/ ROAK200500039/TR53653:

1) Several sensitive animal species are not discussed; review the document for completeness in relation to the CDFG Special Animals list.
2) Wildlife movement through and within the site is a constraint that the proposed development will impact. Design components, such as drainage culverts and other potential bottlenecks to movement, must encourage use by a diversity of species.
3) Mitigation through CC&Rs needs strengthening; a step-by-step chain of responsibility should be presented whereby the process of enforcement of CC&Rs is reasonably ensured.

ACTION TAKEN: Further SEATAC review of the project is required; revise the Biota Report addressing the above SEATAC Comments and Recommendations.

SEATAC REPORT AND COMMENTS

PROJECT CUP 04-069/TR061037/RCUPT200500011

SEATAC MEETING DATE JANUARY 9, 2006, ITEM 4

Biota Report Prepared by Pacific southwest Biological Services, Incorporated, dated December 2005

Previous SEATAC meeting for Biological Constraints Analysis February 7, 2005

PROPOSED PROJECT: CUP 04-069/TR061037/RCUPT200500011 – A tentative tract map application for the construction of 15 single-family residences, a 60-foot wide access street from Woolsey Canyon Road, a 20-foot wide ingress/egress easement, a gate at the entry to the access street, concrete block walls, retaining walls, concrete crib walls, and wrought iron fences as necessary. 20 acres of the project site are proposed as open space. Approximately 24,782 c.y. of cut and 15,782 c.y. of fill are proposed, with 9,000 c.y. of material to be exported off site. The proposed development will be connected to public water and sewer services. The application also includes a request for an Oak Tree Permit to remove four coast live oak trees (trees #2, 3, 11, and 12) and encroach upon 24 coast live oak oak trees. The proposed project is located at 24303 Woolsey Canyon Road, Chatsworth, within SEA 14 (Simi Hills).

SEA DESCRIPTION: The Simi Hills SEA (**SEA No. 14**) contains relatively undisturbed representative examples of most of the biotic communities found in the Simi Hills. Habitats include chaparral, coastal sage scrub, southern oak woodland and riparian woodland. While all of these are relatively common in Los Angeles County, this is one of two areas that include these cismontane associations at the western edge of the County.

The area also supports populations of Santa Susanna tarplant (*Deinandra minthornii*) and serves as a buffer and wildlife corridor for movement between the Chatsworth reservoir and the undeveloped portions of the Simi Hills in Ventura County. Genetic exchange and replenishment of native populations in the Chatsworth Reservoir area are important considerations here.

A paved road runs through Dayton Canyon but does not appear to have greatly disturbed the riparian woodland there. A few dirt roads exist in the area. Scattered houses are found in the Lakeside Park development adjacent to Chatsworth Reservoir.

SEATAC COMMENTS AND RECOMMENDATIONS FOR PROJECT CUP 04-069/ TR061037/RCUPT200500011:

1) SEATAC considers Calochortus plummerae to have a high potential of occurrence on site.
2) SEATAC remains concerned that adequate time has been spent on the site, judging by the low number of species actually observed
3) Expand the sensitive species discussions to all species on the Special Animals list with potential to occur in the region.

ACTION TAKEN: Further SEATAC review of the project is required; prepare a Biota Report incorporating the above SEATAC Comments and Recommendations.

SEATAC REPORT AND COMMENTS

PROJECT 02-109

SEATAC MEETING DATE JANUARY 9, 2006, ITEM 5

Biota Report Prepared by Glenn Lukos Associates, dated December 2005

Initial SEATAC meeting for Biota Report

PROPOSED PROJECT: CUP 02-109 – A General Plan Amendment, Zone Change, and Specific Plan application to allow the phased development of 3,600 dwelling units, an 18-hole golf course, local and community park uses, local community commercial uses, internal greenbelts and open space preservation on a 2.935 acre site. Approximately 1,435 acres are proposed for residential and commercial development, and the remaining acreage is proposed for active and passive open space uses and habitat restoration. The proposed project is located east and west of State Route 57, partially within the Tonner Canyon/Chino Hills SEA (SEA No. 15). This project falls under the jurisdiction of both Los Angeles and Orange Counties.

SEA DESCRIPTIONS: Tonner Canyon (SEA No. 15) is one of three areas in the hilly region of eastern Los Angeles County that still supports relatively undisturbed stands of southern coast live oak woodland, chaparral, coastal sage scrub, and riparian woodland complexes that were once common throughout southern California but have been converted largely to agricultural and urban uses. This is true throughout southern California, resulting in the rapid disappearance of these habitat types from the region. Three areas within Los Angeles County (SEA Nos. 15, 17 and 44) were chosen to serve as representative examples of these once widespread vegetative associations.

The vegetation in Tonner Canyon supports heavily forested areas of California walnut (*Juglans californica*) and coast live oak (*Quercus agrifolia*). The former species is uncommon outside Los Angeles and Ventura Counties and has one of its major populations in this portion of Los Angeles County. Tonner and Brea Canyons are of sufficient size, and in close enough proximity to the other designated SEAs in this region, that they should be able to continue to support relatively healthy wildlife populations if preserved. This probability is increased by the presence of riparian woodlands and intermittent streams in the canyon bottoms.

SEATAC COMMENTS AND RECOMMENDATIONS FOR PROJECT CUP 02-109:

1) Clarify the amount of disturbance that will be associated with the oil facilities remediation.
2) Connectivity must be maintained throughout the processes of construction and remediation.
3) Development in the eastern portion of the project, west of the freeway constrains on-site movement throughout that area.
4) Corridors must be designed to be as wide as possible.
5) The document conveys the tone that if the site is not developed, the property will continue to be degraded; cattle grazing should be discontinued on the site in the near term.

ACTION TAKEN: Further SEATAC review of the project is required; revise the Biota Report addressing the above SEATAC Comments and Recommendations.

Summary of Southwestern Arroyo Toad Surveys
Bloom Biological, Inc., July 11, 2007

SUMMARY OF SOUTHWESTERN ARROYO TOAD SURVEYS ON PORTIONS OF NEWHALL LAND AND FARMING COMPANY PROPERTY, LOS ANGELES COUNTY, CALIFORNIA

Prepared For: THE NEWHALL LAND & FARMING COMPANY
23823 Valencia Blvd.
Valencia, CA 91355

Prepared By: BLOOM BIOLOGICAL, INC.
13611 Hewes Ave
Santa Ana, CA 92705

Date: 11 July 2007

INTRODUCTION

Surveys for the federally endangered southwestern arroyo toad (*Bufo californicus*) were conducted on portions of Newhall Land and Farming Company property by Bloom Biological, Inc. from April through July 2007. The surveys were conducted according U.S. Fish and Wildlife Service (USFWS) survey protocol. This report summarizes the findings of this survey effort.

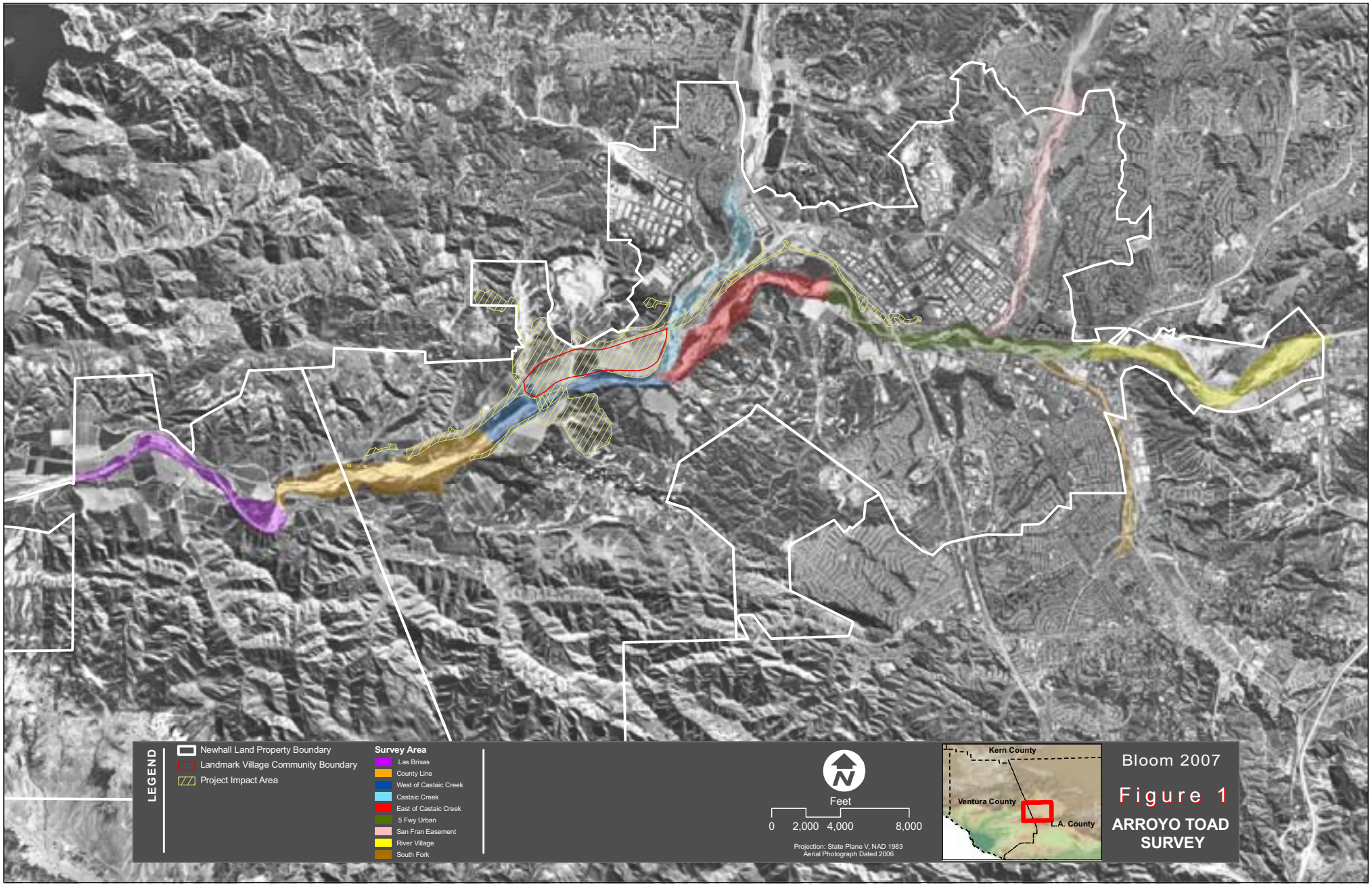
The entire survey area consisted of approximately 25 miles of the Santa Clara River and its major tributaries in and around Valencia, Los Angeles County, California. Tributaries that were included in the survey area were lower Castaic Creek, San Francisquito Canyon, and the South Fork of the Santa Clara River. The limits of the survey area include the entire Santa Clara River from ¼ mile downstream of the Las Brisas Crossing in Ventura County upstream to the future location of the Golden Valley Bridge (east of the Los Angeles Aqueduct). The survey area encompassed the stream margins and riparian habitat along portions of the river and tributaries that contained moving water.

METHODOLOGY

Daytime surveys were conducted by walking slowly along river margins and riparian habitat looking for eggs, larvae, and juveniles. Nighttime surveys were conducted by walking slowly along riverbanks searching for adults and juveniles, and by stopping periodically to listen for calling males. All surveys were conducted in temperatures at or above 55 degrees Fahrenheit. None of the tributaries had sufficient moving water to warrant a complete set of six protocol surveys.

SUMMARY

No southwestern arroyo toad adults, juveniles, eggs, or larvae were detected on Newhall Land and Farming Company property over the course of these surveys. However, suitable breeding and upland habitat does occur along portions of the Santa Clara River from the McBean Pkwy bridge to the westernmost end of the survey area (¼ mile west of Las Brisas bridge). Upper Santa Clara River (River Village), San Francisquito Canyon, and South Fork tributaries contained sections of fluctuating urban runoff, but were not appropriate to support arroyo toads. Lower Castaic Creek contained only small pools of standing water and a few wet sandy spots, and thus not suitable for arroyo toads. Fewer than 20 western toads (*Bufo boreas*) were detected along the entire stretch of survey area. The majority of western toads were found in and around the ponds created by river crossings, and around wet agricultural fields. Hundreds of tree frogs (*Pseudacris regilla*) occurred along the entire stretch of river, including wet areas within all tributaries.



Bloom 2007

Figure 1

ARROYO TOAD SURVEY

Draft Candidate Conservation Agreement
for the San Fernando Valley Spineflower

CANDIDATE CONSERVATION AGREEMENT FOR THE SAN FERNANDO VALLEY SPINEFLOWER

This Candidate Conservation Agreement ("CCA" or "Agreement"), effective and binding on the date of the last signature below, is entered into by and between The Newhall Land and Farming Company, a California limited partnership ("Newhall") and the U.S. Fish and Wildlife Service ("Service" or "USFWS"), with reference to the facts set forth in the recitals below.

RECITALS

A. Property Owner. Newhall is the record owner of the real property, which is the subject of this Agreement.

B. Service. The Service, an agency of the U.S. Department of the Interior, is authorized to enter into this Agreement in accordance with the provisions of the federal Endangered Species Act, as amended ("ESA" or "the Act"), 16 USC §§1531 *et seq*. The Service is responsible for the administration of the ESA, including recommendations about whether plant and animal species should be listed as endangered or threatened, designations of critical habitat, and the monitoring of candidate species for which the Service has found listing to be warranted but precluded due to other higher priority listing actions. 16 USC §1533(b)(3)(B).

C. Plant Species. The San Fernando Valley spineflower ("spineflower" or "SFVS") (*Chorizanthe parryi* var. *fernandina*) is the candidate plant species covered by this Agreement. The spineflower was thought to be extinct until it was rediscovered in 1999 on property located in Ventura County, California, in the vicinity of Laskey Mesa in the southeast edge of Simi Hills. Laskey Mesa is located within the former Ahmanson Ranch property in Ventura County.

After rediscovery of the spineflower, the Service designated it as a candidate species in the October 25, 1999 Candidate Notice of Review ("CNOR"). 64 Fed.Reg. 57534, 57541. The Service has conducted regular reviews of the status of the spineflower since issuance of the 1999 CNOR.

In 2003, the former Ahmanson Ranch property was acquired by the State of California through the Wildlife Conservation Board and transferred to the Santa Monica Mountains Conservancy ("Conservancy") for purposes of wildlife habitat preservation, corridor protection, restoration and management, wildlife-oriented education and research, and for compatible public uses, consistent with wildlife habitat preservation and protection of sensitive biological resources. The former Ahmanson Ranch property is now called the Upper Las Virgenes Canyon Open Space Preserve. As a result, the Service has acknowledged that threats to the spineflower from the former Ahmanson Ranch development project have been eliminated, and the Service and the California Department of Fish and Game ("CDFG") are working with the Conservancy to manage the site, including conservation of spineflower located thereon. Because threats to spineflower from habitat destruction or modification have been substantially lessened due to public acquisition of the former Ahmanson Ranch property, the Service lowered the spineflower's listing priority to reflect threats that are high but non-imminent in the 2003 CNOR, which was published on May 4, 2004. 69 Fed.Reg. 24876, 24882.

Currently, spineflower is known to exist on the Las Virgenes Canyon Open Space Preserve in Ventura County, and on Newhall's land holdings in Los Angeles County. These two spineflower populations are approximately 17 miles apart.

In 2003, Newhall initiated contact with the Service expressing its desire to enter into a CCA that, if successful, would provide for long-term conservation of spineflower populations on Newhall's property. Therefore, this Agreement is intended to conserve spineflower populations on portions of Newhall's Enrolled Lands, described below.

D. Purpose and Intent. The purpose of this Agreement is to agree upon conservation, management, and monitoring measures ("Conservation Measures") for the spineflower, located on portions of Newhall's Enrolled Lands, described below. This Agreement is intended to benefit the spineflower, a candidate species, by obtaining Newhall's commitment to implement the Conservation Measures, which, when combined with the benefits that will be achieved by the conservation of the spineflower in the Upper Las Virgenes Canyon Open Space Preserve, would preclude the need to list the spineflower in the future.

E. Implementation/Tracking. This Agreement will be implemented through the Service's Ventura County Field Office. The tracking number to be used when referring to this Agreement is **CCA 2006-SFVS**.

NOW, THEREFORE, in consideration of the foregoing Recitals and the mutual promises, covenants and conditions set forth below, and for further good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties do hereby agree, as follows:

1.0 DESCRIPTION OF ENROLLED LANDS

Newhall is the sole owner in fee simple of certain real property, located in the County of Los Angeles, State of California, with known spineflower populations located thereon. This property is commonly known as the Newhall Ranch Specific Plan area, and two other Newhall land holdings commonly known as the Entrada and the Valencia Commerce Center ("VCC") project areas. The distribution of spineflower on Newhall's land holdings consists primarily of six general population occurrences, with four located within the Newhall Ranch Specific Plan area, and one occurrence each within the Entrada and VCC areas. Each occurrence consists of spineflower populations that are generally in proximity to each other within a particular area and separated from others by distance or existing site features, such as ridgelines and roadways. The Newhall Ranch Specific Plan, Entrada and VCC areas constitute the enrolled lands covered by this Agreement ("Enrolled Lands"). The Location Map depicts the Enrolled Lands, which is attached hereto as **Exhibit "A"** and incorporated by this reference. Because spineflower has been found on the Enrolled Lands, portions of such lands are important to the continued existence of the species.

2.0 AUTHORITY FOR ENTERING INTO THIS AGREEMENT

Sections 2, 4, 6, 7 and 10 of the Act (16 U.S.C. §§1531-1544) and the Fish and Wildlife Coordination Act, as amended (16 U.S.C. §§661-667(e)) allow the Service to enter into this Agreement. Section 2 of the ESA states that encouraging parties, through federal financial assistance and a system of incentives, to develop and maintain conservation programs is a key to safeguarding the nation's heritage in fish, wildlife and plants. Section 4(a)(1) of the ESA

requires the Service to determine whether any species is endangered or threatened because of any of the five designated "threat" factors listed in the Act. Section 4(b)(1)(A) requires the Service to make a listing determination after taking into account state and local conservation efforts to protect the species. Future conservation efforts identified in conservation agreements, like this Agreement, are actions intended to have positive effects on the species and must be taken into account when making listing decisions. Section 6 of the ESA authorizes cooperation, to the maximum extent practicable, between the Service and the states to further the intent of the Act. Under the Service's published interagency cooperative policy regarding the role of state agencies in Endangered Species Act activities (59 Fed.Reg. 34275), it is the policy of the Service to utilize the expertise and solicit information and participation of state agencies in implementing all aspects of the federal ESA. Section 7 of the ESA requires the Service to review programs that it administers and to utilize such programs in furtherance of the purposes of the Act. By entering into this Agreement, the Service also is utilizing its Candidate Conservation Programs to further the conservation of plant species. In addition, the Service is relying upon its Policy for Evaluation of Conservation Efforts ("PECE") when making listing decisions under the Act.

3.0 BACKGROUND AND STATUS OF SPINEFLOWER

3.1 Scientific Name. The spineflower's scientific name is *Chorizanthe parryi* var. *fernandina* (USFWS 2004a).

3.2 Common Name. The spineflower's common name is San Fernando Valley spineflower (USFWS 2004a).

3.3 USFWS Region. The spineflower is located in USFWS Region 1 (USFWS 2004a).

3.4 Legal Status. At the federal level, the spineflower is designated as a candidate species under the ESA (USFWS 1999). At the state level, the spineflower was listed as endangered under the California Endangered Species Act, effective September 8, 2002.

3.5 Listing Priority and Changes. In 2004, the Service changed the spineflower's listing priority to reflect threats that are high but non-imminent (USFWS 2004a).

3.6 Plant Group and Family. The spineflower is a small, prostrate annual plant in the buckwheat family (Polygonaceae). It grows low to the ground, with several stems branching out from the base and spreading horizontally, reaching a height of up to 12 inches (30 cm) and measuring 2-16 inches (5-40 cm) across. The basal leaves are oblanceolate to oblong, 0.2 to 1.6 inches (5-40 mm) long, alternate, entire, and covered with stiff, straight, appressed hairs. Lower bracts are entire and leaf-like, while upper bracts are reduced (California Department of Fish and Game ("CDFG") 2001, p.2; Sapphos 2001b, p. 3-1).

Spineflower typically blooms from April to June. The flowers are white, six-parted, 0.1 to 0.12 inches (2.5 to 3 cm) long, have unequal sepals and are subtended by spine-tipped involucres. The six, straight involucre teeth are unequal; there are three long outer ones and three inner, shorter ones. The involucre teeth are never hooked, thus distinguishing it from its closest relative, Parry's spineflower (*Chorizanthe parryi* var. *parryi*) (CDFG 2001, p. 2; Sapphos 2001b, p. 3-1).

The spineflower belongs to the genus *Chorizanthe* and was first described as *Chorizanthe fernandina* in 1880, based on a specimen collected in 1879, from the San Fernando Canon in Los

Angeles County. It was reclassified as *Chorizanthe parryi* var. *fernandina* in 1925, and has been recognized as a distinct taxon since that time (CDFG 2001, pp. 2-5; Sapphos 2001b, pp. 3-1-3-2).

3.7 Historic Range and Related Information. The spineflower was thought to be extinct (Reveal/Hardham 1989). Taxon was collected in the late 1800s and early 1900s from Los Angeles County, near the city of Santa Ana in Orange County and an unspecified area in San Bernardino County. The majority of the historical collections of spineflower from the greater Los Angeles metropolitan area were made in areas where urban, agricultural and industrial development have replaced native habitats (Reveal/Hardham 1989). Prior to its rediscovery at Ahmanson Ranch in May 1999, the most recent collection was made in 1929, from Castaic in Los Angeles County (USFWS 2004).

The spineflower is known historically from California in the areas of Elizabeth Lake and Castaic, south through the San Fernando Valley in Los Angeles County, to near Santa Ana in Orange County, and from a single location on the coastal side of the mountains in San Bernardino County. The historical collections may be divided into ten localities in Los Angeles County, one locality in Orange County based on specimens collected in 1902 and one generalized locality in San Bernardino County based on a specimen collected in 1876 (Goodman 1934; Reveal/Hardham 1989; and USFWS 2004).

Based on historical collections, spineflower occurred in sandy to gravely soils, often in washes and mostly in coastal sage scrub (Reveal 1979). Spineflower also was collected in some areas with relatively deep soils in coastal sage scrub (GLA 1999). More recent information from investigations conducted on both Ahmanson Ranch and Newhall Ranch indicate that the spineflower occurs in sparsely vegetated areas with thin or highly mineralized soils (*i.e.*, low organic content) (Sapphos 2001a; Impact 2002f [Seward 2002]; USFWS 2004). The conditions under which spineflower is able to persist are most likely due to the decreased competition from native and non-native plants on thin soils, where other plants cannot become established (USFWS 2004). Spineflower and related annuals do not fare well if shaded by taller plants or forced to compete for water and nutrients (McGraw/Levin 1998; USFWS 2004).

The invasion of non-native grasses and weeds in the last few decades, which grow profusely in deeper or disturbed soils, may explain the disappearance of spineflower from some historical areas and the current observation of the species, primarily on thinner, mineralized soils (Sapphos 2001a; Impact 2002f [Seward 2002]; USFWS 2004).

Of the 12 historical occurrences, the sites in San Bernardino, Orange, and Los Angeles counties are believed to no longer support suitable habitat for the spineflower due to urbanization (USFWS 2004).

3.8 Phenology, Seed Production and Pollination. Spineflower is typical of many winter-spring native annuals that occur in the Mediterranean climate of California. The seeds germinate following fall and winter rains, forming a small basal rosette of leaves, and then mature, bolt and produce multiple branches. The spineflower blooms between April and May/June, and then dies during the dry summer months. The spineflower produces a single, one-seeded flower within each involucre; but it is estimated that an individual plant can produce between 60 and 300 involucres. The seeds remain within the spiny involucres after flowering, but unlike other native California annuals, the spineflowers do not break up and the involucres do not fall to the ground right away, instead the central branches and involucral clusters remain intact for many months after flowering (CDFG 2001, p. 8; Sapphos 2001b, pp. 3-5-3-7).

The pollination ecology of spineflower has been studied (Sapphos 2002a; USFWS 2004; Jones 2004). The studies indicate that the flowers are often visited by ants (*Dorymyrmex insanus*), and this is consistent with the flower type (*i.e.*, other ant-pollinated flowers are small with low nectar yield) (USFWS 2004). However, ants are not efficient pollinators, and the rate of fruit set measured by researchers was high, which would indicate another, more effective pollinator was visiting the plants (USFWS 2004). The studies show that honey bees (*Apis mellifera*) showed a strong constancy (carrying pollen of one plant species) for spineflower and visited the flowers fairly often (Sapphos 2002a; USFWS 2004). Honey bees were the second most common visitors to the spineflowers' flowers, followed by another ant (*Solenopsis xylonii*), and two beetles (*Dasytinae* sp. and *Zabrotes* sp.). Results of the pollination studies have implications for conservation of the spineflower. Continued pollination, seed production and germination of the spineflower will require a healthy, mostly native, insect community, without competition from non-native ants, such as the Argentine ant (*Linepithema humilis*).

In 2004, a study was conducted of the pollination of the spineflower on Newhall Ranch (Jones 2004). Results of this study indicated that there is a substantial diversity in the pollinators that visit the spineflower on Newhall Ranch. Based on a strong correlation noted between the insect visitors captured on the flowers of the spineflower and those insects captured in the vicinity of the spineflower, the study determined that spineflower is not pollinator limited, but rather can be pollinated by a large diversity of pollinators. The study found that numerous species, including ants, beetles, flies and bees, can act as potential spineflower pollinators. (Jones 2004).

3.9 Current Range and Related Information. The plant currently is known to exist in only two disjunct localities. The first is in the southeastern portion of Ventura County in the Upper Las Virgenes Canyon Open Space Preserve, which is now within the purview of the Conservancy. The second is in northwestern Los Angeles County on portions of Newhall's Enrolled Lands.

3.10 Upper Las Virgenes Canyon Open Space Preserve/Former Ahmanson Ranch. In 1999, when spineflower was first rediscovered on the former Ahmanson Ranch property, biologists estimated the number of individual plants at between 5,000 and 10,000 (LSA Associates 1999). Further investigation that same year revised the number of individual plants to 23,000 over almost six acres ("ac") (2.4 hectares ("ha")) (Sapphos 2001a). In 2000, new populations were discovered and the number of individual plants, estimated at approximately 1.5 million over more than 10 ac (4 ha), was greater than in 1999, as a result of favorable weather during the winter and spring of 1999-2000 (Sapphos 2001a). In 2001 surveys, the spineflower population occupied approximately 12.8 ac (5.2 ha) of habitat within the study areas and consisted of approximately 1.8 million individuals (Sapphos 2001d). Current information indicates that the former Ahmanson Ranch population is composed of 18 sub-populations of various sizes, all located within 0.25 miles (0.49 kilometers) of each other, and occupying approximately 12.9 ac (5.2 ha) (Sapphos 2001d; Sapphos 2003; USFWS 2004).

In 2003, the Upper Las Virgenes Canyon Open Space Preserve was formed. The property site will now be preserved as permanent conservation/park land, and the Service has acknowledged that threats to the spineflower from the former Ahmanson Ranch development project have been eliminated.

3.11 Enrolled Lands/Newhall Ranch Specific Plan. In 2000-2002, spineflower populations were discovered on the Newhall Ranch Specific Plan area in four distinct locations: (1) Airport Mesa; (2) Grapevine Mesa; (3) Potrero Canyon; and (4) San Martinez Grande Canyon. In 2003, surveys estimated that the number of individual plants in these four areas totaled approximately 4.6 million (Dudek 2004a). In 2004, total spineflower populations in these four areas were estimated at approximately 511,216 individuals (Dudek 2004d). In 2005, total spineflower populations in these four areas were estimated at approximately 6.4 million (Dudek 2005a). In 2006, total spineflower populations in these four areas were estimated at approximately 1.34 million (Dudek 2006a). In contrast to the population in the Upper Las Virgenes Canyon Open Space Preserve, the Newhall Ranch plants are spread over a large area, with the smaller sub-populations scattered and farther apart. Like the Upper Las Virgenes Canyon Open Space Preserve population, the plants at Newhall Ranch are found mostly on thin soils in open areas where there is no competition from other plants (USFWS 2004; Impact 2002f [Seward 2002]). Surveys of the Newhall Ranch spineflower population have been conducted and reported to the Service (*e.g.*, Impact 2002; Impact 2002a [Dudek 2002]; Impact 2002b [FLx 2002]; Impact 2002f [Seward 2002]; Dudek 2004a; Dudek 2004d; Dudek 2005a; Dudek 2006a). The Newhall Ranch Specific Plan area (Airport Mesa, Grapevine Mesa, Potrero Canyon and San Martinez Grande Canyon) accounted for approximately 77 percent of the known Newhall spineflower populations in 2003, 92 percent in 2004, 87 percent in 2005, and 76 percent in 2006.

In 2003, Newhall conveyed to CDFG permanent conservation easements, including funded management and erosion control plans, over approximately 64 acres of land in the Airport Mesa and Grapevine Mesa areas of the Newhall Ranch Specific Plan area as part of a spineflower preserve to be maintained in perpetuity (Impact 2003d). The Service acknowledges that the spineflower conservation easement provides regulatory protection to spineflower populations on some of the Enrolled Lands.

3.12 Other Enrolled Lands/Entrada and VCC. Spineflower has been found on Newhall's other Enrolled Lands within portions of the Entrada and VCC areas. In 2000, spineflower was observed on the southeastern portion of the Entrada project area. The occurrence is located just west of I-5, south of SR-126, and just east of the Newhall Ranch Specific Plan area. Three polygons representing 1,000 to 2,000 individuals were mapped (pers. com. FLx, March 23, 2004). Surveys conducted in May, June, and September 2002 identified a limited number of current year spineflower individuals (20). However, spineflower plants that germinated prior to 2002 were visible and totaled approximately 1,399,550 individuals within nine polygons. Surveys conducted in 2003 identified approximately 1,183,704 individuals within 29 polygons (Dudek 2004b). In 2004, 26 polygons containing 45,701 individual were observed (Dudek 2004e). In 2005, 30 polygons containing 768,792 individuals were observed (Dudek 2005b). In 2006, 37 polygons containing 231,674 individuals were observed (Dudek 2006b). The Entrada project area accounted for approximately 20 percent of the known Newhall spineflower populations in 2003, eight percent in 2004, 10 percent in 2005, and 13 percent in 2006.

Spineflower was first detected at the VCC project area in 2001. The VCC spineflower occurrence is located in the northwest corner of the I-5 and SR-126 intersect, on the slopes above Castaic Creek near Castaic Junction. This occurrence is generally northeast of both the Newhall Ranch Specific Plan area and the Entrada project area. Seven polygons and approximately 4,600 individuals were observed in the study area (FLx 2002b). Spineflower was not observed during

surveys conducted in the study area in 2002. In 2003, a total of 27 polygons and approximately 170,181 individuals were observed in the study area (Dudek 2004c). In 2004, 24 polygons containing 1,471 individuals were detected (Dudek 2004f). In 2005, 45 polygons containing 223,155 individuals were detected (Dudek 2005c). In 2006, 15 polygons containing 204,405 individuals were detected (Dudek 2006c). The VCC project area accounted for approximately three percent in 2003, less than one percent in 2004, three percent in 2005, and 12 percent in 2006.

3.13 Climate. It is important to note that climatic conditions appear to relate to spineflower abundance. Both timing and amount of precipitation may be important factors in germination and survival of the spineflower (Sapphos 2001b). On the Enrolled Lands, the estimated number of spineflower was dramatically lower in 2002 and 2004 compared to 2003, 2005, and 2006.Years 2002 and 2004 experienced below-average rainfall, but rainfall was considered normal in 2003, according to the Western Regional Climate Center. Winter 2004/spring 2005 rainfall was considered to be above normal and winter 2005/spring 2006 was slightly below average but not as low as 2002 and 2004, according to the Western Regional Climate Center (http://www.wrcc.dri.edu/).

4.0 THREATS TO SPINEFLOWER

As part of this Agreement, the Service has determined that the mutually agreed upon Conservation Measures set forth in this Agreement, when combined with the benefits achieved through public acquisition and conservation of the Upper Las Virgenes Canyon Open Space Preserve, have the potential to preclude and remove the need to list the spineflower as threatened or endangered under the ESA. In making that determination, the Service considered numerous threats to the survival of the spineflower. The Service also specifically assessed the five "threat" factors that the Service must consider when making a listing decision under the ESA.

The spineflower is under threat by habitat loss due to residential development, competition from non-native plants (*e.g.*, several non-native grasses), stochastic events (such as erosion and fire), and the potential loss of native pollinator communities (such as native ants and honey bees) due to competition with and predation by non-native species (*e.g.*, Argentine ants (*Linepithema humilis*)).

The Service has acknowledged that the spineflower populations on the Upper Las Virgenes Canyon Open Space Preserve will be protected from the direct threats to the species as development plans have been eliminated due to the public acquisition of the site, and the Service and CDFG are working with the Conservancy to manage the Upper Las Virgenes Canyon Open Space Preserve site, including conservation of spineflower located thereon. Although Newhall's Enrolled Lands are proposed for development, which have the potential to cause the loss of most, if not all, of the remaining spineflower plant populations on those lands, the mutually agreed upon Conservation Measures set forth in this Agreement are designed to conserve and benefit spineflower populations located on Newhall's Enrolled Lands, thereby eliminating direct threats to the species.

The Service has considered various threats to survival of the spineflower, including those listed in **Sections 4.1** and **4.2**, below.

4.1 Five Threat Factors. As part of this Agreement, the Service considered the following five threats to the spineflower: (1) present or threatened destruction, modification or

curtailment of its habitat or range; (2) over-utilization for commercial, recreational, scientific or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; and (5) other natural or man-made factors affecting the spineflower's continued existence. Each of these threats is discussed further below.

4.1.1 Present or Threatened Destruction, Modification or Curtailment of Habitat or Range. Prior to its rediscovery on the former Ahmanson Ranch property in 1999, 20 collections of spineflower were made at 12 locations, with the most recent from the vicinity of Castaic in Los Angeles County in 1929 (Reveal/Hardham 1989). During the last few decades, numerous field botanists had been unable to locate the species, even where historically recorded, due largely to the alteration and loss of suitable habitat (Reveal/Hardham 1989). According to the Service, the best evidence suggests that spineflower is extirpated from all of the 12 general areas where it was originally collected.

The previous owner of Ahmanson Ranch had obtained approval for a development project in 1992, which would have destroyed approximately 75 percent of the total occurrences of spineflower on the site (County of Ventura 2002). The Service was working with the owner to redesign the project to protect more of the plants until 2003, when the State of California announced it had purchased the property through the Wildlife Conservation Board and transferred it to the Conservancy.

Threats to spineflower from habitat destruction or modification have decreased in recent years. One of the known populations, located on the former Ahmanson Ranch property site, is in permanent, public ownership and is managed by the Conservancy. The other populations located on Newhall's Enrolled Lands are under threat of development, and the potential for significant impacts exists to these spineflower populations, absent implementation of the Conservation Measures and Spineflower Conservation Plan described in this Agreement.

4.1.2. Over-utilization for Commercial, Recreational, Scientific, or Educational Purposes. This factor is not known to be applicable to spineflower.

4.1.3 Disease or Predation. The Service has found no evidence that disease is a factor affecting the spineflower, or that predation by livestock or wildlife is a current threat to this species. The former Ahmanson Ranch site was heavily grazed by sheep in the past, and Newhall's property in Los Angeles County has been grazed by cattle for several decades. Therefore, these factors are not applicable threats to survival of the spineflower.

4.1.4 Inadequacy of Existing Regulatory Mechanisms. Spineflower is not currently protected under federal laws, although it is listed as a candidate species by the Service. The spineflower was listed as an endangered species by the state Fish and Game Commission, effective September 2002. The state listing affords the plant protection from take on private and state-owned lands, pursuant to the state ESA.

The California Environmental Quality Act ("CEQA") requires the disclosure of a project's potential environmental impacts. The lead agency is the public agency with primary authority or jurisdiction over a project, and is responsible for conducting a review of each project and consulting with other agencies concerned with the resources affected by each project. In general, protection of listed species through CEQA depends on the discretion of the lead agency involved. The Service has taken the position that the adequacy of CEQA in protecting sensitive

biological resources is limited to the discretion of the local jurisdiction and may not be effective for species such as spineflower.

In February 2003, Newhall conveyed to CDFG permanent conservation easements, including funded management and erosion control plans, over approximately 64 acres of land in the Airport Mesa and Grapevine Mesa areas of the Newhall Ranch Specific Plan area as part of a spineflower preserve to be maintained in perpetuity (Impact 2003d). The Service has acknowledged that the spineflower conservation easement provides regulatory protection to some of the spineflower populations in the Airport Mesa and Grapevine Mesa areas of the Newhall Ranch Specific Plan area.

4.1.5 Natural or Other Factors Affecting its Continued Existence. Spineflower may be threatened by invasive non-native plants, including grasses that could potentially displace it from available habitat; compete for light, water, and nutrients; and reduce survival and establishment (CBI 2000, Sapphos 2001b, CDFG 2001). A recent study of the endangered *Chorizanthe pungens* var. *hartwegiana* (McGraw and Levin 1999) implicated shade as the primary factor affecting the survival, reproduction and biomass of *Chorizanthe*. Preliminary studies within the project study area indicated that shading may be an inhibitor of spineflower occurrence (Dudek 2006d). Additional test-plot experiments at Laskey Mesa indicate that maintaining subplots free of competing vegetation produced spineflower plants of exceptional size and number of involucres by producing additional primary, secondary, and tertiary branching (Sapphos 2003c). Current research and management approaches are inadequate to control the problem of nonnative plant invasions (Hobbs and Humphries 1995; Schierenbeck 1995). Proposed development also threatens to fragment known spineflower populations, which could increase the likelihood of invasion by non-native plant species. In light of these potential indirect effects, it has been determined that non-native invasive plant species pose a serious threat to the spineflower (CBI 2000, Sapphos 2001b, CDFG 2001).

Spineflower is particularly vulnerable to extinction due to its concentration in two geographic areas (Barren and Kohn 1991). This relatively small range makes the spineflower susceptible to extinction or extirpation due to random events such as fire, drought, erosion or other occurrences (Shaffer 1981, 1987; Meffe and Caroll 1994). Such events are not usually a concern unless the number of populations or geographic distribution is severely limited as is the case with spineflower. Once the number of populations or the plant population size is reduced, the remnant populations, or portions of populations, have a higher probability of extinction from random events (Primack 1998).

4.2 Other Threat Factors Assessed. As part of this Agreement, the Service has also considered the following additional threats to the spineflower: (1) vegetation clearing; (2) changes in hydrological conditions; and (3) chemical pollutants. Each of these threats is discussed further below.

4.2.1 Vegetation Clearing. When native vegetation is cleared for fire protection along the boundary between proposed development and known spineflower populations, or for the creation of roads or trails, non-native plant species may colonize gaps or bare areas. Non-native plant species often out-compete native species like spineflower. This risk factor is considered relatively high because of its relationship to invasive non-native plants and the uncertainty of controlling this factor (CBI 2000, CDFG 2001).

4.2.2 Changes in Hydrological Conditions. Spineflower can be adversely impacted by changes in surface and subsurface hydrological conditions (*i.e.*, increased irrigation and runoff). Proposed development can remove native vegetation, increase runoff from roads and other paved surfaces, and result in an increase in ornamental landscaping and turf that eventually will lead to an increase in irrigation. These consequences can result in increased erosion and transport of particulate matter into known spineflower populations. Altered erosion, increased surface flows and increased underground seepage can allow for the establishment of weedy non-native plant species and the invasion of Argentine ants (*Linepithema humilis*). Changed hydrological conditions can alter seed bank characteristics and modify habitat for ground-dwelling fauna. Consequently, this risk factor poses an indirect threat to known spineflower populations (CBI 2000).

4.2.3 Chemical Pollutants. Use of chemical pollutants during the development stage and by the residents of new development can decrease the number of plant pollinators, increase the existence of non-native plants, and cause damage to, or the destruction of, native plants. Herbicide use can cause fragmentation of known spineflower populations, and insecticide use can result in pollution drift that can kill known spineflower populations. Fertilizers, especially nitrogen rich fertilizers, can promote the growth of non-native plant species, to the detriment of native species not adapted to high nitrogen environments. Thus, the use of chemicals near known spineflower populations can have an adverse indirect impact (CBI 2000, Sapphos 2001b).

4.3 Relationship of Threat Factors to this Agreement. This Agreement is intended to reduce threats to the spineflower under all threat categories identified in **Sections 4.1** and **4.2** above. Conservation benefits for spineflower from implementation of this Agreement are expected in the form of: (1) establishment of spineflower preserve areas within the Enrolled Lands and (2) implementation of the Conservation Measures, adaptive management and monitoring of known spineflower populations and habitat on the Enrolled Lands. In summary, the spineflower Conservation Measures include, among other performance-based criteria:

(a) Updated survey requirements at the subdivision map level;

(b) Consultation requirements;

(c) Dedicated spineflower preserve areas, with connectivity, preserve design and buffer area requirements;

(d) Preserve protection measures;

(e) Fire management plan provisions;

(f) Water flow diversion and management provisions;

(g) Biological monitoring;

(h) Construction impact avoidance measures;

(i) Monitoring, reporting and management measures;

(j) Possible translocation and reintroduction program; and

(k) Restrictions on on-going agricultural activities.

These Conservation Measures are intended to contribute to an increase and reestablishment of spineflower over portions of the Enrolled Lands. Due to the threat of invasive

non-native plant species within or in the near vicinity of known spineflower populations, absent active management and monitoring as specified in this Agreement, existing habitat conditions and the resulting negative effects to spineflower are not expected to improve.

The Agreement also is expected to benefit spineflower by increasing spineflower populations on Enrolled Lands due to the specified conservation and other protection measures, including expanding the current range of the species by reintroducing/translocating spineflower into suitable, but currently unoccupied habitat. Spineflower should be less vulnerable to stochastic events (such as erosion and fire) as spineflower populations increase in size and area.

In addition, the Agreement is expected to benefit spineflower by minimizing the potential loss of native pollinator communities (such as native ants and honey bees) due to competition with and predation by non-native species (*e.g.*, Argentine ants).

5.0 CONSERVATION MEASURES AND OBLIGATIONS OF THE PARTIES

5.1 Newhall Obligations. Newhall agrees to undertake the Conservation Measures set forth below for the spineflower on the Enrolled Lands.

5.1.1 Cooperation with CDFG. Pursuant to Section 6 of the federal ESA, and the Service's interagency cooperative policy regarding the role of state agencies in Endangered Species Act activities (59 FR 34275), the Service acknowledges that spineflower is currently listed as an endangered species pursuant to the state ESA. Because of this listing, and in light of staffing and funding restraints at the federal level, the Service further acknowledges that the State of California, through CDFG, in consultation with the County of Los Angeles ("County"), is in the best position to directly monitor compliance with these Conservation Measures, with oversight provided by the Service at its discretion.

5.1.2 Newhall Ranch Mitigation Measures. The Conservation Measures set forth below are taken from the adopted Mitigation Monitoring Plan for the Newhall Ranch Specific Plan. The Conservation Measures identify the specific mitigation measure by the following reference: "MM [number]."

5.2 Conservation Measures.

5.2.1 Updated Survey Requirements at the Subdivision Map Level. As part of the subdivision map process involving the Enrolled Lands, Newhall shall prepare updated rare plant surveys. All such surveys shall be conducted during appropriate seasons by qualified botanists in a manner that will locate spineflower that may be present. To the extent that there are applicable spineflower protocols for such surveys published by the Service or CDFG, such protocols shall be followed in preparing the updated surveys. After completing such surveys, Newhall shall consult with CDFG regarding the results of those surveys.

5.2.2 Spineflower Preserves. Direct impacts to known spineflower populations within the Enrolled Lands shall be avoided or minimized through the establishment of one or more on-site preserves that are configured to ensure the continued existence of the species in perpetuity. These preserves shall be delineated in consultation with CDFG.

A sufficient number of known spineflower populations shall be included within delineated spineflower preserves in order to ensure the continued existence of the species in perpetuity. The conservation of known spineflower populations shall be established in consultation with the CDFG.

In addition to conservation of known populations, spineflower shall be introduced in appropriate habitat and soils in the delineated spineflower preserves. Creation of introduced populations shall require seed collection and/or top soil at impacted spineflower locations and nursery propagation to increase seed and sowing of seed. The seed collection activities and the maintenance of the bulk seed repository shall be approved in advance by the CDFG.

Once the boundaries of the spineflower preserves are delineated, Newhall shall be responsible for conducting a spineflower population census within each preserve annually for 10 years. The yearly spineflower population census documentation shall be submitted to CDFG and maintained by Newhall. If there are any persistent population declines documented in the annual population census reports, Newhall shall be responsible for conducting an assessment of the ecological factor(s) that are likely responsible for the decline, and shall, thereafter, implement management activity or activities to address these factors where feasible. In no event, however, shall project-related activities jeopardize the continued existence of the known spineflower populations. If a persistent population decline is documented, such as a trend in steady population decline that persists for a period of 5 consecutive years, or a substantial drop in population is detected over a 10-year period, spineflower may be introduced in consultation with CDFG in appropriate habitat and soils in the spineflower preserves, utilizing the bulk spineflower seed repository, together with other required management activity or activities. These activities shall be undertaken by a qualified botanist/biologist, subject to approval by CDFG. Newhall shall be responsible for the funding and implementation of the necessary management activity or activities, including monitoring, as approved by CDFG.

Annual viability reports shall be submitted to CDFG for 10 years following delineation of the spineflower preserves to ensure long-term documentation of the spineflower population status within each preserve. In the event annual status reports indicate the spineflower population within each preserve is not stable and viable 10 years following delineation of the spineflower preserves, Newhall shall continue to submit annual status reports to CDFG for a period of no less than an additional 5 years (MM 4.6-66).

5.2.3 Connectivity, Preserve Design and Buffers. Indirect impacts associated with the interface between the delineated spineflower preserves and planned development on the Enrolled Lands shall be avoided or minimized by establishing open space connections. In addition, buffers (*i.e.*, setbacks from developed, landscaped or other use areas) shall be established around portions of the delineated spineflower preserves not connected to open space areas. The open space connections and buffer configurations shall take into account local hydrology, soils, existing and proposed adjacent land uses, the presence of non-native invasive plant species, and seed dispersal vectors.

Open space connections shall be of adequate size and configuration to achieve a moderate to high likelihood of effectiveness in avoiding or minimizing indirect impacts (*e.g.*, invasive plants, increased fire frequency, chemicals, *etc.*) to the delineated spineflower preserves. Open space connections for the spineflower preserves shall be configured in consultation with CDFG.

For delineated spineflower preserves and/or those portions of such preserves not connected to open space areas, buffers shall be established at variable distances of between 80 and 200 feet from the edge of development to achieve a moderate to high likelihood of effectiveness in avoiding or minimizing indirect impacts (*e.g.*, invasive plants, increased fire

frequency, chemicals, *etc.*) to the delineated spineflower preserves. The buffer size/configuration shall be guided by the analysis set forth in the *Review of Potential Edge Effects on the San Fernando Valley Spineflower*, prepared by the Conservation Biology Institute, January 19, 2000, and other sources of scientific information and analysis, which are available at the time the preserves and buffers are established. Buffers for the spineflower preserves shall be configured in consultation with CDFG.

Roadways and road rights-of-way shall not be constructed in any delineated spineflower preserve or buffer location on the Enrolled Lands, unless constructing the road(s) in such locations is found to be the environmentally superior alternative. No other development or disturbance of native habitat shall be allowed within the spineflower preserves or buffers.

Newhall shall be responsible for revegetating open space connections and buffer areas of the spineflower preserves to mitigate temporary impacts due to grading that will occur within portions of those open space connections and buffer areas. The impacted areas shall be reseeded with a native seed mix to prevent erosion, reduce the potential for invasive non-native plants, and maintain functioning habitat areas within the buffer area. Revegetation seed mix shall be reviewed and approved by CDFG (MM 4.6-67).

5.2.4 Preserve Protection/Fencing. To protect the preserved spineflower populations, and to further reduce potential direct impacts to such populations due to unrestricted access, Newhall shall erect and maintain temporary orange fencing and prohibitive signage around each delineated preserve that is adjacent to areas impacted by proposed development prior to and during all phases of construction. Openings shall be included in the fence when located within wildlife corridors and habitat connectivity areas to allow for the safe passage of wildlife. The preserve manager shall indicate the location and width of each of these openings. The areas behind the temporary fencing shall not be used for the storage of any equipment, materials, construction debris or anything associated with construction activities.

Following the final phase of construction of any subdivision map adjacent to the spineflower preserves, Newhall shall install and maintain permanent fencing along the subdivision tract bordering each preserve. Permanent signage shall be installed on the fencing along the preservation boundary to indicate that the fenced area is a biological preserve, which contains protected species and habitat, that access is restricted, and that trespassing and fuel modification are prohibited within the area. The permanent fencing shall be designed to allow wildlife movement. The plans and specifications for the permanent fencing and signage shall be approved by CDFG (MM 4.6-68).

5.2.5 Preserve Protection/Hydrological Alterations. Indirect impacts resulting from changes to hydrology (*i.e.*, increased water runoff from surrounding development) at the interface between spineflower preserves and planned development on the Enrolled Lands shall be avoided or mitigated.

Achievement of this standard will be met through the documented demonstration by Newhall that the storm drain system achieves pre-development hydrological conditions for each spineflower preserve. To document such a condition, Newhall shall prepare a study of the pre- and post-development hydrology, in conjunction with the subdivision map process adjacent to each spineflower preserve. The study shall be used in the design and engineering of a storm drain system that achieves pre-development hydrological conditions. The study must conclude that proposed grade changes in development areas beyond the buffers will maintain pre-

development hydrology conditions within each preserve. The study shall be approved by the Planning Director of the County, and the resulting conditions confirmed by CDFG.

The storm drain system for any subdivision maps adjacent to any spineflower preserve must be approved by the County prior to the initiation of any grading activities (MM 4.6-69).

5.2.6 Road Construction Measures. Direct impacts to known spineflower populations associated with proposed road construction or modifications to existing roadways shall be further assessed for proposed road construction at the subdivision map level. To avoid or substantially lessen direct impacts to known spineflower populations, roadways shall be redesigned or realigned, to the extent practicable, to achieve the spineflower preserve and connectivity/ preserve design/buffer standards set forth above. Newhall acknowledges that road redesign and re-alignment are feasible means to avoid or substantially lessen potentially significant impacts on the now known spineflower populations. Road redesign or alignments to be considered at the subdivision map level include:

(a) Commerce Center Drive;

(b) Magic Mountain Parkway;

(c) Chiquito Canyon Road;

(d) Long Canyon Road;

(e) San Martinez Grande Road;

(f) Potrero Valley Road;

(g) Valencia Boulevard; and

(h) Any other or additional roadways that have the potential to result in significant impacts to known spineflower populations.

Roadways and road rights-of-way shall not be constructed in any spineflower preserves and buffer locations on the Enrolled Lands, unless constructing the roads in such location is found to be the environmentally superior alternative (MM 4.6-70).

5.2.7 Engineering, Design and Grading Modifications. Direct impacts to known spineflower populations shall be further assessed at the subdivision map level. To avoid or substantially lessen impacts to known spineflower populations at the subdivision map level, Newhall may be required to adjust development footprints, roadway alignments, and the limits, patterns and techniques associated with project-specific grading to achieve the spineflower preserve and connectivity/preserve design/buffer standards set forth above for all future subdivision maps that encompass identified spineflower populations (MM 4.6-71).

5.2.8 Fire Management Plan. A Fire Management Plan shall be developed to avoid and minimize direct and indirect impacts to the spineflower to protect and manage the spineflower preserves and buffers. The Fire Management Plan shall be completed by Newhall in conjunction with approval of any subdivision map adjacent to a spineflower preserve. The final Fire Management Plan shall be approved by the County Fire Department.

Under the final Fire Management Plan, limited fuel modification activities within the spineflower preserves will be restricted to selective thinning with hand tools to allow the maximum preservation of spineflower populations. No other fuel modification or clearance

activities shall be allowed in the spineflower preserves. Controlled burning may be allowed in the future within the spineflower preserves and buffers, provided that it is based upon a burn plan approved by CDFG. Newhall shall also be responsible for annual maintenance of fuel modification zones, including, but not limited to, removal of undesirable non-native plants, revegetation with acceptable locally indigenous plants and clearing of trash and other debris in accordance with the County Fire Department (MM 4.6-72).

5.2.9 Water Flow Diversion and Management. At the subdivision map level, Newhall shall design and implement project-specific design measures to minimize changes in surface water flows to the spineflower preserves for all subdivision maps adjacent to the preserves and buffers, and avoid and minimize indirect impacts to the spineflower. Prior to issuance of a grading permit for each such subdivision map, Newhall shall submit for approval to the County plans and specifications that ensure implementation of the following design measures:

(a) During construction activities, drainage ditches, piping or other approaches will be put in place to convey excess storm water and other surface water flows away from the spineflower preserves and connectivity/preserve design/buffers, identified above;

(b) Final grading and drainage design will be developed that does not change the current surface and subsurface hydrological conditions within the spineflower preserves;

(c) French drains will be installed along the edge of any roadways and fill slopes that drain toward the spineflower preserves;

(d) Roadways will be constructed with slopes that convey water flows within the roadway easements and away from the spineflower preserves;

(e) Where manufactured slopes drain toward the spineflower preserves, a temporary irrigation system would be installed in order to establish the vegetation on the slope areas. This system shall continue only until the slope vegetation is established and self-sustaining;

(f) Underground utilities will not be located within or through the spineflower preserves. Drainage pipes installed within the spineflower preserves away from spineflower populations to convey surface or subsurface water away from the populations will be aligned to avoid the preserves to the maximum extent practicable; and

(g) Fencing or other structural type barriers that will be installed to reduce intrusion of people or domestic animals into the spineflower preserves shall incorporate footing designs that minimize moisture collection (MM 4.6-73).

5.2.10 Biological Monitor. A knowledgeable, experienced botanist/biologist, subject to approval by CDFG, shall be required to monitor the grading and fence/utility installation activities that involve earth movement adjacent to the spineflower preserves to avoid the incidental take through direct impacts of conserved plant species, and to avoid disturbance of the preserves. The biological monitor will conduct bi-weekly inspections of the project site during such grading activities.

The biological monitor will have authority to immediately stop any such grading activity, and to take reasonable steps to avoid the take of, and minimize the disturbance to, spineflower populations within the preserves (MM 4.6-74).

5.2.11 Construction Impact Avoidance Measures. The following measures shall be implemented to avoid and minimize indirect impacts to spineflower populations during all phases of project construction:

(a) *Water Control*. Watering of the grading areas would be controlled to prevent discharge of construction water into the spineflower preserves or on ground sloping toward the preserves. Prior to the initiation of grading operations, Newhall shall submit for approval to the County an irrigation plan describing watering control procedures necessary to prevent discharge of construction water into the preserves and on ground sloping toward the preserves.

(b) *Storm Water Flow Redirection*. Diversion ditches would be constructed to redirect storm water flows from graded areas away from the spineflower preserves. To the extent practicable, grading of areas adjacent to the preserves would be limited to spring and summer months (May through September) when the probability of rainfall is lower. Prior to the initiation of grading operations, Newhall would submit for approval to the County a storm water flow redirection plan that demonstrates the flow of storm water away from the spineflower preserves.

(c) *Treatment of Exposed Graded Slopes*. Graded slope areas would be trimmed and finished as grading proceeds. Slopes would be treated with soil stabilization measures to minimize erosion. Such measures may include seeding and planting, mulching, use of geotextiles and use of stabilization mats. Prior to the initiation of grading operations, Newhall would submit for approval to the County the treatments to be applied to exposed graded slopes that would ensure minimization of erosion (MM 4.6-75).

5.2.12 Newhall Ranch Monitoring and Management. Direct and indirect impacts to the preserved spineflower populations shall require a monitoring and management plan, subject to the approval of the County. Newhall shall consult with CDFG with respect to preparation of the spineflower monitoring/management plan. This plan shall be in place when the preserves and connectivity/preserve design/buffers are established. The criteria set forth below shall be included in the plan.

Monitoring. The purpose of the monitoring component of the plan is to track the viability of the spineflower preserves and its populations. The monitoring component of the plan shall investigate and monitor factors such as population size, growth or decline, general condition, new impacts, changes in associated vegetation species, pollinators, seed dispersal vectors and seasonal responses. Necessary management measures will be identified. The report results will be sent annually to the County, CDFG and the Service, along with photo documentation of the assessed site conditions.

Newhall shall contract with a qualified botanist/biologist, approved by the County, with concurrence of CDFG, to conduct quantitative monitoring. The botanist/ biologist shall have a minimum of three years experience with established monitoring techniques and familiarity with southern California flora and target taxa. Field surveys of the spineflower preserves will be

conducted each spring. Information to be obtained will include: (a) an estimate of the numbers of spineflower in each population within the preserves; (b) a map of the extent of occupied habitat at each population; (c) establishment of photo monitoring points to aid in documenting long-term trends in habitat; (d) aerial photographs of the preserved areas at five-year intervals; (e) identification of significant impacts that may have occurred or problems that need attention, including invasive plant problems, weed problems and fencing or signage repair; and (f) overall compliance with the Conservation Measures specified in this Agreement.

For a period of three years commencing in 2003, all areas of potential habitat on the Enrolled Lands have been surveyed annually in the spring with the goal of identifying previously unrecorded spineflower populations. Because population size and distribution limits are known to vary depending on rainfall, annual surveys have been conducted for those areas proposed for development in order to establish a database appropriate for analysis at the project-specific subdivision map level (rather than waiting to survey immediately prior to proceeding with the project-specific subdivision map process). In this way, survey results gathered over time (across years of varying rainfall) will provide information on ranges in population size and occupation. New populations, as they are found, are mapped and assessed for inclusion in the preserve program to avoid impacts to the species.

Monitoring/Reporting. An annual report will be submitted to CDFG by December 31 of each year. The report will include a description of the monitoring methods, an analysis of the findings, effectiveness of the mitigation program, site photographs and adoptive management measures, based on the findings. Any significant adverse impacts, signage, fencing or compliance problems identified during monitoring visits will be reported to CDFG for corrective action by Newhall.

Management. Based on the outcome of on-going monitoring and additional project-specific surveys addressing the status and habitat requirements of the spineflower, active management of the spineflower preserves will be required in perpetuity. Active management activities will be triggered by a downward population decline over 5 consecutive years, or a substantial drop in population over a 10-year period from calendar year 2003. Examples of management issues that may need to be addressed in the future include, but are not limited to, control of exotic competitive non-native plant species, herbivory predation, weed control, periodic controlled burns or fuel modification compliance.

After any population decline documented in the annual populations census, Newhall shall be responsible for conducting an assessment of the ecological factor(s) that are likely responsible for the decline, and shall implement management activity or activities to address these factors where feasible. If a persistent population decline is documented, such as a trend in steady population decline persistent for a period of 5 consecutive years, or a substantial drop in population detected over a 10-year period, spineflower may be introduced in appropriate habitat and soils in the spineflower preserves, utilizing the bulk spineflower seed repository, together with other required management activity or activities. In connection with this monitoring component, Newhall shall contract with a qualified botanist/biologist, approved by the County, to complete: (a) a study of the breeding and pollination biology of the spineflower, including investigation into seed physiology to assess parameters that may be important as management tools to guarantee self-sustainability of populations, which may otherwise have limited opportunity for germination; and (b) a population genetics study to document the genetic diversity of the spineflower populations. The criteria for these studies shall be to develop data to

make the spineflower management program as effective as possible. These studies shall be subject to approval by the County, with the concurrence of CDFG. These activities shall be undertaken by a qualified botanist/biologist, subject to approval by the County, with concurrence of CDFG. Newhall shall be responsible for the funding and implementation of the necessary management activity or activities, as approved by the County and CDFG.

The length of the active management components set forth above shall be governed by attainment of successful management criteria rather than by a set number of years (MM 4.6-77).

5.2.13 Translocation/Reintroduction Program. To the extent project-related direct and indirect significant impacts on spineflower cannot be avoided or substantially lessened through establishment of the spineflower preserves, and other avoidance, minimization, or other compensatory mitigation measures, a translocation and reintroduction program may be implemented in consultation with CDFG to further mitigate such impacts. Direct impacts (*i.e.*, take) to occupied spineflower areas shall be fully mitigated at a 4:1 ratio. Impacts to occupied spineflower areas caused by significant indirect effects shall be mitigated at a 1:1 ratio.

Introduction of new spineflower areas will be achieved through a combination of direct seeding and translocation of the existing soil seed bank that would be impacted by grading. Prior to any development within, or disturbance to, spineflower populations, on-site and off-site mitigation areas shall be identified and seed and top soil shall be collected. One-third of the collected seed shall be sent to the Rancho Santa Ana Botanical Garden for storage. One third of the seed shall be sent to the USDA National Seed Storage Lab in Fort Collins, Colorado for storage. One third shall be used for direct seeding of the on-site and off-site mitigation areas.

Direct seeding. Prior to the initiation of grading, Newhall shall submit to the County a program for the reintroduction of spineflower on portions of the Enrolled Lands, or on mutually acceptable off-site lands. The reintroduction program shall include, among other information: (a) location map with scale; (b) size of each introduction polygon; (c) plans and specifications for site preparation, including selective clearing of competing vegetation; (d) site characteristics; (e) protocol for seed collection and application; and (f) monitoring and reporting. Newhall shall implement the reintroduction program prior to the initiation of grading. Success criteria shall be included in the monitoring/management plan, with criteria for the germination, growth, and production of viable seeds of individual plants for a specified period.

Although the reintroduction program is experimental at this stage, the parties consider such a program to be a feasible form of conservation at this juncture based upon available studies. Botanists/biologists familiar with the ecology and biology of the spineflower would prepare and oversee the reintroduction program.

Translocation. Prior to the initiation of grading, Newhall shall submit to the County a translocation program for the spineflower. Translocation would salvage the topsoil of spineflower areas to be impacted due to grading. Salvaged spineflower soil seed bank would be translocated to the candidate spineflower reintroduction areas. The translocation program shall include, among other information: (a) location map with scale; (b) size of each translocation polygon; (c) plans and specifications for site preparation, including selective clearing of competing vegetation; (d) site characteristics; (e) protocol for topsoil collection and application; and (f) monitoring and reporting. Translocation shall occur within the candidate spineflower reintroduction areas on site and off site.

Although the translocation program is experimental at this stage, the parties consider such a program to be a feasible form of conservation at this juncture based upon available studies. Botanists/biologists familiar with the ecology and biology of the spineflower would prepare and oversee the translocation program (MM 4.6-78).

5.2.14 On-Going Agricultural Activities. Newhall shall engage in regular and on going consultation with CDFG in connection with its on-going agricultural operations in order to avoid or minimize significant direct impacts to the spineflower.

In addition, Newhall shall provide 30 days advance written notice to CDFG of the proposed conversion of its on-going rangeland operations on the Enrolled Lands to more intensive agricultural uses. The purpose of the advance notice requirement is to allow Newhall to coordinate with CDFG to avoid or minimize significant impacts to the spineflower prior to Newhall's proposed conversion of its on-going rangeland operations to more intensive agricultural uses. Implementation will consist of the County Department of Regional Planning and/or the Regional Director of CDFG conducting a site visit of the proposed conversion area(s) within the 30-day period, and making a determination of whether the proposed conversion area(s) would destroy or significantly impact spineflower populations in, or immediately adjacent to, said conversion area(s). If it is determined that the conversion area(s) do not destroy or significantly impact spineflower populations, then the County and/or CDFG will authorize such conversion activities in the proposed conversion area(s). If it is determined that the conversion area(s) may destroy or significantly impact spineflower populations, then the County or CDFG will issue a stop work order to Newhall. If such an order is issued, Newhall shall not proceed with any conversion activities in the proposed conversion area(s). However, Newhall may take steps to relocate the proposed conversion activities in an alternate conversion area(s). In doing so, Newhall shall follow the same notice and coordination provisions identified above. This conversion shall not include ordinary pasture maintenance and renovation or dry land farming operations consistent with rangeland management (MM 4.6-79).

5.3 Service Obligations. The Service agrees to undertake the obligations set forth below for the spineflower on the Enrolled Lands.

5.3.1 Pursuant to Section 6 of the federal ESA and the Service's interagency cooperative policy regarding the role of state agencies in Endangered Species Act activities (59 FR 34275), the Service shall cooperate with Newhall and CDFG to implement the Conservation Measures described in this Agreement.

5.3.2 The Service shall provide prompt review to Newhall of any plans, reports, studies or other documents required by the Conservation Measures set forth in **Section 5.2** of this Agreement. No review period shall exceed thirty (30) days from actual delivery to the Service of such plans, reports, studies, or documents.

5.3.3 The Service shall provide staffing necessary to promptly carry out its role, as described in the Conservation Measures set forth in **Section 5.2** of this Agreement.

5.3.4 The Service shall seek funding necessary to carry out all of its obligations under **Section 5.0** of this Agreement.

5.3.5 The Service shall seek funding to support spineflower research, survey work, and habitat enhancement, restoration or management on the Enrolled Lands.

6.0 LEVEL/TYPE OF IMPACTS

The ESA's take provision pursuant to Section 9 is not applicable to the possible impacts that may occur to plant species. Impacts on a listed endangered plant species under the ESA, 16 U.S.C. §1538(a)(2), involve unlawfully removing and possessing a listed plant from areas under federal jurisdiction; maliciously damaging or destroying a listed plant species within any such area; or removing, cutting, digging up, or damaging or destroying a listed plant species in any other area in knowing violation of state law prohibiting such conduct or in violation of a state criminal trespass law.

An ESA candidate species does not receive protection under the ESA, 16 U.S.C. §1538(a)(2). Thus, in developing a CCA, the primary objective is to avoid, reduce, or minimize the possible impacts to the plant species to the point that listing the species under the ESA is not necessary. Although the objective is to avoid or minimize the impacts of threats and land-use activities, in achieving this objective, the Service has recognized that some impacts to the spineflower will occur within the Enrolled Lands. The identified impacts (*e.g.*, development/modification, wildfires, vegetation clearing, hydrological changes, chemical pollutants, *etc.*) to the spineflower have been addressed in this Agreement, the Spineflower Conservation Plan, and the associated environmental documentation. In addition, such documentation has identified the conservation measures needed to protect the long-term survival and continued persistence of spineflower populations and its habitat.

7.0 FUNDING

Newhall shall be responsible for funding the work described in the Conservation Measures set forth in **Section 5.2** of this Agreement, and the Spineflower Conservation Plan that is made part of this Agreement.

8.0 IMPLEMENTATION

The Conservation Measures set forth in **Section 5.2** of this Agreement shall be implemented and funded by Newhall, consistent with the terms and conditions provided in the Spineflower Conservation Plan, which is attached hereto as **Exhibit "B"** and incorporated by reference.

The Spineflower Conservation Plan (**Exhibit "B"**) is the method by which Newhall will implement the mitigation measures adopted by the Los Angeles County Board of Supervisors in the certified Program Environmental Impact Report for the Newhall Ranch Specific Plan and Water Reclamation Plant (SCH No. 95011015). The Spineflower Conservation Plan incorporates and reflects the adopted mitigation measures, but will adaptively apply them based on the best available scientific information on the spineflower.

9.0 DURATION OF AGREEMENT

The duration of this Agreement will be twenty-five (25) years from the date upon which the last party executes the Agreement.

10.0 MODIFICATIONS TO THE AGREEMENT

Any party may propose modifications to this Agreement by providing written notice to the other party. Such notice shall include a statement of the proposed modification and the reason for such modification. The parties will use their best efforts to respond to proposed modifications within thirty (30) days of actual delivery of such notice. Proposed modifications

will become effective upon the other parties' written approval and completion of any necessary environmental analysis as required by the National Environmental Policy Act ("NEPA") or the federal ESA.

11.0 AGREEMENT RENEWAL

The Agreement can be renewed. At least 90 days prior to expiration of this Agreement, the Service may notify Newhall of the upcoming renewal opportunity. Neither Newhall, nor the Service is obligated to renew the Agreement. However, if Newhall elects to renew the Agreement, the Service will renew the Agreement upon terms mutually agreeable to the parties.

12.0 TERMINATION OF THE AGREEMENT

Newhall may terminate this Agreement prior to expiration, even if the terms and conditions of the Agreement have not been realized.

13.0 ADDITIONAL PROVISIONS

13.1 Remedies. Each party shall have all remedies otherwise available to enforce the terms of this Agreement, except that no party shall be liable in damages for any breach of this Agreement, any performance or failure to perform an obligation under this Agreement or any other cause of action arising from this Agreement.

13.2 Dispute Resolution. The parties agree to work together in good faith to resolve any disputes, using dispute resolution procedures agreed upon by the parties.

13.3 Availability Of Funds. Implementation of this Agreement is subject to the requirements of the Anti-Deficiency Act and the availability of appropriated funds. Nothing in this Agreement will be construed by the parties to require the appropriation or expenditure of any money from the U.S. Treasury. The parties acknowledge that the Service will not be required under this Agreement to expend any federal agency-appropriated funds unless and until an authorized official of that agency affirmatively acts to commit to such expenditures as evidenced in writing.

13.4 No Third-Party Beneficiaries. This Agreement does not create any new right or interest in any member of the public as a third-party beneficiary, nor shall it authorize anyone not a party to this Agreement to maintain a suit for personal injuries or damages pursuant to the provisions of this Agreement. The duties, obligations and responsibilities of the parties to this Agreement with respect to third parties shall remain as imposed under existing law.

13.5 Relationship To Authorities. The terms of this Agreement shall be governed by and construed in accordance with applicable federal law. Nothing in this Agreement is intended to limit the authority of the Service to fulfill its responsibilities under federal laws. All activities undertaken pursuant to this Agreement must be in compliance with all applicable state and federal laws and regulations.

13.6 Succession And Transfer. This Agreement shall be binding on and shall inure to the benefit of the parties and their respective successors and transferees, in accordance with applicable regulations (currently codified at 50 CFR §§13.24 and 13.25).

13.7 Notices And Reports. Any notices, demands or reports required by this Agreement shall be given in writing and: (a) delivered in person (including messenger or courier service); (b) by facsimile (but only if also delivered in writing sent by certified mail, postage pre-

paid, return receipt requested); (c) mailed by certified mail, postage pre-paid, return receipt requested; or (d) mailed by overnight mail service (Federal Express, United Parcel Service, *etc*.), addressed as follows:

If to the Service, addressed to:

Ventura Field Office
Attn: Field Supervisor
U.S. Fish and Wildlife Service
2493 Portola Road, Suite B
Ventura, CA 93003
Telephone: (805) 644-1766
Fax: (805) 644-3958

If to Newhall, addressed to:

The Newhall Land and Farming Company
Attn: Steven D. Zimmer
23823 Valencia Boulevard
Valencia, CA 91355
Telephone: (661) 255-4000
Fax: (661) 288-1052

The Newhall Land and Farming Company
Attn: Mark A. Subbotin
23823 Valencia Boulevard
Valencia, CA 91355
Telephone: (661) 255-4000
Fax: (661) 288-1052

With a copy to:

Gatzke Dillon & Ballance LLP
Attn: Mark J. Dillon
1525 Faraday Avenue, Suite 150
Carlsbad, CA 92008
Telephone: (760) 431-9501
Fax: (760) 431-9512

Center for Natural Lands Management
425 East Alvarado Street, Suite H
Fallbrook, California 92028
Telephone: (760) 731-7790
Fax: (760) 731-7791

Each such notice, demand or report, if addressed and delivered as described above, shall be effective upon the date of actual delivery, whether or not accepted by addressee.

13.8 Duplicate Originals. This Agreement may be executed by facsimile signatures and in counterparts, each of which when so executed, shall constitute an original, and all of which taken together shall constitute one and the same document. This Agreement may also be executed in any number of duplicate originals. A complete original of this Agreement shall be maintained in the official records of each of the parties hereto.

14.0 LITERATURE REFERENCES

The following literature references were used or considered by the parties to this Agreement, and are incorporated by this reference and made a part of this Agreement:

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Dudek & Associates, Inc. 2004c. *2003 Sensitive Plant Survey Results for the Valencia Commerce Center Site, Los Angeles County, California.*

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IN WITNESS WHEREOF, the parties have entered into this Agreement, to be effective as of the date of the last signature shown below.

Dated: _____ **THE NEWHALL LAND AND FARMING COMPANY**,
(a California limited partnership)

By: NWHL GP LLC
Its: General Partner

By: _____

Name: _____

Its: _____

By: _____

Name: _____

Its: _____

Dated: _____ **UNITED STATES FISH AND WILDLIFE SERVICE**

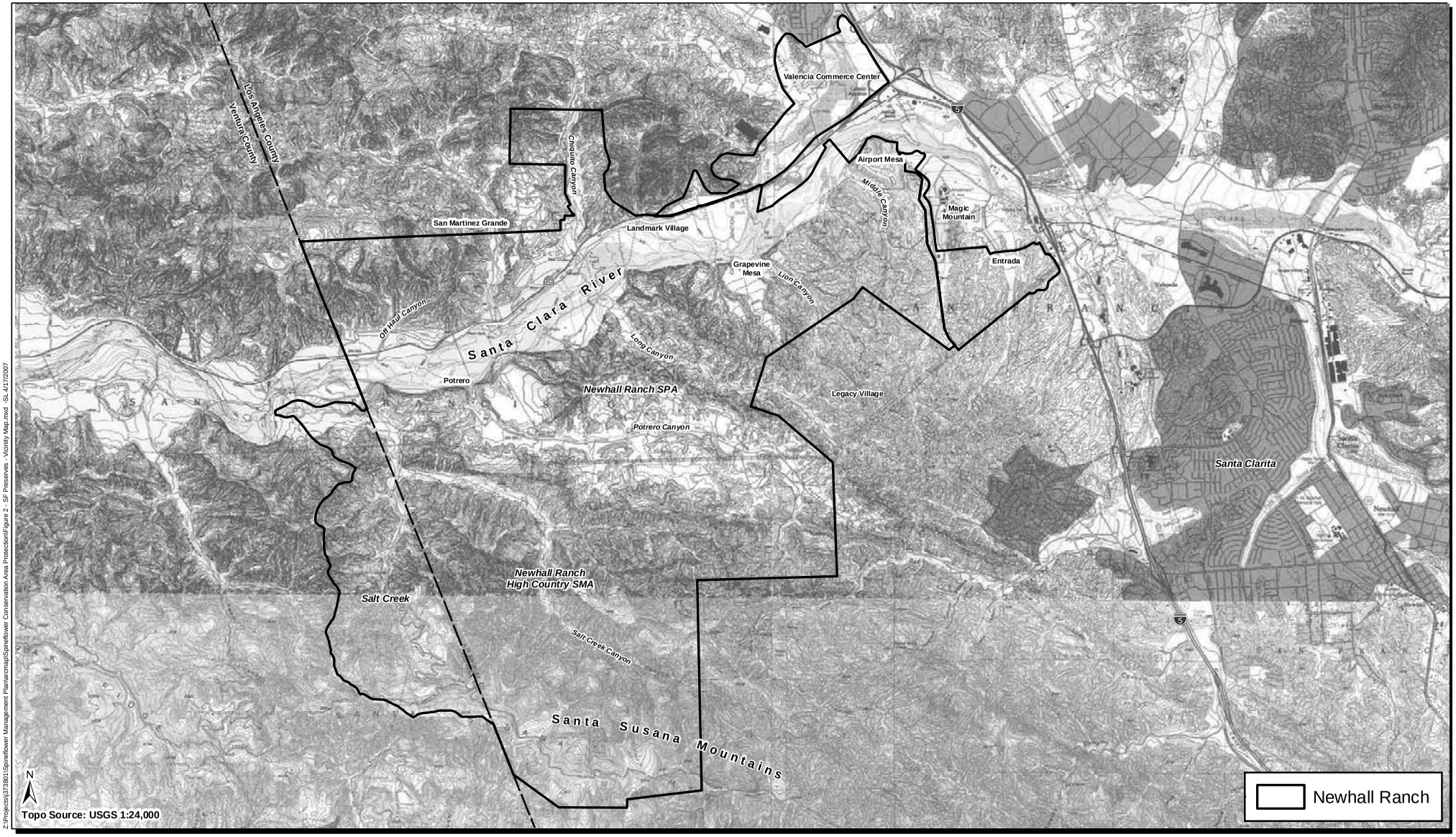
By: _____

Name: _____

Its: _____

Exhibit "A"

[Location Map depicting Enrolled Lands]



Z:\Projects\373801\Spineflower Management Plan\arcmap\Spineflower Conservation Area Protection\Figure 2 - SF Preserves - Vicinity Map.mxd -SL 4/17/2007

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Newhall Land - San Fernando Valley Spineflower Conservation Plan

Vicinity Map

FIGURE 2

Exhibit "B"

[Spineflower Conservation Plan]

Please refer to the **Draft Spineflower Conservation Plan**

Presented earlier in the Landmark Village Final EIR Appendices

Wetlands Mitigation Plan
Dudek, 2007

Conceptual Wetlands Mitigation Plan

Landmark Village Project

DRAFT

JUNE 2007

PREPARED FOR:

The Newhall Land and Farming Company
23823 Valencia Blvd.
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DRAFT

CONCEPTUAL WETLANDS MITIGATION PLAN

for the

LANDMARK VILLAGE PROJECT

Santa Clara River, Los Angeles County, California

Prepared for:

THE NEWHALL LAND AND FARMING COMPANY
23823 Valencia Boulevard
Valencia, California 91355
Contact: Glenn Adamick

Prepared by:

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JUNE 2007

Draft Conceptual Wetlands Mitigation Plan
Landmark Village Project
Santa Clara River, Los Angeles County, California

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Draft Conceptual Wetlands Mitigation Plan
Landmark Village Project
Santa Clara River, Los Angeles County, California

1.0 INTRODUCTION

1.1 Background

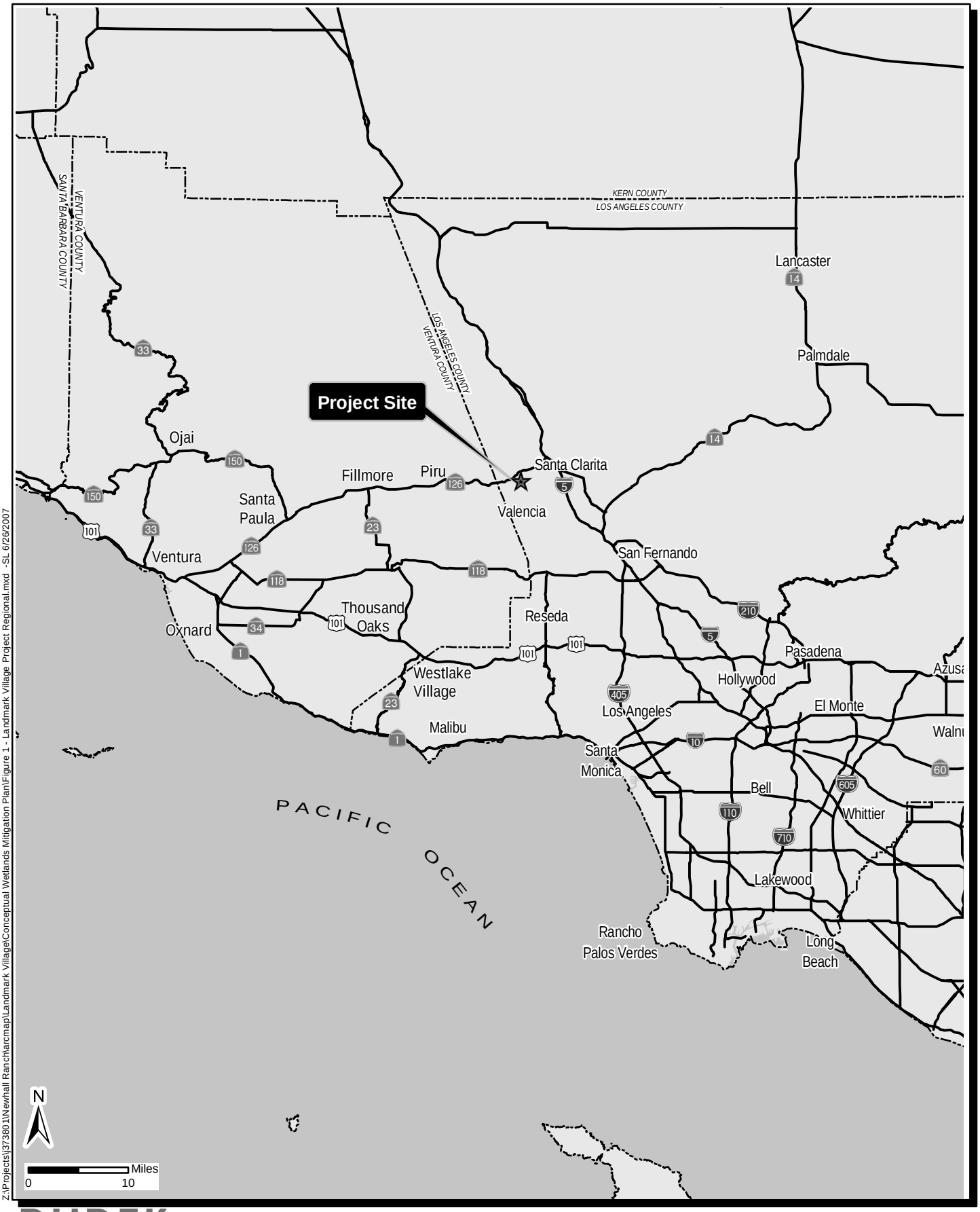
The Landmark Village project is located south of State Route 126 (SR-126) and west of Interstate 5 (I-5) in the Newhall Ranch Specific Plan area within an unincorporated part of Los Angeles County, California (*Figure 1*).

This conceptual mitigation plan addresses permanent and temporary jurisdictional wetlands impacts associated with the proposed construction of the Landmark Village project and provides a mitigation program that satisfies mitigation measures described in the certified Newhall Ranch Specific Plan area (NRSP) Environmental Impact Report (EIR) and the Landmark Village EIR (once certified). This mitigation plan will also satisfy the Resource Management and Development Plan (RMDP), California Department of Fish and Game (CDFG), Army Corps of Engineers (ACOE), and Regional Water Quality Control Board (RWQCB) permit requirements, once they have been issued.

1.2 Project Description

The project applicant proposes to develop the 292.6-acre Landmark Village tract map site. The Landmark Village project is located within the first phase of the Riverwood Village area of the approved NRSP. The proposed project consists of residential, mixed-use, and commercial development, along with roads, an elementary school site, a community park, recreational centers, open space, trails, and off-site grading/improvements, including the Long Canyon Road Bridge, bank stabilization, drainage improvements, and the establishment of potable and reclaimed water tanks, utility corridor, borrow site, and related haul routes. These project components, combined, equal approximately 1,000 acres.

The majority of jurisdictional impacts will result from the installation of buried bank stabilization and the Long Canyon Road Bridge. The buried bank protection project will use soil cement to provide bank protection/stabilization along a segment of the Santa Clara River to allow for development of the adjacent land. The majority of the tract map site is currently used for agriculture. The remaining portion of the tract map site is composed of various disturbed lands, southern cottonwood–willow riparian forest, arrow weed scrub, mulefat scrub, and river wash. The remaining project components occur in both developed and undeveloped areas (agricultural fields, riverbed and tributary drainages, existing highway and local roadways, and undisturbed native habitats).



Z:\Projects\j373801\Newhall Ranch\arcmap\Landmark Village\Conceptual Wetlands Mitigation Plan\Figure 1 - Landmark Village Project Regional.mxd -SL 6/26/2007

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Landmark Village Conceptual Wetlands Mitigation Plan

Regional Map

FIGURE
1

1.3 Project Location

The Landmark Village project is located immediately downstream of the confluence of Castaic Creek and the Santa Clara River southwest of the intersection between SR-126 and Commerce Center Drive in the City of Santa Clarita, Los Angeles County, California. SR-126 runs generally along the northern boundary of the project site (*Figure 2*). The Santa Clara River forms the southern boundary of the tract map site. Other project components are located south of the tract map site, within and south of the river (borrow site, haul routes, bank protection, and bridge construction); east of the tract map site (bank protection); and along SR-126 and Chiquito Canyon Road, east, west, and north of the tract map site (drainage channel improvements, potable and reclaimed water tanks, and utility corridor).

1.4 Responsible Parties

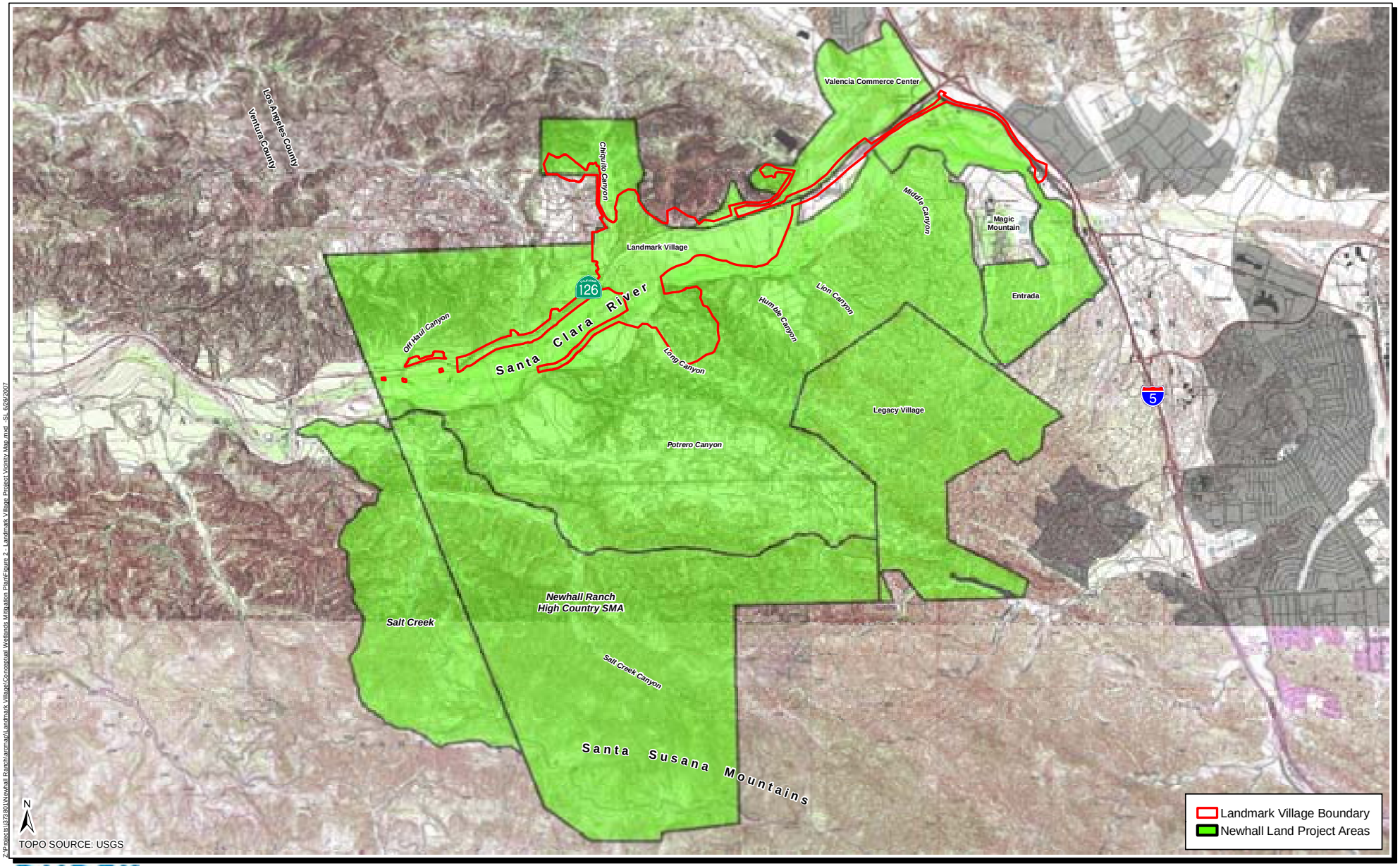
1.4.1 Applicant Responsibilities

The Newhall Land and Farming Company (Newhall Land) is the applicant for the project. The contact person for Newhall Land is Glenn Adamick. Newhall Land is financially responsible for all costs associated with the implementation, monitoring, maintenance, and long-term management and protection of the mitigation area, as defined in this document and under applicable sections of the NRSP area EIR, Landmark Village EIR, and master CDFG, ACOE, and RWQCB permits.

The mitigation project area shall be accessible to CDFG, ACOE, RWQCB, the U.S. Fish and Wildlife Service (USFWS) and the County of Los Angeles throughout project review and installation and during the 5-year maintenance and monitoring period.

1.4.2 Project Biologist Responsibilities

A qualified project biologist(s) will be selected to implement mitigation installation monitoring and long-term maintenance monitoring of the mitigation area. The project biologist will possess specific knowledge and project-level experience with wetlands restoration and enhancement projects. The project biologist must demonstrate an understanding of local plant community ecology, habitat restoration, and weed removal and have expertise in plant and wildlife identification. The project biologist will possess at least 3 years of wetlands restoration experience in Southern California.



Z:\Projects\373801\Newhall Ranch\arcmap\Landmark Village\Conceptual Wetlands Mitigation Plan\Figure 2 - Landmark Village Project Vicinity Map.mxd SL 6/26/2007

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Landmark Village Conceptual Wetlands Mitigation Plan

Vicinity Map

FIGURE 2

The project biologist, in coordination with Newhall Land and the various permitting agencies, will review applicable contract documents to gain a complete understanding of the project. The project biologist shall be responsible for monitoring compliance with environmental permits during mitigation construction (fine grading, irrigation installation, and planting), and long-term biological monitoring and reporting on the mitigation area.

During development construction, the project biologist will monitor approved development impact limits, site clearing activities, and salvaging of topsoil to be used in restoration. The project biologist shall ensure that Newhall Land follows the guidelines of this plan, the NRSP EIR, the Landmark Village EIR, resource agency permits, and construction and landscape documents as they apply to mitigation. Technical consultation shall be provided for interpretation of plans, field monitoring of project installation, and biological monitoring and reporting throughout the 5-year long-term monitoring period.

The project biologist will inform project personnel prior to implementation of this conceptual plan of on-site construction restrictions. The project biologist will inform project personnel of the presence or potential presence of sensitive species and sensitive vegetation communities within or adjacent to the restoration/creation/enhancement project areas, as well as known biological-related dangers on site (e.g., rattlesnakes, bee hives, stinging nettle). Information about federal, state, and local laws relating to these biological resources will be discussed as part of the personnel education. Access and staging areas outside of environmentally sensitive areas will be established.

The project biologist will periodically monitor mitigation project activities to confirm compliance with the above requirements. During installation and maintenance, the project biologist will have the authority to stop work in situations where biological resources not permitted to be impacted are in imminent danger of impacts from installation or maintenance work. The project biologist shall document in an observation report construction activities relating to the mitigation plan and any project deficiencies and shall prepare annual reports and summary progress reports as described in *Section 8.1*.

1.4.3 Restoration Contractor Responsibilities

Revegetation installation and long-term maintenance shall be provided by a contractor who possesses a valid California C-27 Landscape Contractor's license, who has previous experience with habitat revegetation in the region, and who can demonstrate at least three successful similar wetland enhancement projects of significant size in vegetation community types in Southern

California. The restoration contractor hired for installation may be separate from a restoration contractor hired for long-term maintenance.

During the implementation phase, the restoration contractor will be responsible for project installation, including initial weed treatment and removal, irrigation installation, seeding, planting, mulch installation, erosion control, any necessary grading, and other tasks as directed by the project biologist as described in this document, the construction documents, the NRSP EIR, the Landmark Village EIR, and all resource agency permits. During the long-term monitoring phase, the restoration contractor will be responsible for maintenance of the irrigation system, weed control, erosion control, trash removal, replanting, and other tasks as directed by the project biologist and as described in all construction documents. The restoration contractor's responsibility will continue until success criteria have been met, pursuant to resource agency permits and this mitigation plan.

1.4.4 Construction Documents

Following approval of this conceptual plan, construction drawings and specifications will be prepared for construction purposes. Construction drawings and specifications will conform to all aspects of this conceptual plan, the NRSP EIR, the Landmark Village EIR, and permit conditions required by the resource agencies. Construction documents will incorporate the most current site condition information available. Any significant changes to site conditions and final mitigation plans may be subject to review and comment by permitting resource agencies. The plan package will include a site plan showing proposed work areas and final site facilities, construction details, irrigation and planting plans, and any additional grading. Construction documents shall provide location and details of any resource-agency-required signage or access restrictions.

1.4.5 As-Built Conditions

As-built plans for this mitigation project will only be required if the installation project substantially deviates from this plan and/or the permit conditions. If necessary, as-built plans will reflect changes to the configuration of vegetation community areas and site elevations that may affect project success.

2.0 EXISTING CONDITIONS

2.1 Field Reconnaissance

On March 14, 2007, Dudek habitat restoration specialists Stuart Fraser and Adam Causey established point-intercept transects to collect data for evaluation of existing native and non-native

vegetation cover values in the native vegetation communities to be impacted by this tract map development and associated borrow site, bank protection construction, bridge construction, haul routes, drainage channel improvements, potable and reclaimed water tanks, and utility corridor. Data was collected from two 25-meter transects established in existing mulefat scrub, arrow weed scrub, southern cottonwood-willow riparian forest, and river wash vegetation communities on site. Vegetation intercepting the transect line at 0.5-meter intervals was recorded. Data was collected in three different vertical strata, including herbaceous layer (0.0 meter – 1.0 meter), shrub layer (1.0 meter – 3.0 meters), and canopy layer (3.0 meters and higher). This data was utilized to establish success criteria for replacement vegetation communities as required by the NRSP EIR and the Landmark Village EIR (*Section 7.4*).

A list of plant species observed within the NRSP from 2002-2006 is presented in *Appendix A*.

2.2 Existing Plant Communities and Land Covers

A total of 23 plant communities and associated alliances and 2 existing land use areas (active agriculture and developed areas) was identified on the project site during the field investigations based on species composition and general physiognomy using CDFG classification. Sixteen of these plant communities, including California annual grassland (49.95 acres), southern cottonwood–willow riparian forest (26.66 acres), coast live oak woodland (1.81 acres), California sagebrush scrub (84.57 acres), undifferentiated chaparral scrubs (48.64 acres), arrow weed scrub (6.93 acres), mulefat scrub (10.74 acres), southern willow scrub (3.70 acres), big sagebrush scrub-California buckwheat (0.54 acres), California sagebrush scrub–*Artemisia* (0.42 acres), California sagebrush scrub–black sage (5.58 acres), California sagebrush scrub–California buckwheat (40.93 acres), California sagebrush scrub–purple sage (14.45 acres), chamise chaparral (2.84 acres), southern coast live oak riparian forest (0.64 acre), and big sagebrush scrub (11.59 acres) correspond with the "List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database" (CDFG 2003). Included (where applicable) are the codes corresponding to the "List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database" (CDFG 2003). The remaining six described communities—disturbed land (239.93 acres), herbaceous wetlands (2.35 acres), California sagebrush scrub–undifferentiated chaparral (62.05), open channel–developed (0.02 acre), river wash (14.07 acres), and alluvial scrub (0.47 acre) —do not fit a defined plant community classification and, therefore, are defined by their dominant plant species. The plant communities and the land uses occurring on the project site are discussed below. These vegetation communities and land covers are described below, and their acreages are presented in *Table 1*. Qualitative data and a brief structural description for each of the vegetation community types to be mitigated are presented in *Table 2*.

TABLE 1
2006 Vegetation Community Data for Landmark Village

Vegetation Communities	Existing Acreage
Agriculture	404.92
Alluvial scrub	0.47
Arrow weed scrub	6.93
Big sagebrush scrub	11.59
Big sagebrush scrub – California buckwheat	0.54
California annual grassland	49.95
California sagebrush scrub	84.57
California sagebrush scrub–*Artemisia*	0.42
California sagebrush scrub–black sage	5.58
California sagebrush scrub–California buckwheat	40.93
California sagebrush scrub–purple sage	14.45
California sagebrush scrub–undifferentiated chaparral	62.05
Undifferentiated chaparral	48.64
Chamise chaparral	2.84
Coast live oak woodland	1.81
Developed areas	9.52
Disturbed land	239.93
Herbaceous wetlands	2.35
Mulefat scrub	10.74
Open channel–developed	0.02
River wash	14.07
Southern coast live oak riparian forest	0.64
Southern cottonwood–willow riparian forest	26.66
Southern willow scrub	3.70
Total	**1043.31**

2.2.1 Agriculture

The majority of the development site is currently used for agricultural purposes. At the time of the 2006 vegetation community surveys, the agricultural fields on the tract map site were fallow and contained non-native grasses and other ruderal vegetation. The agricultural fields are disked regularly. The 19.84 acres of agriculture not developed by the proposed Landmark Village project would be temporarily disturbed by bank stabilization and/or haul roads, but would be restored to native vegetation following completion of construction.

TABLE 2
2007 Vegetation Community Quality Data

Vegetation Community Type	% Native Species	% Non-Native Species	% Absolute Native Cover	Structural Diversity
Southern cottonwood–willow riparian forest	70%	30%	65%	Well-developed cottonwood and willow canopy with understory dominated by exotic grasses.
Arrow weed scrub	83%	17%	51%	Thickets of dense arrow weed cover in shrub layer. Groundcover consists of mainly native scrub vegetation and weedy exotic annuals.
Mulefat scrub	63%	37%	29%	Thickets of dense mulefat cover in shrub layer, but groundcover is disturbed and mainly consists of weedy exotic annuals.
River wash	100%	0%	2%	Dominated by bare ground due to scouring. Diverse vegetation in river wash and along banks, including native and exotic plants.

2.2.2 California Annual Grassland

California annual grassland is a non-native grassland vegetation community that typically refers to areas with a sparse to dense cover of annual grasses, often associated with showy-flowered annual forbs (Holland 1986). These areas typically occur where the native grassland vegetation has been disturbed frequently or intensively by grazing, fire, agriculture, or other practices, resulting in the removal of the native seed source from the soil. Native grasses are often incapable of recovering, allowing weedy, introduced annual grasses and forbs to colonize. Dominant species include slender wild oat (*Avena barbata*), bromes (*Bromus diandrus*, *B. madritensis*, *B. hordeaceus*), and forbs such as mustards (*Brassica* and *Sisymbrium* spp.), filaree (*Erodium* spp.), and Russian thistle (*Salsola tragus*).

Within the project footprint, non-native grassland vegetation occurs on the flat floodplain terraces immediately adjacent to the Santa Clara River and supports at least 50% cover of annual non-native grasses, with the remaining cover dominated by non-native annual forbs (*Figure 3*). Dominant species include slender wild oat, ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), red brome (*Bromus madritensis*), and mustards.

Figure 3 Existing Conditions Photos

Photo 1: California annual grassland

Photo 2: Southern cottonwood–willow riparian forest

2.2.3 Southern Cottonwood–Willow Riparian Forest

According to Holland (1986), southern cottonwood–willow riparian forest is a tall, open, broad-leaved winter-deciduous riparian forest dominated by Fremont cottonwood (*Populus fremontii*) in the canopy and shrubby willow species, including narrow-leaved willow (*Salix exigua*) and arroyo willow (*Salix lasiolepis*), in the understory.

Within the project footprint, this vegetation community is dominated by a mature cottonwood and arroyo willow canopy generally greater than 20 feet high and covering over 70% of the area (*Figure 3*). The understory consists of shrubs, including golden currant (*Ribes aureum*), mulefat (*Baccharis salicifolia*), arrow weed (*Pluchea sericea*), mugwort (*Artemisia douglasiana*), hoary nettle (*Urtica dioica* ssp. *holosericea*), Mexican elderberry (*Sambucus mexicanus*), and herbaceous forbs and non-native grasses, including slender wild oat. The shrub layer (the vertical stratum between 3 and 12 feet in height) averages approximately 5% native cover; the only notable non-native cover present was the monotypic stands of giant reed (*Arundo donax*). Non-native grasses, like slender wild oat, dominate the herbaceous understory (the vertical stratum beneath 3 feet), making up approximately 73% of the ground cover. Native species make up less than 20% of the herbaceous cover.

2.2.4 Arrow Weed Scrub

This plant community occurs in two locations in the northeast portion of the tract map site, located to the south of SR-126. This community is characterized by a dense growth of arrow weed in the shrub layer. Arrow weed makes up about 20% of the vegetation community. The ground-cover layer is composed of mainly small native brush and weedy exotic annuals. California sagebrush (*Artemisia californica*) and mustard are the most common plants within the ground-cover layer. Less frequently but commonly present are Mexican elderberry, black sage (*Salvia mellifera*), and annual grasses. All exotic species found in arrow weed scrub were found in the ground-cover layer. About 33% of the area within this community is bare of any vegetation. Based on quantitative data collection and cover value analysis, arrow weed scrub supports a total relative cover of 68%, which includes 51% absolute native cover and 24% absolute non-native cover (*Figure 4*).

Figure 4 Existing Conditions Photos

Photo 3: Arrow weed scrub

Photo 4: Mulefat scrub

2.2.5 Mulefat Scrub

Within the project footprint, this vegetation community occurs on the western portion of the tract map site, adjacent to the river floodplain, near the water tank area, as well as within the utility corridor in locations within the floodplains of Castaic Creek and the Santa Clara River. The dominant species in this community are mulefat and arrow weed shrubs. The mulefat and arrow weed grow in dense groups, but over 50% of the ground in this community is bare.

Non-native plants, including tree tobacco (*Nicotiana glauca*), tamarisk (*Tamarix* sp.), and giant reed also are common. The understory is sparse or absent, but when present can include such species as phacelia (*Phacelia* sp.), tocalote (*Centaurea melitensis*), telegraph weed (*Heterotheca grandiflora*), mustard, and annual grasses. Nearly 80% of exotic plants in the understory are exotic grass species. Based on quantitative data collection and cover value analysis, mulefat scrub supports a relative cover of only 53%. This includes 28.5% native absolute canopy cover, and 24.5% non-native absolute canopy cover (*Figure 4*).

2.2.6 River Wash

The stretch of the Santa Clara River occurring within and bordering the project location is sparsely vegetated and subject to scouring by seasonal storm flows (*Figure 5*). Soils are sandy river wash and gravel, and in places form sand bars and low terraces within the channels. Shrub species occurring in and adjacent to the channel include mulefat, sandbar willow, tamarisk, scale-broom, sandwash groundsel (*Senecio flaccidus* var. *douglasii*), big saltbush (*Atriplex lentiformis* ssp. *lentiformis*), and Great Basin sagebrush (*Artemisia tridentata*). Smaller species growing in the riverbed include white sweet clover (*Melilotus albus*), buckwheat (*Eriogonum baileyi*), cocklebur (*Xanthium strumarium*), California croton (*Croton californicus*), California evening primrose (*Oenothera californica* ssp. *californica*), Mediterranean schismus (*Schismus barbata*), foxtail chess, and annual bur-sage (*Ambrosia acanthicarpa*). Despite the variety of plant species found in river wash, quantitative data collection and cover analysis show the relative cover of river wash to be 2%.

2.2.7 Developed Land

Developed land typically refers to areas supporting built structures such as homes, yards, roadways, and other highly modified lands supporting structures associated with dwellings or other permanent structures. Such structures typically support little to no natural vegetation growth and are not considered sensitive.

These areas primarily include road corridors, parking lots, and commercial areas along the eastern utility corridor and various impermeable surfaces throughout the project site.

Figure 5 Existing Conditions Photos

Photo 5: River Wash

2.2.8 Disturbed Land

Disturbed areas are mostly devoid of vegetation and are often accompanied by trash and litter. These areas mostly include portions of the site that are located immediately adjacent to SR-126 and Chiquito Canyon Road.

2.3 Soils

Soils on site are Quaternary older alluvium (Qoa) and Quaternary alluvium (Qal). Soils on the eastern portion at the depth of intended grading (approximately 10–15 feet) tend to be composed of mainly sand. The soils range from being poorly-graded sand containing gravel to well-graded sand with silt. There are also areas that are mainly composed of a mixture of sand and silt. The soil varies between moist and wet. The soils also tend to be dense. The groundwater is found about 25 feet deep.

The soil on the western portion of the site at the depth of intended grading (approximately 6 to 8 feet) is composed of well-graded sand with gravel. The soil is loose and wet. The groundwater is found about 10 feet under the surface.

See *Section 4.5* for more information about groundwater depths.

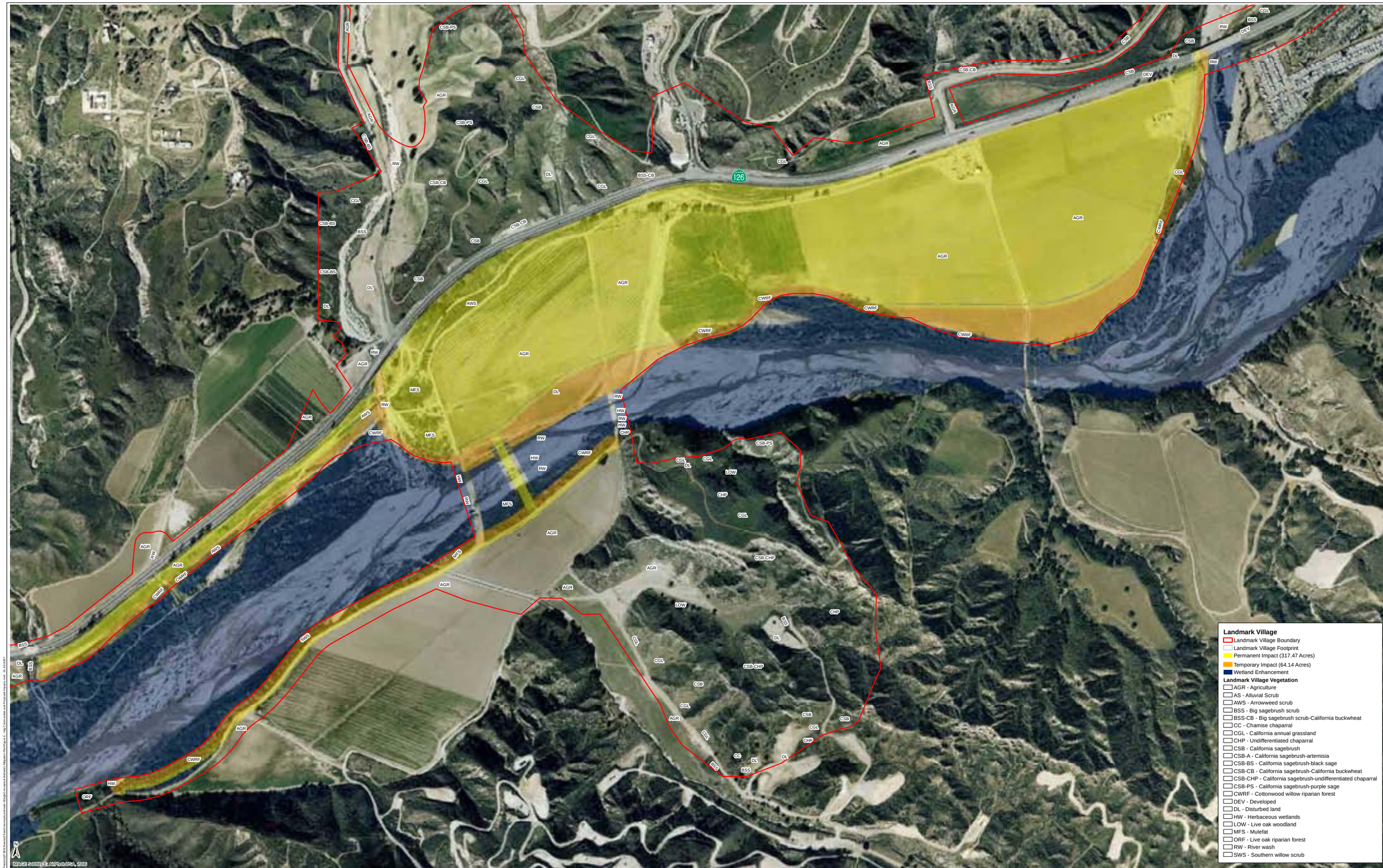
3.0 PROJECT IMPACTS

3.1 Impacts to Vegetation Communities

Implementation of the proposed project will result in permanent impacts and temporary impacts as stated in the Landmark Village EIR. *Table 3* provides acreages of permanent and temporary impacts to all vegetation community types. *Figure 6* shows the locations of vegetation communities and the impacts to those vegetation communities. The permanent impacts amount to 367.19 acres of agriculture, 48.17 acres of California annual grassland, 1.76 acres of coast live oak woodland, 46.63 acres of undifferentiated chaparral, 2.84 acres of chamise chaparral, 7.12 acres of mulefat scrub, 8.05 acres of southern cottonwood–willow riparian forest, 84.57 acres of California sagebrush scrub, 0.15 acre of California sagebrush scrub–*Artemisia*, 5.50 acres of California sagebrush scrub–black sage, 40.93 acres of California sagebrush scrub–California buckwheat, 13.97 acres of California sagebrush scrub–purple sage, 60.66 acres of California sagebrush scrub-undifferentiated chaparral, 0.04 acre of southern willow scrub, 6.26 acres of river wash, 0.47 acre of alluvial scrub, 9.13 acres of big sagebrush scrub, 0.35 acre of southern coast live oak riparian forest, 5.49 acres of arrow weed scrub, 0.11 acre of California sagebrush scrub, 0.38 acre of herbaceous wetlands, 0.02 acre of open channel–developed, 228.01 acres of disturbed land, and 0.54 acre of big sagebrush scrub-California buckwheat.

3.2 Existing Functions and Values of Vegetation Communities to be Impacted

Vegetation communities impacted by project construction range from disturbed vegetation communities dominated by weedy herbaceous vegetation, containing vegetation with low existing functions and values, to vegetation communities exhibiting high existing functions and values that include mature native vegetation with developed vertical structure and diversity of plant species. Areas with significant functions and values include native vegetation communities providing nesting, feeding, and breeding opportunities for various aquatic, terrestrial, and avian animals. Mature vegetation in these areas provides energy dissipation during storm flow events, nutrient cycling, uptake of elements and compounds, entrapment of sediments, and hydrologic variation in flow patterns.



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Landmark Village Conceptual Wetlands Mitigation Plan

Vegetation Communities with Proposed Impacts

FIGURE
6

TABLE 3
Project Impacts to Vegetation Community Types at Landmark Village

Vegetation Community Type	Impacts (Acres)		Total
	Permanent	Temporary	
Agriculture	367.19	19.84	387.03
Alluvial scrub	0.47	—	0.47
Arrow weed scrub	5.49	0.63	6.12
Big sagebrush scrub	9.13	2.46	11.59
Big sagebrush scrub – California buckwheat	0.54	—	0.54
California annual grassland	48.17	1.78	49.94
California sagebrush scrub	84.57	—	84.46
California sagebrush scrub–*Artemisia*	0.15	—	0.15
California sagebrush scrub–black sage	5.50	0.08	5.58
California sagebrush scrub–California buckwheat	40.93	—	40.93
California sagebrush scrub–purple sage	13.97	—	13.97
California sagebrush scrub–undifferentiated chaparral	60.66	—	60.66
Undifferentiated chaparral	46.63	—	46.63
Chamise chaparral	2.84	—	2.84
Coast live oak woodland	1.76	—	1.76
Developed areas	9.52	—	9.52
Disturbed land	228.01	7.98	235.99
Herbaceous wetlands	0.38	0.55	0.93
Mulefat scrub	7.12	2.13	9.25
Open channel–developed	0.02	—	0.02
River wash	6.26	3.70	9.96
Southern coast live oak riparian forest	0.35	0.28	0.63
Southern cottonwood–willow riparian forest	8.05	12.95	21.00
Southern willow scrub	0.04	3.64	3.69
Total	**947.74**	**56.04**	**1003.78**

3.2.1 Southern Cottonwood–Willow Riparian Forest

The southern cottonwood–willow riparian forest to be impacted has a well-developed canopy layer composed of cottonwood trees. The community contains willow saplings and developed understory. The understory is dominated by exotic annual grasses, but native vegetation occurs, including mugwort, California buckwheat, golden currant, and manroot (*Marah macrocarpus*). In all strata, understory through canopy, native vegetation covers almost 70% of the vegetation community. The understory is dominated by exotic invasive species covering over 80% of the area. The most common exotic species are weedy annual grasses and giant reed.

The southern cottonwood–willow riparian forest is adjacent to the Santa Clara River, which contains year-round surface flow and occasionally floods. The functions of the southern cottonwood–willow riparian forest include improving the Santa Clara River system's water-holding capacity, filtration ability, and soil stability. The southern cottonwood–willow riparian forest provides breeding, feeding, and nesting habitat for avian, aquatic, and terrestrial animal species. The site also receives runoff from the nearby agricultural fields and the groundwater is no more than 30 feet deep (Allen E. Seward 2007). The channel's topographical complexity comprises both micro- and macro-features, including meanders, bars, secondary channels, terraces, pits, ponds, and hummocks, providing niche habitats for plant and wildlife species.

3.3.2 Mulefat Scrub

The mulefat scrub vegetation community to be impacted contains patchy riparian vegetation consisting mainly of mulefat. The understory is poorly developed and often bare. The understory vegetation is mostly composed of exotic species. There are few riparian trees growing above the shrub layer. Other native species occur, but the variety and quantity are poor. The site is only about 25%-covered with exotic species, and about 50% of the community is bare. This site contains a total vegetative cover of about 50%.

The mulefat vegetation community is adjacent to a stream channel, which flows periodically and with varying intensity. The community is also adjacent to agricultural fields that provide intermittent runoff, and likely has access to groundwater. The groundwater near this area is approximately 10 feet below surface level (Allen E. Seward 2007). There are no micro- or macro-topographic features; instead, the area is mostly flat. Mulefat scrub provides some breeding, feeding, and nesting habitat for avian, aquatic, and terrestrial animal species.

3.3.3 Arrow Weed Scrub

The arrow weed scrub community is dominated by shrubs and understory species. There is no vegetation reaching into the canopy layer. The site is approximately 30% bare of any vegetation. Exotic invasive species, mainly mustard, but also including annual grasses, cover approximately 25% of the community. The arrow weed scrub is dominated by a small number of species, mainly arrow weed, California sagebrush, and mustard. Arrow weed scrub provides some breeding, feeding, and nesting habitat for avian, aquatic, and terrestrial animal species.

3.3.4 River Wash

The river wash community is predominately flat and homogenous. There are some micro-topographic features including meanders, bars, terraces, pits, ponds, and hummocks. The area

contains only 2% vegetative cover. The vegetation surrounding the river wash is diverse, containing both native and exotic plant vegetation. The river wash provides area for river movement and meander, space for flood waters, and some habitat for avian, aquatic and terrestrial animal species.

4.0 MITIGATION PROGRAM

4.1 Mitigation Requirements

This plan addresses the required mitigation for permanent and temporary impacts incurred by the implementation of the Landmark Village project. Mitigation requirements will be achieved through the creation, restoration, and enhancement of native vegetation communities on site and immediately off site in the existing Santa Clara River channel. Wetland creation areas represent an expansion of the jurisdictional area of state and federal wetlands that will be used to mitigate for permanent impacts to native vegetation communities. Restoration areas define the extent of areas temporarily impacted by project implementation that will be re-established as native wetland vegetation communities. Enhancement areas are located within existing jurisdictional wetlands and involve enhancement of the functions and values of the existing vegetation community. In some cases, enhancement involves the removal of non-native species, such as giant reed (*Arundo donax*), and the establishment of appropriate wetland species within the previous footprint of the removed non-native vegetation. One of the enhancement areas will convert an area of predominantly non-native vegetation (Disturbed Land) to a predominately native wetland vegetation community—in this case, southern coast live oak riparian forest. All vegetation mitigation is subject to the mitigation requirements established by the permitting agencies. The permanent and temporary impacts, the total areas required for mitigation, and mitigation opportunities available on site are provided in *Table 4*.

TABLE 4
Mitigation Requirements and Availability Summary

Vegetation Type (Permanent Impact Mitigation Ratio)	Permanent Wetland Impacts (Acres)	Temporary Wetland Impacts (Acres)	Total Mitigation Required (Acres)	Creation (Acres)	Restoration (Acres)	Enhancement (Acres)	Total Mitigation Provided (Acres)
Arrow weed scrub (2:1)	5.49	0.62	11.6	5.26	5.88		11.14
Mulefat scrub (2:1)	7.12	2.12	16.36	17.79	1.38		19.17
River wash (1:1)	6.26	3.72	9.98	2.39	3.31		5.7
Southern cottonwood–willow riparian forest (3:1)	8.05	12.95	37.1	22.36	12.79	4.58	39.73
Southern coast live oak riparian forest (3:1)	0.35	0.28	1.33	2.25			2.25
Southern willow scrub (3:1)	0.04	3.64	3.76	1.14	2.56		3.7
Herbaceous wetlands (1:1)	0.38	0.55	0.93		0.17		0.17
Total	**27.69**	**23.88**	**81.06**	**51.19**	**26.09**	**4.58**	**81.86**

4.1.1 Permanent Impact Mitigation

Permanent impacts will be mitigated through the on-site creation of like-kind wetland vegetation types at a 1:1 ratio. Additional wetlands will be created or additional wetland enhancement will be conducted to mitigate permanent wetlands impacts to the full mitigation ratio based on vegetation community type (*Table 4*) and to mitigate for vegetation types that cannot completely be created/restored on site. For example, impacts to southern cottonwood–willow riparian forest will be mitigated through 1:1 on-site creation and a combination of wetland creation, restoration, and enhancement along the Santa Clara River for a total replacement ratio of 3:1. Permanent impacts to river wash will be mitigated at a 1:1 ratio through on-site restoration of the Santa Clara River or Castaic Creek or through wetland enhancement. Any deficits in either permanent or temporary mitigation acreages will be mitigated by excess mitigation completed for the other. Should both mitigation types run a deficit or if the excess is not enough to make up the other's deficiency, the remainder will be mitigated through enhancement.

4.1.2 Temporary Impact Mitigation

Vegetation communities temporarily impacted by the proposed project will be restored through a passive restoration approach. Native vegetation within temporary construction areas shall be mulched and set aside. Large trunks of removed trees may be utilized on site to provide habitat for invertebrates, reptiles, and small mammals or may be anchored within the project site for erosion control. If the timing of the mulching and application is appropriate (i.e., not too long), the native mulch will be spread over the temporary impact areas in order to facilitate revegetation. If the period of mulch storage exceeds approximately 1 month, then when the temporary impact area is ready for a native mulch application, fresh native mulch will be acquired from Newhall Land's mulching facility nearby and applied to the temporary impact areas to provide seed propagules and native biomass.

After the completion of Year 1, the project biologist will evaluate the progress of the passive restoration approach in the temporary impact areas to determine if natural recruitment has been sufficient for the site to eventually reach performance goals. In the event that native plant recruitment is determined by the project biologist to not be adequate for successful habitat establishment, Newhall Land shall revegetate the temporary construction areas in accordance with the methods designed for permanent impacts (i.e., seeding, container plants, and/or a temporary irrigation system may be recommended). This will help ensure the success of temporary mitigation areas.

Areas temporarily disturbed by construction activities shall also be weeded annually, as needed, for up to 5 years following construction. Weeds shall be removed by hand, an approved herbicide application, and/or by mechanical equipment. These areas shall be annually monitored for 5 years after construction to document vegetation community establishment.

Annual monitoring reports on the status of the natural recovery of temporarily disturbed areas shall be submitted to the ACOE and CDFG by April 1 of each year as part of the Annual Mitigation Status Report and Mitigation Accounting Form.

4.1.3 Cumulative Impacts and Mitigation Area Available

Project implementation will result in permanent and temporary impacts to 51.57 acres of wetlands vegetation that require 81.06 acres of mitigation through wetlands creation, restoration of temporary impact areas, and enhancement of existing degraded wetlands. There are 81.86 acres available for wetlands mitigation on site. There is a total of 0.8 acres of wetlands mitigation available for Newhall Land to use on other projects.

4.1.4 Specific Project Mitigation Requirements

The County of Los Angeles adopted mitigation measures for potential significant biological impacts as part of the NRSP EIR. The mitigation measures that apply to this report are found in the certified NRSP EIR and the Landmark Village EIR. The project applicant has committed to implementing these mitigation measures. The mitigation measures that relate specifically to the NRSP EIR and Landmark Village project are designated “SP 4.6-1” and “LV 4.4-1” respectively.

4.2 Goals of the Mitigation Program

Goals of this creation/revegetation project are to:

- Comply with the requirements mandated in resource agency permits
- Create/replace upland and riparian vegetation communities suitable for nesting, forage, and breeding by native animal species
- Create/replace vegetation communities that are consistent with adjacent existing riparian vegetation communities
- Create vegetation communities that are compatible with the fluvial morphology and hydrology of the stream channel corridor
- Create vegetation communities with similar or higher functions and values than those vegetation communities permanently impacted by the project
- Create vegetation communities that are self-sustaining and functional beyond the maintenance and monitoring period.

4.3 Design Approach

Wetland mitigation areas are required to replace the functions and values of the vegetation communities permanently and temporarily impacted. Replacement vegetation communities shall have similar dominant trees, understory shrubs, and herbs, and shall be designed to replicate the density and structure of the affected vegetation communities once the replacement vegetation communities have reached mature status.

Vegetation communities to be restored on site include a mosaic of mulefat scrub, arrow weed scrub, river wash, and southern cottonwood–willow riparian forest. The target functions and values of the created and restored wetland areas include increasing the overall vegetation quality by

removing and controlling any invasive exotic and weed species present on site and replacing exotic species with appropriate native species and vegetation communities from container plants and seed. The improvement to vegetative cover will increase wildlife habitat value, which will provide better nesting, cover, and foraging opportunities for avian, aquatic, and terrestrial animal species. Also, the areas will function to promote nutrient cycling, nutrient and compound uptake, and organic carbon export, will be hydraulically compatible with the adjacent stream system, and will reduce erosion and increase slope stability during flood inundation.

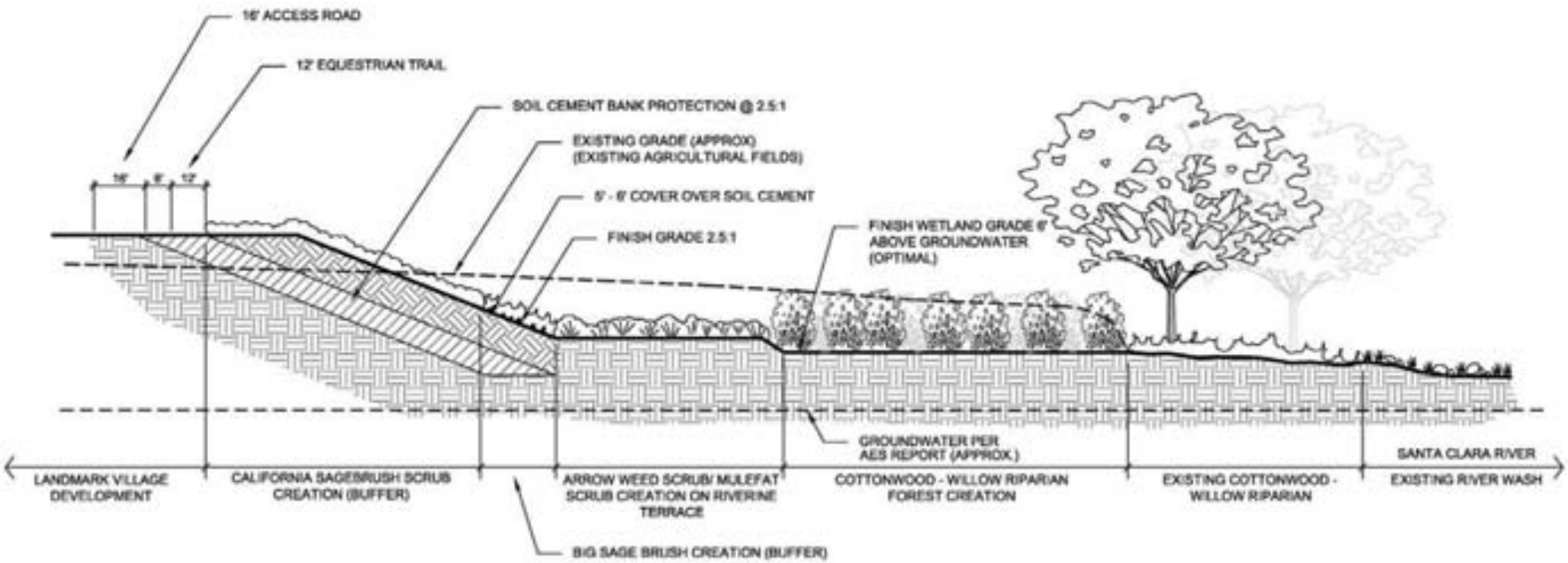
Once mitigated and restored, it is probable that this site will attract state- and/or federally-listed species, including the least Bell's vireo (*Vireo bellii pusillus*) and southern willow flycatcher (*Empidonax traillii*), both of which are known to occur in the project vicinity along the Santa Clara River. The vegetative communities on site are ultimately expected to expand the adjacent riparian vegetation and become a functioning part of the existing riparian system of the Santa Clara River.

Water quality will be improved by significantly reducing the amount of water-borne weed propagules (e.g., giant reed rhizomes, roots, and canes, or herbaceous weed seed) that currently flow downstream each winter. Deep-rooted native willow trees (*Salix* spp.), mulefat, and Fremont cottonwood are not as susceptible to uprooting during high flow events and will stabilize the soil better than the existing exotic species. Native riparian plants help to reduce turbidity and limit erosion during high flow events. The native wetlands vegetation that replaces the non-native cover generally functions better at stabilizing soil and stream bank edges and increasing nutrient transformation. The site hydrology is expected to improve after the removal of the water-consumptive exotic species, which will increase the amount of groundwater locally available to native trees, shrubs, and herbs.

4.4 Wetlands Creation Design Concept

4.4.1 Permanent and Temporary Wetland Impact Mitigation Areas

Permanent wetlands impacts at Landmark Village will be mitigated through wetlands creation and enhancement. Wetlands creation will involve grading agricultural lands to elevations that are consistent with the flows of the Santa Clara River. Grade elevations in the eastern portion of the mitigation area will be lowered by 10 to 12 feet to create the appropriate hydraulic connections to the river. On the western portion of the mitigation area, the grades will be lowered by 6 to 8 feet (*Figure 7*). In all cases, grading will be designed to achieve flow gradients consistent with the existing river floodplain. The proposed mitigation elevations also are consistent with existing groundwater levels within the project site as discussed in *Section 4.5*.



Landmark Village Project

Typical Wetland Creation Cross Section

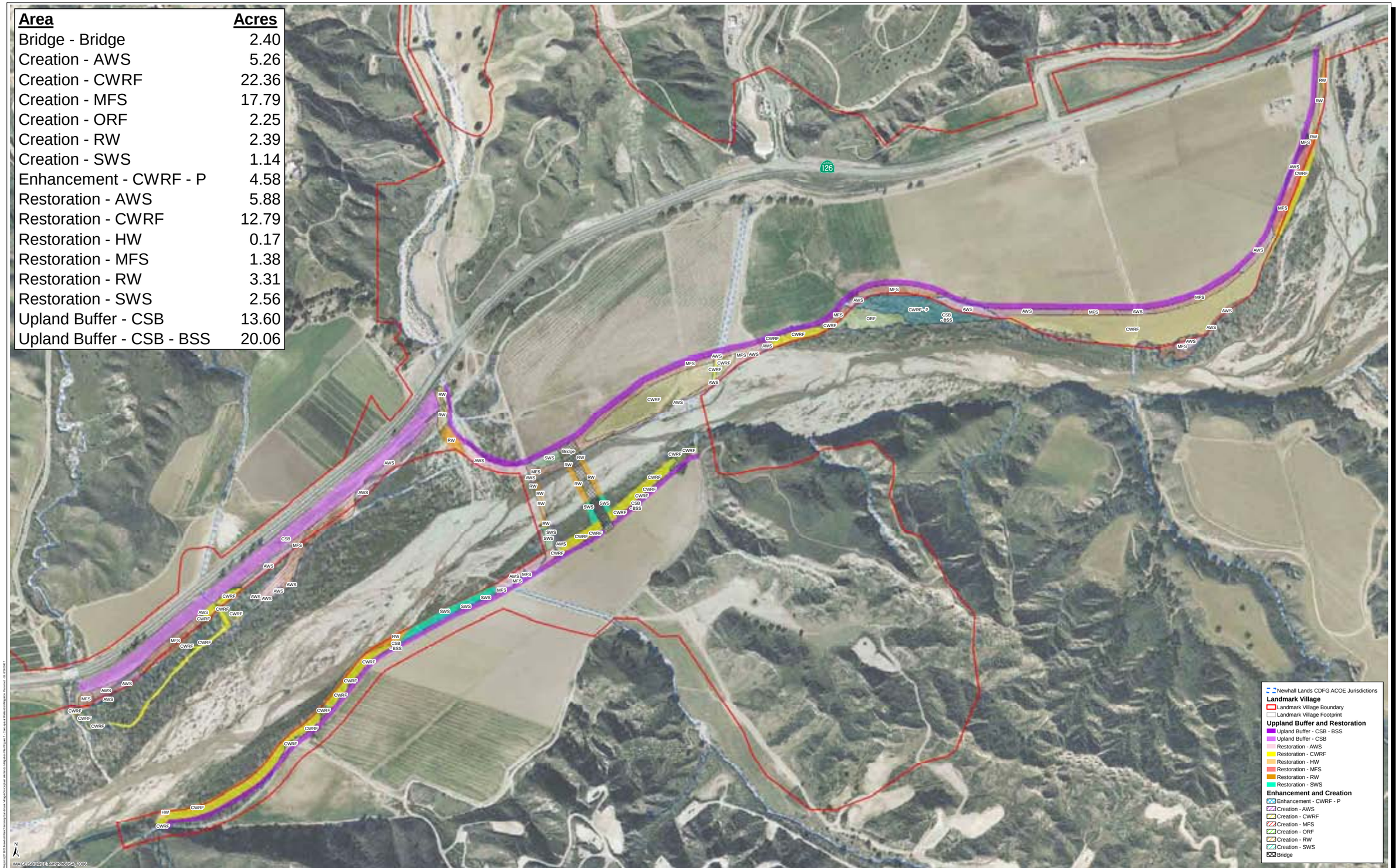
FIGURE 7

Tie-in elevations along the existing riparian vegetation edge will match the flow gradients wherever possible. However, some areas will remain at higher elevations to avoid existing mature riparian vegetation. This will result in a berm-like feature that will be vegetated with appropriate transitional riparian vegetation such as mulefat scrub and arrow weed scrub.

Temporary wetlands impacts will be mitigated through restoration of vegetation communities at the temporary impact site that is equivalent to the impacted vegetation. The restored vegetation communities will have similar native cover and species composition, and the goal of restoration is to create a vegetation community with improved native cover of the original area. In many of the creation areas the functions and values of the vegetation will provide a significant functional lift above the existing functions and values of previous land types (e.g., agriculture, California annual grassland, or disturbed land). In addition to in situ wetlands restoration, giant reed will be removed from adjacent areas of the existing Santa Clara River floodplain and replacement native riparian vegetation will be established in its place. This wetlands enhancement exceeds the mitigation requirement for temporary impacts and credit for this work will be applied to other projects within the NRSP that require wetlands mitigation through enhancement.

4.4.2 Vegetation Communities to be Created

The distribution of the vegetation communities created is depicted on *Figure 8*. In general, the intention of the mitigation design is to create a mosaic of vegetation communities that best reflect the natural riverine condition in which the mitigation project will occur. Southern coast live oak riparian forest and southern cottonwood–willow riparian forest will be situated in association with the lowest elevations of the mitigation area, approximately 6 feet above known groundwater elevations (Allen E. Seward 2007). However, the southern cottonwood–willow riparian forest mitigation area will be graded to incorporate micro-topographic features, including swales and hummocks, that are characteristic of adjacent vegetation community. Individual species will be distributed in accordance with the microclimate that best suits each species. California black walnut trees to be impacted by the proposed project will be inventoried prior to construction and will be incorporated into the southern coast live oak riparian forest at a ratio of 1:1.



Area	Acres
Bridge - Bridge	2.40
Creation - AWS	5.26
Creation - CWRF	22.36
Creation - MFS	17.79
Creation - ORF	2.25
Creation - RW	2.39
Creation - SWS	1.14
Enhancement - CWRF - P	4.58
Restoration - AWS	5.88
Restoration - CWRF	12.79
Restoration - HW	0.17
Restoration - MFS	1.38
Restoration - RW	3.31
Restoration - SWS	2.56
Upland Buffer - CSB	13.60
Upland Buffer - CSB - BSS	20.06

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Landmark Village Conceptual Wetlands Mitigation Plan
Proposed Creation / Restoration

FIGURE
8

The downstream southern cottonwood–willow riparian forest creation area will require a permeable energy dissipater that allows water to flow through the mitigation site but directs high flow water to the south. The structure might be made from concrete "K" rails placed on end in an alternating, interlocking orientation and buried in the channel approximately 15 feet deep. The rails would be spaced apart to provide gaps where water could flow through the structure, but would not allow so much volume as to create scour within the mitigation site. The structure will have no exposed metal that could harm sensitive wildlife, such as unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), nor create a filter that could trap fish. The structure may provide hydraulic benefits for the bridge proposed at the mouth of Long Canyon.

Mulefat scrub and arrow weed scrub will be located on higher elevations, benches, and hummocks that will be incorporated into the site grading plan. These vegetation community types typically occur on drier wetland fringes and in ephemeral channels. Accordingly, the base of the buried bank protection structure will be installed with these two vegetation community types. River terrace features will be created along this edge to create topographic diversity and increase the area of these vegetation community types.

The design anticipates the creation of river wash in association with the existing Castaic Creek and Chiquito Canyon river wash as required for project mitigation as defined in *Table 3*. These areas will undergo minimal revegetation to mirror natural river wash conditions. River wash will be created through the grading process described above. The design anticipates that the designed river wash channel will passively revegetate with a variety of native species as seed and propagules wash onto the mitigation site or migrate from adjacent planted mitigation areas.

Big sagebrush scrub will be installed and established on the wetland fringe and along the lower portion of the buried bank slope. California sagebrush scrub will be established on the upper slope of the buried bank. These upland vegetation communities are well adapted to the conditions that are anticipated to occur along the perimeter of the project. The uplands vegetation is intended to provide a positive buffer area for the wetlands mitigation areas and cover for wildlife during flood events. This buffer will increase the overall functions and values of the wetlands mitigation areas.

4.5 Rationale for Expecting Project Success

The target vegetation communities for the creation/enhancement areas will consist of native plant species that are found in riparian areas adjacent to the creation/enhancement sites. Plant species to be used will consist of those which were observed successfully growing in adjacent native areas and found within the watershed.

The Santa Clara River is subject to high-velocity storm flows during the rainy season and subsurface low flows in the dry season. Although the mitigation/restoration area is outside the designated Federal Emergency Management Agency (FEMA) floodplain, it is situated within the main river channel and may be subject to extraordinarily high water conditions. The plant species to be used in the mitigation project are native species that are adapted to periodic inundation and the natural disturbance regime of the river system. In order to support the riparian vegetation proposed, finish grades for the mitigation project area (as provided by the proposed project) are expected to be lower than the existing elevations and allow dynamic interaction with subsurface low flows, the water table, and periodic seasonal flooding.

In addition, the vegetation communities to be created will be located in hydrologically compatible locations, with less hydric vegetation communities being located in transitional upland locations. For example, big sagebrush scrub portions of the creation/revegetation areas have been placed on the perimeter of the project site, furthest from the active stream channel. Piezometer readings conducted by Allen E. Seward Engineering Geology, Inc. show historic minimum and maximum water table depths to 1994 (*Table 5*; *Figure 9*). Water depths from 1994 to 2004 ranged from 3.5 to 22 feet at minimum and 9 to 33.5 feet at maximum. Construction grading will lower the ground surface so that the water table will be within the root zone of riparian vegetation.

Weed-control measures will be implemented prior to installation of vegetation and for 5 years after the initial installation. These measures may include remedial actions that will be implemented as needed to achieve project success. The suppression of weed growth and reproduction over the extended maintenance period will allow establishing native vegetation to become the dominant vegetation type throughout the area.

DUDEK

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0 300 600 Feet

Landmark Village Project
Piezometer Locations

FIGURE
9

TABLE 5
Landmark Village Groundwater Depth Summary

Piezometer	Date of Initial Reading	Minimum Groundwater Depth (Ft.)	Maximum Groundwater Depth (Ft.)	Maximum Variation Between Readings (Ft.)
P-1	9/1/1999	20	33.5	13.5
P-3	9/1/1999	8.5	12.5	4
P-7	10/2/1999	20	23.5	3.5
P-11	4/7/2000	6	10.75	4.75
P-13	4/7/2000	22	26.5	4.5
P-32F	8/3/1994	3.5	12	8.5
P-1R	3/18/2004	6	9	3
P-2R	3/18/2004	8.5	10.75	2.25
P-3R	3/17/2004	7	9	2
P-4R	3/17/2004	19	23	4
P-5R	3/17/2004	11	12.5	1.5

4.6 Cost Estimate

It is estimated that the initial cost for installation and initial maintenance of the mitigation revegetation effort for the total 81.86-acre area will cost approximately **$4,287,773**. This cost estimate includes all installation associated with the mitigation/revegetation and biological construction monitoring through the 120-day plant establishment period.

Long-term maintenance and biological monitoring costs for the proposed 5-year maintenance and monitoring period would total approximately **$1,422,182**, which includes the costs associated with the weed control, site maintenance, quarterly and annual biological monitoring, and preparation of annual year-end reports. The total cost for the entire mitigation and monitoring program is estimated to be **$5,709,955** through the end of the 5-year period. All costs provided include a 15% contingency.

5.0 MITIGATION IMPLEMENTATION PLAN

Implementation of the mitigation design requires a series of coordinated, progressive steps to properly install the proposed mitigation project. Many of these steps are prerequisites for subsequent activities to occur. This section describes the steps that are necessary to implement this mitigation plan, including the creation, restoration, and enhancement of wetlands:

- Initiate enhancement component of project
- Salvage native plant materials for mulch
- Salvage topsoil from existing wetlands areas
- Salvage tree trunks over 12 inches in diameter at breast height (DBH) for wildlife habitat and stabilization structures
- Finish grading and contouring restoration areas to be compatible with adjacent native vegetation and streambed
- Apply salvaged topsoil and test for fertility
- Install irrigation system
- Conduct a minimum of two “grow and kill” cycles, more at the discretion of the project biologist
- Install salvaged native vegetation mulch in temporary impact areas if available
- Install container stock throughout all mitigation and buffer areas
- Apply seed mixes in all mitigation areas
- Begin 120-day plant establishment maintenance and monitoring period
- Begin 5-year long-term maintenance and monitoring period.

5.1 Implementation Schedule

Project implementation should be timed so that project installation is conducted in the late fall/ early winter. This will allow for a complete growing season of establishment to take place before the onset of the fall rainy season. A preliminary implementation timeline is shown in *Table 6*. Prior

to beginning mitigation area grading, the site clearing, mulch/soil salvaging and stockpiling, bank stabilization construction, invasive removal as part of the enhancement program, and topsoil application are to be completed. These are not included in the implementation schedule in order to allow some flexibility in the timing of their completion.

TABLE 6
Preliminary Project Implementation Schedule

Activity	Date
Mitigation area grading (in the first available season after bank protection construction)	March-May – Year 1
Irrigation system installation	June-July – Year 1
"Grow and kill" cycles	August-October – Year 1
Container planting/hydroseed application	October-December – Year 1
Commence 120-day plant establishment period	January – Year 2
Start of 5-year long-term monitoring period	May – Year 2
Year 3 milestone evaluation – remedial planting	October – Year 6
End of 5-year long-term monitoring and maintenance period	June – Year 7

5.2 Sensitive Species Avoidance and Pre-Construction Wildlife Surveys

To comply with mitigation measure Within 30 days of vegetation and/or ground disturbance activities associated with mitigation site grading or invasive species removal that would occur during the nesting/breeding season (March 15th through September 1st), the applicant shall have weekly surveys conducted by a qualified biologist to determine if active nests of bird species protected by the Migratory Bird Treaty Act and/or the California Fish and Game Code are present in the disturbance zone or within 300 feet (500 feet for raptors) of the disturbance zone.

If an active nest is found, clearing and construction within 300 feet of the nest (500 feet for raptors) shall be postponed or halted, at the discretion of the biologist, until the nest is vacated and juveniles have fledged, as determined by the biologist, and there is no evidence of a second attempt at nesting. Limits of construction to avoid an active nest shall be established in the field with flagging, fencing, or other appropriate barriers and construction personnel shall be instructed on the sensitivity of nest areas. If the birds begin nesting in vegetation adjacent to the project site, postponement of work will not be required. Depending on proposed activities, the biologist may establish additional setbacks, exclusionary fencing, and/or noise attenuation measures to ensure that nesting birds are not disturbed. The biologist shall serve as a construction monitor during those periods when construction activities will occur near active nest areas to ensure that no inadvertent impacts on these nests occur. The results of the surveys and any avoidance measures taken shall be

submitted to the County of Los Angeles, CDFG, and USFWS within 30 days of completion of the pre-construction surveys and/or construction monitoring to document compliance with applicable state and federal laws pertaining to the protection of native birds.

5.3 Boundary Fencing

Prior to beginning mitigation site preparation work and vegetation restoration efforts, the limit of work shall be confirmed and delineated with protective high-visibility orange construction fencing, if not already in place from site-development construction.

Protective fencing shall be installed in all areas adjacent to native vegetation and/or wetland areas. Protective fencing shall be maintained for the duration of construction activities to maximize habitat protection. Protective fencing shall be removed upon completion of construction and vegetation restoration work as directed by the project biologist.

If heavy equipment or other vehicles require access during the enhancement phase, the work area and access routes shall be clearly delineated by construction fencing to exclude work from non-enhancement areas.

5.4 Erosion Control – Best Management Practices (BMPs)

Erosion-control measures shall be implemented as indicated and in accordance with the adopted project grading/erosion-control plans, associated grading and resource agency permits, and Storm Water Pollution Prevention Program (SWPPP). Erosion-control devices will be implemented and maintained as necessary to prevent erosion and to prevent deposition of sediment off site, including into adjacent riparian areas. The project biologist will monitor BMPs during mitigation construction and grading and provide periodic monitoring reports to Newhall Land.

Installation will start in the late fall/early winter after the likelihood of significant precipitation events has decreased. This will maximize the growing period for plant establishment before the first rainy season. Silt fences, fiber rolls, and construction fencing shall be incorporated into the BMPs based on the construction documents and project biologist recommendation.

The dynamic and volatile seasonal flow patterns of the Santa Clara River are responsible for the variability of storm flow events in the river channel. Storm flow could result in the loss of project fencing and may affect BMPs. Project fencing and BMPs lost/affected due to storm flow events will be replaced or modified, or additional erosion control devices shall be installed at the discretion of the project biologist.

5.5 Vegetation Mulching

It is anticipated that native mulch will be applied to the temporary impact areas to encourage natural recruitment. The source of that native mulch will either be from on site or from Newhall Land's nearby mulching facility. If mulch from on site is used, it will be made from native vegetation removed during vegetation clearing for construction of the bank protection structure. If the on-site mulch must be stored for an extended period of time (greater than approximately 1 month), fresh native mulch from Newhall Land's mulching facility will be acquired and applied to the temporary impact areas following construction. Fresh native mulch created just before mitigation implementation will improve viability of seeds and propagules, as infertility of propagules will increase over time. Ideally, mulch will be no more than a week to a month old depending on the season. The mulch from a nearby project should be created from the same vegetation types with similar species composition. A portion of native topsoil salvaged from the impact areas (*Section 5.6*) will be mixed with mulch and spread over the mitigation areas.

All mulched native vegetation removed during construction will be stockpiled if it is to be used on site. Mulch from various vegetation types will be stored separately to ensure their use in the correct area during mitigation implementation. The mulch will be spread in piles no higher than 3 vertical feet for storage until use. The piles will not be tarped or covered, and should not be irrigated. Irrigating the piles will cause any viable seed to sprout in place. The stockpiled mulch shall be stored in the upland portion of the project site adjacent to the stockpiled topsoil. Orange construction fencing shall be placed around the stockpiled mulch as a BMP and the words "salvaged mulch," along with the name of the vegetation type from which the mulch was created, shall be posted on signage around the pile. If mulch is stockpiled in an area that contains weeds/ weed seed, the top 8 inches of soil shall be stripped before stockpiling the mulch to avoid seed contamination.

If recently-created mulch cannot be found or attained, a possibility exists that some viable native seed/propagules may survive until mitigation site installation in mulch created on site. However, it is anticipated that there will be a significant period of time between harvest and installation, resulting in viable plant matter deteriorating and losing viability. The mulch will primarily provide organic matter to the soil, and secondarily provide a source of viable seed or root/shoot sprouting.

5.6 Soil Salvaging

Following clearing and grubbing work, the topsoil shall be salvaged from native vegetation areas impacted by project construction. Due to the high proportion of weeds in the herbaceous layer, the top 5 to 6 inches will be stripped and used as backfill subsoil or removed from the area. The

existing topsoil has a copious seed bank within the top few inches, including mustard seed and brome grass seed, along with several other invasive weeds that have been depositing seed for several years. Removal of the top few inches of soil will help reduce the amount of weeds that may germinate within the restoration areas. The soil in this area is relatively deep sandy alluvium, so removal of the top few inches will not negatively affect the edaphic conditions.

Soil shall be salvaged to a depth of 12 inches and stockpiled on site following removal of the top weed-seed-laden 5 to 6 inches of soil. The stockpiled topsoil shall be stored in the upland portion of the project site adjacent to the stockpiled mulch. Silt fencing shall be placed around the stockpiled topsoil as a BMP and the words "salvaged topsoil" shall be painted on the silt fence in bright orange paint. If topsoil is stockpiled in an area that contains weeds/weed seed, the top 8 inches of soil shall be stripped before stockpiling the topsoil to avoid seed contamination. In addition, if weeds are present and blooming during the time the soil is stockpiled, the soil shall either be covered with clear plastic or a 30-foot weed-free band shall be kept around the stockpiled soil. "Grow and kill" cycles are planned to ensure that any weed seeds in the salvaged soil are eliminated immediately after irrigation installation and prior to planting.

Upon completion of bank protection installation and rough grading, the stockpiled soil will be used to create a continuous soil cover 36 inches deep over the entire buried bank structure to create the finished grades (*Section 5.7*). A portion of the topsoil shall be incorporated into the mulch prior to application.

Salvaging of the topsoil will help improve edaphic conditions for native seed germination, plant growth, and native vegetation establishment on the buried bank structure. Soil salvaging will also help to preserve soil biota, including mycorrhizal fungi. Once the salvaged soil is graded, but prior to planting, soil tests will be completed to test for suitable growing conditions. The results of soil suitability tests will determine the necessity of soil amendments, fertilizers, and/or mycorrhizae additions.

Topsoil placement and final grading shall be monitored and approved by the project biologist.

5.7 Grading and Site Preparation

Grading of the mitigation areas will be accomplished during general site development and bank stabilization soil cement construction activities. Upon completion of bank protection construction work, the final grades within the restoration areas shall be established by grading the entire wetlands creation area to elevations conducive to native habitat establishment, as depicted in this mitigation plan (see *Figure 7*). Salvaged topsoil shall be dispersed over the restoration areas to a

depth of approximately 12 inches and utilized to create the finished grade conditions. Any soils within the restoration areas that are deemed compacted shall be ripped and/or disked to a depth of 12 inches in two opposing directions and floated out to the satisfaction of the project biologist. Topographic contours of the wetlands mitigation area will include swales and hummocks that mimic the river channel environment. A low-flow channel will constructed in order to create appropriate river wash conditions.

If the quantity of salvaged topsoil is less than expected and is not enough to satisfy the above condition requiring soils be spread approximately 12 inches thick, then salvaged soils will be placed in higher-priority locations. Since one of the main purposes of salvaging topsoil is to improve soil fertility, high priority for salvaged topsoil would be given to areas graded to a greater depth that more likely to have lower soil fertility. Low-priority areas to receive salvaged topsoil include shallowly graded areas and areas where flooding poses a threat to wash newly laid soil away. If these measures still cannot compensate for less salvaged soil than expected, then salvaged soil may be spread at a thickness that will cover all areas of higher priority.

5.8 Weed Removal

This section addresses control of weed recruitment within the project during project installation. Prior to project installation, the mitigation site must be free of invasive non-native annual grasses and forbs as well as persistent perennial exotic species such as giant reed (*Arundo donax*) and saltcedar (*Tamarix ramosissima*). In addition to the wetlands creation site, *Arundo* removal will be conducted on the adjacent existing river channel to facilitate flow onto and off of the wetlands creation site. As the existing soil of the wetland creation area will be completely removed and replaced, any existing weeds and seed bank will be removed and the remaining weed seed bank will be minimal. However, if there is a significant lag time between initial excavation and mitigation project installation, it is possible that weeds may recruit and reproduce within that time period. Weed control during the 120-day plant establishment period and the long-term maintenance period is addressed in *Section 6.2*.

Following installation of the irrigation system and prior to installation of plant material, “grow and kill” weed-removal treatments will be conducted by the restoration contractor. “Grow and kill” cycles consist of irrigation over an approximately 2-week period to encourage non-native seedling emergence. Once weeds begin to germinate and grow, a foliar application of an appropriate translocating herbicide is applied to kill target weeds. The cycle shall be repeated a minimum of two times. Additional cycles may be required, as recommended by the project biologist.

Physical removal of non-native plants, including the roots, is the best method for those species for which the root ball can readily be pulled out with the above-ground portions of the plant. These species will be physically removed before seed-set. If hand removal is possible only after seed-set, then seed heads will be cut off, bagged, and removed from the site prior to the weed removal.

The project biologist will coordinate with the restoration contractor/pesticide applicator to identify specific locations where herbicides may be used. Chemical treatment may follow hand and mechanical removal activities that are conducted to increase the effectiveness of subsequent chemical treatment, or for persistent species in which mechanical removal is impractical.

All herbicide treatments must be specified by a licensed pest control advisor and applied by a licensed pest control applicator. Any chemical use should be conducted using methods that minimize effects to adjacent/desirable native species, such as brush application or spot spraying, as directed by the licensed pest control advisor. Only herbicides approved for use in wetland areas will be used in or near flowing waters, as approved by permitting agencies.

Primary herbicide applications should be timed to match when target plant is most susceptible to herbicide. For example, giant reed is most susceptible to herbicide applications during late summer and early fall as it translocates energy into its root mass. As it translocates energy, the spread of herbicide through the plant's system will be easier. Follow-up applications may be necessary for highly aggressive species that cannot be killed with one herbicide application. Follow-up herbicide treatment should be done at the biologically appropriate time, when the recovering plants are still relatively small and before they have time to regain strength and vigor.

5.9 Plant Palette for Mitigation/Revegetation Areas

Both the project creation and restoration areas will be prepared and revegetated with native species. The planting palettes are shown in *Tables 7–12*. The distribution of vegetation community types is shown on *Figure 8*. Planting will follow grading, installation of salvaged soil and mulch, irrigation system installation, and "grow and kill" weed-control cycles.

The planting palettes have been designed to replace the impacted vegetation communities and to create additional appropriate native vegetation communities through a formulated composition of container stock and seed mix. The species included are important components of the revegetation program.

TABLE 7
Southern Cottonwood–Willow Riparian Forest Plant Palette (39.73 Acres)

Seed Mix			
Botanical Name	**Common Name**	**Minimum Percent Live Seed**	**Application Rate (Lbs./Acre)**
Ambrosia acanthicarpa	Annual bursage	60	2
Amsinckia menziesii	Yellow fiddleneck	25	3
Artemisia douglasiana	Mugwort	10	2
A. dracunculus	Tarragon	10	1
Clarkia purpurea	Winecup clarkia	80	1
Elymus glaucus	Blue wildrye	85	2
Eriogonum gracile var. *gracile*	Buckwheat	15	1
E. fasciculatum	Flat-topped buckwheat	10	2
Gnaphalium californicum	California everlasting	2	1
Isocoma menziesii	Goldenbush	15	2
Lasthenia californica	Coast goldfields	50	1
Layia platyglossa	Tidy tips	60	1
Leymus triticoides	Creeping wild rye	80	1
Lupinus bicolor	Lindley's annual lupine	90	2
Mimulus aurantiacus	Bush monkeyflower	2	2
Phacelia cicutaria	NCN	80	1
Verbena lasiostachys	Western verbena	50	1
Total Lbs./Acre			**26**

Container Plants				
Botanical Name	**Common Name**	**Size**	**Spacing (Feet on Center)**	**Total Quantity**
Baccharis salicifolia	Mulefat	1 gallon	8	1,246
Ericameria palmeri var. *pachylepis*	Goldenbush	1 gallon	10	350
Leymus condensatus	Giant wild rye	1 gallon	6	963
Pluchea sericea	Arrow weed	1 gallon	8	2,462
Populus fremontii	Fremont cottonwood	1 gallon	20	3,152
Quercus agrifolia	Coast live oak	1 gallon	25	252
Rhus trilobata	Skunkbrush	1 gallon	4	1,969
Ribes aureum	Golden currant	1 gallon	6	1,051
Salix exigua	Sandbar willow	1 gallon	10	3,852
S. laevigata	Red willow	1 gallon	12	1,094
S. lasiolepis	Arroyo willow	1 gallon	14	3,502
Salvia mellifera	Black sage	1 gallon	6	263
Sambucus mexicana	Mexican elderberry	1 gallon	12	569
Total				**20,725**

TABLE 8
Mulefat Scrub Plant Palette (19.17 Acres)

Seed Mix			
Botanical Name	**Common Name**	**Minimum Percent Live Seed**	**Rate (Lbs./Acre)**
Ambrosia acanthicarpa	Annual bursage	60	2
Artemisia douglasiana	Mugwort	10	2
Epilobium ciliatum	California cottonweed	48	1
Iva axillaris	Poverty weed	15	2
Lessingia glandulifera	Lessingia	80	1
Phacelia cicutaria	NCN	80	1
Pluchea odorata	Marsh fleabane	15	0.5
Senecio flaccidus var. *douglasii*	Butterweed	5	5
Total Lbs./Acre			**14.5**

Container Plants				
Botanical Name	**Common Name**	**Size**	**Spacing (Feet on Center)**	**Total Quantity**
Baccharis salicifolia	Mulefat	1 gallon	8	7,383
Eriodictyon crassifolium var. *nigrescens*	Yerba santa	1 gallon	6	958
Opuntia basilaris var. *ramosa*	Beaver-tail cactus	1 gallon	6	656
Pluchea sericea	Arrow weed	1 gallon	8	1,532
Ribes aureum	Golden currant	1 gallon	6	958
Salix exigua	Sandbar willow	1 gallon	10	1,341
S. lasiolepis	Arroyo willow	1 gallon	14	302
Sambucus mexicanus	Mexican elderberry	1 gallon	12	383
Total				**13,513**

TABLE 9
Arrow Weed Scrub Plant Palette (11.14 Acres)

Seed Mix			
Botanical Name	**Common Name**	**Minimum Percent Live Seed**	**Rate (Lbs./Acre)**
Ambrosia acanthicarpa	Annual bursage	60	2
Artemisia californica	California sagebrush	10	1
A. tridentata	Big sagebrush	10	1
Atriplex canescens ssp. *canescens*	Four-wing saltbush	35	1
Clarkia purpurea	Winecup clarkia	80	1
Eriogonum gracile var. *gracile*	Buckwheat	15	1
E. fasciculatum	Flat-topped buckwheat	10	5
Leymus triticoides	Alkali rye	80	1
L. condensatus	Giant wild rye	70	2
Phacelia cicutaria	NCN	80	1
Total Lbs./Acre			**16**

Container Plants				
Botanical Name	**Common Name**	**Size**	**Spacing (Feet on Center)**	**Total Quantity**
Baccharis salicifolia	Mulefat	1 gallon	8	1,114
Pluchea sericea	Arrow weed	1 gallon	8	3,342
Salix exigua	Sandbar willow	1 gallon	8	1,114
Total				**5,570**

TABLE 10
Southern Coast Live Oak Riparian Forest Plant Palette (2.25 Acres)

Seed Mix			
Botanical Name	**Common Name**	**Minimum Percent Live Seed**	**Rate (Lbs./Acre)**
Amsinckia menziesii var. *menziesii*	Yellow fiddleneck	25	7.0
Artemisia californica	California sagebrush	10	2.0
Bromus carinatus	California brome	85	6.0
Clarkia purpurea	Winecup clarkia	80	0.5
Collinsia heterophylla	Purple Chinese houses	85	2.0
Eriogonum gracile var. *gracile*	Buckwheat	15	1.0
E. fasciculatum	Flat-topped buckwheat	10	6.0
Isocoma menziesii	Goldenbush	15	3.0
Lasthenia californica	Coast goldfields	50	0.5
Leymus triticoides	Alkali rye	80	3.0
Mimulus aurantiacus	Bush monkeyflower	2	2.0
Nassella cernua	Nodding needlegrass	75	3.0
Nemophila menziesii	Baby blue-eyes	75	2.0
Phacelia cicutaria	NCN	80	1.0
Trichostema lanatum	Woolly bluecurls	40	2.0
Total Lbs./Acre			41.0

Container Plants				
Botanical Name	**Common Name**	**Size**	**Spacing (Feet on Center)**	**Total Quantity**
Juglans californica	Black walnut	1 gallon	20	25
Leymus condensatus	Giant rye grass	1 gallon	6	98
Marah macrocarpus	Wild cucumber	1 gallon	30	15
Opuntia littoralis	Coastal prickly-pear	1 gallon	6	98
Pluchea sericea	Arrow weed	1 gallon	8	80
Prunus ilicifolia	Holly-leaf cherry	1 gallon	12	68
Quercus agrifolia	Coast live oak	1 gallon	20	172
Rhus trilobata	Squaw bush	1 gallon	6	272
Ribes californicum	California gooseberry	1 gallon	6	204
Rosa californica	California rose	1 gallon	6	204
Sambucus mexicana	Mexican elderberry	1 gallon	12	68
Total				**1,304**

TABLE 11
Big Sagebrush Scrub Plant Palette (13.60 acres)

Seed Mix			
Botanical Name	**Common Name**	**Minimum Percent Live Seed**	**Rate (Lbs./Acre)**
Artemisia tridentata ssp. *tridentata*	Big basin sagebrush	10	1
Atriplex canescens ssp. *canescens*	Four-wing saltbush	35	1
Chrysothamnus nauseosus	Rubber rabbit brush	10	3
Eriastrum densifolium	Perennial eriastrum	5	1
Eriogonum gracile var. *gracile*	Buckwheat	15	1
Gnaphalium californicum	California everlasting	2	1
Isocoma menziesii	Goldenbush	15	3
Lessingia glandulifera	Lessingia	80	1
Lupinus bicolor	Lindley's annual lupine	90	6
Phacelia cicutaria	NCN	80	2
Total Lbs./Acre			**20**

Container Plants				
Botanical Name	**Common Name**	**Size**	**Spacing (Feet on Center)**	**Total Quantity**
Artemisia tridentata ssp. *parishii*	Sagebrush	1 gallon	6	1,973
Artemisia tridentata ssp. *tridentata*	Great basin sagebrush	1 gallon	6	5,440
Opuntia californica var. *parkeri*	Cane cholla	1 gallon	6	985
Eriodictyon crassifolium var. *nigrescens*	Yerba santa	1 gallon	6	1,360
Eriogonum fasciculatum	Flat-topped buckwheat	1 gallon	6	985
Malacothamnus fasciculatus	Chaparral mallow	1 gallon	6	815
Prunus ilicifolia	Holly-leaf cherry	1 gallon	10	356
Quercus agrifolia	Coast live oak	1 gallon	25	59
Yucca whipplei	Our Lord's candle	1 gallon	6	678
Total				**12,651**

TABLE 12
California Sagebrush Scrub Plant Palette (20.06 acres)

Seed Mix			
Botanical Name	**Common Name**	**Minimum Percent Live Seed**	**Rate (Lbs./Acre)**
Artemisia californica	California sagebrush	10	6
Brickellia californica	California brickellbush	3	2
Chaenactis glabriuscula	Yellow pincushion	10	2
Encelia actoni	Acton's encelia	15	5
Eriogonum fasciculatum	Flat-topped buckwheat	10	6
Gnaphalium californicum	California everlasting	2	1
Isocoma menziesii	Goldenbush	15	2
Lasthenia californica	Coast goldfields	50	1
Lessingia glandulifera	Lessingia	80	1
Lotus scoparius var. *scoparius*	Deerweed	85	1
Lupinus bicolor	Lindley's annual lupine	90	6
Nassella lepida	Foothill needle grass	65	1
N. pulchra	Purple needlegrass	75	1
Phacelia cicutaria	NCN	80	1
Trichostema lanatum	Woolly bluecurls	5	4
Total Lbs./Acre			**40**

Container Plants				
Botanical Name	**Common Name**	**Size**	**Spacing (Feet on Center)**	**Total Quantity**
Artemisia californica	California sagebrush	1 gallon	5	6,459
Isomeris arborea	Bladderpod	1 gallon	6	1,122
Leymus condensatus	Giant wild rye	1 gallon	6	1,122
Malacothamnus fasciculatus	Chaparral mallow	1 gallon	5	3,230
Opuntia littoralis	Prickly-pear cactus	1 gallon	6	1,122
Ribes californicum	California gooseberry	1 gallon	5	3,230
Salvia leucophylla	Purple sage	1 gallon	6	2,244
Total				18,529

5.9.1 Container Planting

Plant materials used to implement the planting plan will include 1-gallon container stock, mulched material, and native seed as indicated in *Tables 7–12*. All container plants will be checked for viability and general health upon arrival at the mitigation site by the project biologist. Plant materials not meeting acceptable standards will be rejected. Plant species and quantities will be confirmed after delivery by the project biologist. General locations for

installation will be designated on the construction documents. Specific locations for installation will be marked on site temporarily with pin flags by the project biologist.

Standard planting procedures will be employed for installing container plants. Holes approximately twice the size of the root ball of the plant will be dug using a post hole digger or power auger. Holes will be filled with water and allowed to drain immediately prior to planting. Backfill soil containing amendments (as directed by the project biologist) will be placed in every planting hole following soaking, with the top 1 to 2 inches of the root ball entirely below grade. Woody container plant species specified by the project biologist will be planted into the soil slightly deeper than this standard, approximately 2 to 4 inches above the root collar of the plant. This additional planting depth for the above species will help ensure sufficient rooting strength and provide additional protection against seasonal scour and/or uprooting due to high flow velocities after winter storm events. Due to the soft nature of the alluvial soils on site, deep-rooted species on the whole should not have problems extending their roots in the soil.

Mulch will be raked around installed container plants to a diameter of 2 feet or 1.5 times the drip line, whichever is greater. Mulch will be 3 to 4 inches deep. This mulch is in addition to the mulch made from salvaging native material from on site. Herbivory cages are not expected to be necessary, as a certain level of herbivory is planned for and built into plant palettes. Should herbivory increase beyond expected amounts, the project biologist has the ability to take steps to counteract herbivory. See *Section 9.1.1* for more information on excessive herbivory procedures.

5.9.2 Seed Application (Hydroseed and/or Drill Seeding)

Following container plant installation, mitigation areas will be stabilized with specified hydroseed mixes (*Tables 7* to *12*) and a light application of a soil binder, primarily for erosion and weed control. Individual mixes have been prescribed for different vegetation communities. Labels for each mixture will be inspected and approved by the project biologist prior to mixing and application. All mixes are to include the specified seed mix at the prescribed rate per acre, virgin wood cellulose fiber mulch at 2000 pounds per acre, if applicable, commercial fertilizer at the specified rate as directed by the project biologist during finish grading, and a commercial binder (“Guar gum,” “super tack,” or equivalent) at 100 pounds per acre.

Applying seed via hydroseed instead of drill seeding will allow for the installation of the irrigation system prior to “grow and kill” cycles being conducted before seeding. Irrigation during the “grow and kill” cycles will greatly increase the germination among weeds and improve our ability to remove them from the seed bank.

Drill seeding may be useful in areas where an irrigation system is not being installed (i.e., the temporary mitigation areas) if/when seeding is decided to be necessary. If drill seeding is decided upon as the method of application, it must be done prior to container planting, which could be done immediately after the drill seeding.

5.10 Irrigation System

The primary goal of this creation/revegetation project is to establish native vegetation communities capable of maintaining and supporting themselves in perpetuity. However, native container plants and seed will require irrigation for establishment on the mitigation site, especially during summer months. A temporary above-ground overhead spray irrigation system will be installed and shall continue as needed to meet the 3- and 5-year performance criteria regarding plant survivorship and growth. Where necessary, drip irrigation may also be used to deliver irrigation water directly to woody container plantings. The irrigation system shall be utilized to support the container stock plantings and seed mixtures until they can survive on their own based on observed and predicted seasonal rainfall and effective plant rooting depth.

All irrigation will be installed by the restoration contractor per the construction documents and specifications. The irrigation system will be designed with above-ground components to facilitate removal once the system is decommissioned.

Irrigation will be used during the plant establishment period of the project. It is planned that irrigation use will be discontinued at least 2 years before the end of the 5-year maintenance period to demonstrate the self-sustainability of the established vegetation communities. The irrigation may be reactivated in order to achieve the 5-year success criteria.

Irrigation design and layout will be provided with the final construction plans. The irrigation system may utilize a series of solar-operated or battery-operated controllers that operate independent irrigation circuits, minimizing irrigation maintenance requirements for the site. Irrigation on site will likely consist of polyvinyl chloride piping (UV-PVC), staked at grade with coverage provided by spray heads.

Consideration shall be taken to keep irrigation components out of the way of flood disturbance. Should portions of the irrigation system become damaged or lost due to unforeseen flood events, the restoration contractor will be required to replace lost components and/or modify the design based on recommendation of the project biologist.

6.0 MAINTENANCE ACTIVITIES DURING THE MONITORING PERIOD

Because the goal of the maintenance and monitoring plan is to establish a natural riparian system that can support itself without maintenance, the primary effort of the maintenance plan is concentrated in the first few seasons of plant growth following the enhancement efforts, when weeds can easily out-compete native plants. The intensity of the maintenance activity is expected to subside each year as the native plant materials become more established and local competition from non-native plants for resources in the mitigation areas is minimized through ongoing control.

6.1 Maintenance Activities

Maintenance activities will be conducted concurrently with the installation of the mulch, container plants, and seed materials in the mitigation areas, and will continue throughout the initial 120-day establishment period and through the long-term maintenance and monitoring period, concluding once success criteria have been met. Contractor maintenance activities on the site will be conducted monthly during the 120-day establishment period and quarterly for the 5-year monitoring and maintenance period.

6.2 Weed Control

Ongoing weed-control activities will occur within the mitigation areas throughout the 5-year maintenance period. Weed eradication will consist of the complete removal of selected non-native vegetation (i.e., seed heads, stems, roots). All debris and slash generated from weed-removal activities will be disposed of off site in a legally acceptable manner. Root removal will not necessarily apply to trees. The cover of non-native plant species within the project area shall not exceed 10% at any time within the 5-year maintenance period. The cover of non-native perennial invasive species will not exceed 0% in any of the 5 years.

Target weed species include all perennial exotic and weedy annual forb species listed on the CAL-IPC California Invasive Plant Inventory. Specific focus will be on species that pose a risk to the development of the proposed vegetation communities. Appropriate measures for control will be determined based on current literature and known methods of control.

Weed-control measures may include direct physical or mechanical removal (e.g., cutting with weed whip machines, mowing) and herbicide application. Weeding will be performed as recommended by the project biologist to keep any weeds establishing on the mitigation site at manageable levels. Specified weed species will be controlled before seed-set. (Other species that appear may need to be controlled if deemed necessary by the project biologist.)

Non-native grasses will be controlled within the project boundaries during the long-term monitoring period, but complete eradication may not be possible due to the ubiquitous nature of their distribution within the watershed. Presence of non-native grasses will not be used as a criterion for project success. Herbicide control will be used for persistent plant species specified by the project biologist, as well as any additional perennial species that are low-growing and are difficult to control by other methods. The restoration contractor should coordinate with the project biologist and Newhall Land to identify specific sites where chemical herbicide may be used. Any herbicide treatment must be specified by a licensed pest control advisor and applied by a licensed pest control applicator. See *Section 5.8* for additional description of weed control.

6.3 Trash Removal

Trash will be removed from the mitigation areas by hand during maintenance visits. Trash consists of all man-made materials, equipment, or debris dumped, thrown, washed, blown, and left within the mitigation areas. Trash and inorganic debris washed or blown onto the mitigation site will be removed regularly. Deadwood and leaf litter from native trees and shrubs will not be removed. Downed logs and leaf litter provide valuable micro-habitats for invertebrates, reptiles, small mammals, and birds. In addition, the decomposition of deadwood and leaf litter is essential for the replenishment of soil nutrients and minerals.

6.4 Irrigation Maintenance

All mitigation areas will be irrigated to promote plant survival during the drier parts of the year, primarily the summer months. Irrigation may be used in winter months to simulate an average or above average rain season if natural precipitation is lacking. It is expected that the irrigation system will be utilized for a maximum of 3 years, excepting conditions for implementation of adaptive management activities. Irrigation volume will be gradually reduced over time to acclimate plants to a non-irrigated condition prior to complete cessation of irrigation. Irrigation from June to November may be minimized to allow plants to experience normal drought cycles and to promote appropriate root growth. The restoration contractor will maintain the irrigation system at the optimum level of operation.

Consultation with the project biologist will be necessary to determine the timing for the cessation of irrigation. Irrigation should stop at the earliest possible date without risking substantial loss of plantings. It is expected that the irrigation system will be abandoned no earlier than the end of Year 1. Irrigation will be most likely be discontinued by the end of Year 3 of the 5-year monitoring and maintenance period. Irrigation components, such as valves and sprinkler heads, may be salvaged for reuse elsewhere at the end of the establishment period. Again, if irrigation is

deemed necessary beyond Year 3, adaptive management methods will be necessary to bring the project up to success criteria.

7.0 MONITORING PLAN FOR THE MITIGATION AREAS

Monitoring of the mitigation site has a two-fold purpose: (1) to monitor the progress of the native revegetation area by assessing whether native vegetation establishment has achieved the performance criteria established for the project and (2) to direct and monitor the maintenance activities and determine remedial actions in a manner that ensures that appropriate maintenance occurs in a timely manner. The monitoring shall be performed by a qualified biologist or habitat restoration specialist. Following installation at the mitigation sites, monitoring shall be required for 5 years.

The project biologist shall be responsible for monitoring the activities of all contractors associated with mitigation implementation during finish grading, soil amending, irrigation installation, mulch application, container planting, and seeding; for monthly monitoring during the 120-day plant establishment/maintenance period; and for quarterly and biannual monitoring during the 5-year maintenance and monitoring period. The project biologist will communicate and coordinate with the restoration contractor to assure the timely performance of project activities. The project biologist shall submit progress reports to Newhall Land during installation and long-term monitoring site visits and annual reports to Newhall Land, ACOE, CDFG, and RWQCB each year on the anniversary date during the 5-year monitoring period.

7.1 Construction/Installation Monitoring

The project biologist will make regular site visits during key milestones associated with project implementation. The project biologist also will review activities for conformance to this plan, environmental permit conditions, and the requirements of contract plans and specifications. Each site observation visit will be documented in an observation report. Construction shall be photo-documented and will be included in observation reports, as needed.

7.2 120-Day Plant Establishment Period and Monitoring

Upon successful completion of project installation as determined by the project biologist, the 5-year long-term monitoring phase will begin. During the first 120 days of the long-term monitoring period, container plants will be monitored for health and vigor. Should any of the container plants die during the 120-day plant establishment period, they will be replaced in kind at the expense of the restoration contractor to 100% of the original quantity at the recommendation of the project biologist. Should seed/hydroseed fail to germinate within the

120-day plant establishment period, it shall be reapplied at the expense of the contractor at the recommendation of the project biologist. The project biologist will perform monitoring monthly (every 30 days) during the 120-day plant establishment period and will make recommendations to the contractor to ensure conformance with the 120-day plant establishment requirements.

7.3 Monitoring Methods

After each site visit, a site observation report will be provided to Newhall Land and to the restoration contractor. The site observation report will include a description of the project status, site conditions, and any maintenance recommendations or remedial actions.

Monitoring of the mitigation areas will be performed by the project biologist during the 120-day establishment period and quarterly throughout the duration of the project. Both horticultural (qualitative) monitoring and biological (quantitative) monitoring will be conducted at the mitigation areas. Permanent photo-documentation stations will be established along each transect to record the progress of the mitigation site and graphically record plant establishment over the 5-year period. On an annual basis, the project biologist will provide a summary of results, in the annual report, of the monitoring activities completed during the prior year.

7.4 Performance Standards and Success Criteria

Performance criteria have been established for the southern cottonwood–willow riparian forest, arrow weed scrub, and mulefat scrub vegetation community types to be created on site. The criteria are based upon expected vegetative development within a properly functioning native vegetation of the same type, and are listed in *Table 13.* These performance criteria will be utilized to assess the annual progress of the restoration areas, and are regarded as interim project objectives designed to achieve the final goals. Fulfillment of these criteria will indicate that the wetlands mitigation areas on the project site are progressing toward the vegetation community types and functions that constitute the long-term goals of the plan. Performance criteria for areas permanently impacted (creation areas) include a minimum container plant survivorship, an average height requirement of planted tree species, and a minimum required native plant cover. Performance criteria for river wash have not been established because the ultimate goal is to recreate the mostly barren nature of the vegetation community type and the routine scouring. Performance criteria for temporarily impacted areas (revegetation areas) include minimum container plant survivorship, an average height requirement of mitigated tree species, and a minimum required native plant cover (*Table 14*).

TABLE 13
Performance Guidelines for Creation Areas (Permanent Impact)

Criteria	Year 1[1]	Year 2	Year 3	Year 4	Year 5
Container plant survival[2]	100%	80%	80%	70%	70%
Container Tree Heights					
Fremont cottonwood	4 ft.	6 ft.	7 ft.	12 ft.	15 ft.
Coast live oak	2 ft.	3 ft.	5 ft.	6 ft.	7 ft.
Arroyo willow	4 ft.	6 ft.	10 ft.	12 ft.	12 ft.
Sandbar willow	3 ft.	3 ft.	4 ft.	5 ft.	6 ft.
Native Cover					
Southern cottonwood–willow riparian woodland	15%	30%	40%	60%	80%
Arrow weed scrub	10%	20%	34%	55%	75%
Mulefat scrub	10%	20%	25%	40%	50%
Southern coast live oak riparian forest	15%	25%	35%	50%	70%
Perennial non-native/exotic cover[3]	0%	0%	0%	0%	0%

1 Percentages based upon visual estimates.
2 All dead plants shall be replaced unless their function is anticipated to be performed by natural recruitment.
3 The cover of non-native plant species at the mitigation sites shall not exceed 10% at any time within this 5-year period.

TABLE 14
Performance Guidelines for Revegetation Areas (Temporary Impact)

Criteria	Year 1[1]	Year 2	Year 3	Year 4	Year 5
Container plant survival[2]	—	100%[4]	80%[4]	80%[4]	70%[4]
Container Tree Heights					
Fremont cottonwood	—	4 ft.[4]	6 ft.[4]	7ft.[4]	12ft.[4]
Arroyo willow	—	4 ft.[4]	6 ft.[4]	10 ft.[4]	12 ft.[4]
Sandbar willow	—	3 ft.[4]	3 ft.[4]	4 ft.[4]	5 ft.[4]
Native Cover					
Southern cottonwood–willow riparian woodland	15%	30%	45%	60%	80%
Arrow weed scrub	10%	20%	34%	55%	75%
Mulefat scrub	10%	20%	25%	40%	50%
Perennial non-native/exotic cover[3]	0%	0%	0%	0%	0%

1 Percentages based upon visual estimates.
2 All dead plants shall be replaced unless their function is being performed, or is reasonably anticipated to be performed, by natural recruitment.
3 The cover of non-native plant species at the mitigation sites shall not exceed 10% at any time within this 5-year period.
4 Only required if native cover does not reach target native cover at the end of Year 1 and project biologist requires remedial seeding/planting.

If mitigation efforts fail to meet the performance standards listed in any one year, the project biologist may recommend remedial actions to be implemented (e.g., supplemental planting, seeding, transplanting) that will enhance the vegetation communities to a level in conformance with these standards. In addition, if native plant cover does not reach 50% of the pre-construction plant cover in the revegetation areas, these areas will be revegetated. River wash will not need to reach 50% of the pre-construction plant cover due to periodic scouring. Scouring is a regular disturbance with this vegetation community that makes predicting plant cover impossible. Scouring will provide new seeds/propagules to replace the plants that are swept away.

7.5 Qualitative Monitoring

Data on native vegetation coverage, weed presence, and site progress will be collected during monitoring visits to be used in the annual monitoring report. Qualitative monitoring will be conducted to assess native container plant vigor and development, seedling recruitment from native hydroseed and natural sources, soil moisture content, presence/absence of plant pests or diseases, erosion and/or drainage conditions on site, presence/absence of non-native or invasive plant species, trash or debris accumulation, wildlife presence/absence, and project fencing. All qualitative monitoring visits to the mitigation site will be documented with a monitoring report, which will be forwarded to Newhall Land. Any project deficiencies will be noted in the monitoring report, with accompanying recommendations for maintenance or remedial actions.

7.6 Quantitative Monitoring

Quantitative monitoring will be conducted to determine container plant survivorship/mortality, total native species cover and composition, and total non-native species cover and composition. Quantitative monitoring will be conducted by establishing permanent vegetation transects within the mitigation areas at random locations at the end of Year 1. These transects will be utilized to help determine achievement of the yearly performance standards. Permanent photo-documentation stations will be established along each transect to record the progress of the mitigation site and graphically record plant establishment over the 5-year period.

Transects will be sampled using the point-intercept method. A transect tape will be run between two posts and a vegetative intercept line will be visually projected above and below the tape at every half-meter mark. Each native or non-native species that intercepts the projected line will be recorded. In addition to species, a vertical stratum for each “hit” will also be recorded. Vertical strata include the herbaceous layer (0.0 meter–1.0 meter), shrub layer (1.0 meter–3.0 meters) and canopy layer (3.0 meters and higher). All plant species present within a 5-meter-wide “species richness” portion of each transect will be recorded. All data will be utilized to determine total

percent plant cover, vertical structural diversity, percent native cover, percent non-native cover, overall species richness and diversity, and target species growth. Quantitative monitoring will be conducted once annually in the fall at the end of the growing season to capture the project's complete growth beginning in Year 1 and extending through Year 5 of the mitigation project. Approximately twenty transects will be installed in total; each vegetation community type shall be sampled with a minimum of three transects. Transects will be 50 meters long, or the maximum length possible in areas with less than 50 linear meters available. Transect locations will be established by the project biologist.

7.7 Functional Hybrid Assessment (FHA) Monitoring and Criteria

In order to more effectively evaluate functional criteria for the varying vegetation communities on site, three sets of evaluation criteria were established: one for southern cottonwood–willow riparian forest, mulefat scrub, and arrow weed scrub; one for southern coast live oak riparian forest; and one for river wash. The evaluation criteria with associated scores for each of the functional categories are described below.

Criteria for Southern Cottonwood–Willow Riparian Forest, Mulefat Scrub, and Arrow Weed Scrub

Vegetation Community – Structural Diversity

Score	Evaluation Criteria
0	Site permanently converted to land use that will not be able to support native riparian vegetation, such as housing, agricultural, or concrete channel.
0.2	No existing riparian vegetation (e.g., covered with annual grasses and scrub, or bare ground). However, site has the potential for revegetation without extensive structural modification.
0.4	Vegetated areas of the site contain sparse, scattered, patchy, or remnant riparian vegetation that is immature and/or lacks structural (vertical) diversity.
0.6	The patches of riparian vegetation on the site contain riparian trees and saplings (i.e., perennial dicots), but contain no, or poorly-developed, shrub understory.

0.8 The patches of riparian vegetation on the site contain riparian trees and saplings (for southern cottonwood–willow scrub and southern coast live oak riparian forest), plus a well-developed native shrub understory.

1.0 The patches on the site are structurally diverse. They contain riparian trees and saplings (for southern cottonwood–willow forest) and native seedlings, as well as developed native shrub understory and herbaceous wetlands.

Vegetation Community – Coverage and Spatial Diversity

Score	Evaluation Criteria
0	Site permanently converted to land use that will not be able to support native riparian vegetation, such as housing, agricultural, or concrete channel.
0.2	No existing riparian vegetation (e.g., covered with annual grasses and scrub, or bare ground). However, site has the potential for revegetation without extensive structural modification.
0.4	Patches of monotypic riparian vegetation covering up to 50% of the site, interspersed among grasses or bare ground.
0.6	Patches of diverse riparian vegetation covering up to 30% of the site, interspersed among grasses, exotic plants, or bare ground; AND/OR greater than 50% of the site covered with monotypic patch(es) of riparian vegetation, interspersed among grasses or bare ground.
0.8	Diverse riparian vegetation covering between 30% and 70% of the site (e.g., strips or islands of riparian vegetation communities, interspersed in open space).
1.0	Diverse riparian vegetation (e.g., at least three different genera of riparian vegetation present) covering between 70% and 100% of the site, interspersed in open space.

Percent Exotic, Invasive Vegetation

Score	Evaluation Criteria
0	Site is covered with pure stands of exotic vegetation or lacks any riparian vegetation.
0.2	Site is covered by 70% to 99% exotic vegetation.
0.4	Site is covered by 40% to 69% exotic vegetation.

0.6 Site is covered by 10% to 39% exotic vegetation.

0.8 Site is covered by 5% to 9% exotic vegetation.

1.0 Site is covered by less than 5% exotic vegetation.

Hydrologic Regime of Riparian Zone

Score	Evaluation Criteria
0	No regular supply of water to the site. Site not associated with any water source, surface drainage, impoundment, or groundwater discharge.
0.2	Water supply to the site is solely from artificial irrigation (e.g., sprinklers, drip irrigation). No natural surface drainage, natural impoundment, groundwater discharge, or other natural hydrologic regime.
0.5	Site is sustained by natural source of water, but is not associated with a stream, river, or other concentrated flow conduit. (For example, the site is sustained by groundwater or urban runoff.) There is no evidence of riparian processes, such as overbank flow, scouring, or deposition.
0.7	Site is within or adjacent to an impoundment on a natural water course that is subject to fluctuations in flow or hydroperiod.
1.0	Site is within or adjacent to a stream, river, or other concentrated flow conduit that provides the primary source of water to the site. This site contains some evidence of riparian processes, such as overbank flow, scouring, or deposition.

Micro- and Macro-Topographic Complexity

Score	Evaluation Criteria
0	Channel is contained in a concrete-lined channel, culvert, etc.
0.2	Flood-prone area is characterized by a homogeneous, flat earthen surface with little to no micro- and macro-topographic features.
0.5	Flood-prone area contains micro- and/or macro-topographic features such as meanders, bars, braiding, secondary channels, backwaters, terraces, pits, ponds, or hummocks, but is predominantly homogeneous or flat surfaced.

0.8 Floodplain is not predominantly homogeneous and is characterized by micro-topographic features such as pits, ponds, hummocks, or bars. However, there are no macro-topographic features such as braiding, secondary channels, or backwaters.

1.0 Flood-prone area is characterized by micro- and macro-topographic complexity such as meanders, bars, braiding, secondary channels, backwaters, terraces, pits, ponds, hummocks, etc.

Biogeochemical Processes – Vegetation Roughness and Organic Carbon

Score	Evaluation Criteria
0	Channel is contained in a concrete-lined channel, culvert, etc., with little to no vegetation or detritus.
0.2	Site can support grasses, forbs, or other herbaceous vegetation and there is woody debris, leaf litter, or detritus present in the channel.
0.4	Channel supports at least 25% relative cover of grasses, forbs, or herbaceous or riparian vegetation and there is at least 10% relative cover of woody debris, leaf litter, or detritus in the channel.
0.6	Site contains between 25% and 50% relative cover of any stratum of riparian vegetation and between 10% and 40% relative cover with woody debris, leaf litter, or detritus.
0.8	Site contains between 50% and 75% relative cover of any stratum of riparian vegetation and between 40% and 60% relative cover with woody debris, leaf litter, or detritus.
1.0	Site contains greater than 75% relative cover of any stratum of riparian vegetation and greater than 60% relative cover with woody debris, leaf litter, or detritus.

Criteria for Southern Coast Live Oak Riparian Forest

Vegetation Community – Structural Diversity

Score	Evaluation Criteria
0	Site permanently converted to land use that will not be able to support native riparian vegetation, such as housing, agricultural, or concrete channel.
0.2	No existing riparian vegetation (e.g., covered with annual grasses and scrub, or bare ground). However, site has the potential for revegetation without extensive structural modification.
0.4	Vegetated areas of the site contain sparse, scattered, patchy, or remnant riparian vegetation that is immature and/or lacks structural (vertical) diversity.
0.6	The patches of riparian vegetation on the site contain riparian trees and saplings (i.e., perennial dicots), but contain no, or poorly-developed, shrub understory.
0.8	The patches of riparian vegetation on the site contain riparian trees and saplings plus a well-developed native shrub understory.
1.0	The patches on the site are structurally diverse. They contain riparian trees and saplings (for southern coast live oak riparian forest) and native seedlings, as well as developed native shrub understory and herbaceous wetlands.

Vegetation Community – Coverage and Spatial Diversity

Score	Evaluation Criteria
0	Site permanently converted to land use that will not be able to support native riparian vegetation, such as housing, agricultural, or concrete channel.
0.2	No existing riparian vegetation (e.g., covered with annual grasses and scrub, or bare ground). However, site has the potential for revegetation without extensive structural modification.
0.4	Patches of monotypic riparian vegetation covering up to 50% of the site, interspersed among grasses or bare ground.

0.6 Patches of diverse riparian vegetation covering up to 30% of the site, interspersed among grasses, exotic plants, or bare ground; AND/OR greater than 50% of the site covered with monotypic patch(es) of riparian vegetation, interspersed among grasses or bare ground.

0.8 Diverse riparian vegetation covering between 30% and 70% of the site (e.g., strips or islands of riparian vegetation communities, interspersed in open space).

1.0 Diverse riparian vegetation (e.g., at least three different genera of riparian vegetation present) covering between 70% and 100% of the site, interspersed in open space.

Biogeochemical Processes – Vegetation Roughness and Organic Carbon

Score	Evaluation Criteria
0	Channel is contained in a concrete-lined channel, culvert, etc., with little to no vegetation or detritus.
0.2	Site can support grasses, forbs, or other herbaceous vegetation and there is woody debris, leaf litter, or detritus present in the channel.
0.4	Site supports at least 25% relative cover of grasses, forbs, or herbaceous or riparian vegetation and there is at least 10% relative cover of woody debris, leaf litter, or detritus in the channel.
0.6	Site contains between 25% and 50% relative cover of any stratum of riparian vegetation and between 10% and 40% relative cover with woody debris, leaf litter, or detritus.
0.8	Site contains between 50% and 75% relative cover of any stratum of riparian vegetation and between 40% and 60% relative cover with woody debris, leaf litter, or detritus.
1.0	Site contains greater than 75% relative cover of any stratum of riparian vegetation and greater than 60% relative cover with woody debris, leaf litter, or detritus.

Percent Exotic, Invasive Vegetation

Score	Evaluation Criteria
0	Site is covered with pure stands of exotic vegetation or lacks any riparian vegetation.
0.2	Site is covered by 70% to 99% exotic vegetation.
0.4	Site is covered by 40% to 69% exotic vegetation.
0.6	Site is covered by 10% to 39% exotic vegetation.
0.8	Site is covered by 5% to 9% exotic vegetation.
1.0	Site is covered by less than 5% exotic vegetation.

Hydrologic Regime of Riparian Zone

Score	Evaluation Criteria
0	No regular supply of water to the site. Site not associated with any water source, surface drainage, impoundment, or groundwater discharge.
0.2	Water supply to the site is solely from artificial irrigation (e.g., sprinklers, drip irrigation). No natural surface drainage, natural impoundment, groundwater discharge, or other natural hydrologic regime.
0.5	Site is sustained by natural source of water, but is not associated with a stream, river, or other concentrated flow conduit. (For example, the site is sustained by groundwater or urban runoff.) There is no evidence of riparian processes, such as overbank flow, scouring, or deposition.
0.7	Site is within or adjacent to an impoundment on a natural water course that is subject to fluctuations in flow or hydroperiod.
1.0	Site is within or adjacent to a stream, river, or other concentrated flow conduit that provides the primary source of water to the site. This site contains some evidence of riparian processes, such as overbank flow, scouring, or deposition.

Criteria for River Wash

Micro- and Macro-Topographic Complexity

Score	Evaluation Criteria
0	Channel is contained in a concrete-lined channel, culvert, etc.
0.2	Flood-prone area is characterized by a homogeneous, flat earthen surface with little to no micro- and macro-topographic features.
0.5	Flood-prone area contains micro- and/or macro-topographic features such as meanders, bars, braiding, secondary channels, backwaters, terraces, pits, ponds, or hummocks, but is predominantly homogeneous or flat surfaced.
0.8	Floodplain is not predominantly homogeneous and is characterized by micro-topographic features such as pits, ponds, hummocks, bars. However, there are no macro-topographic features such as braiding, secondary channels, or backwaters.
1.0	Flood-prone area is characterized by micro- and macro-topographic complexity such as meanders, bars, braiding, secondary channels, backwaters, terraces, pits, ponds, hummocks, etc.

Percent Exotic, Invasive Vegetation

Score	Evaluation Criteria
0	Site is covered with pure stands of exotic vegetation or lacks any riparian vegetation.
0.2	Site is covered by 70% to 99% exotic vegetation.
0.4	Site is covered by 40% to 69% exotic vegetation.
0.6	Site is covered by 10% to 39% exotic vegetation.
0.8	Site is covered by 5% to 9% exotic vegetation.
1.0	Site is covered by less than 5% exotic vegetation.

7.7.1 FHA Success Criteria

At the end of each monitoring year, scores will be assigned to each vegetation community within the mitigation area using the evaluation criteria above. The interim and ultimate target scores are listed in *Table 15*. Interim and ultimate success will be determined as follows:

- Interim success of southern cottonwood–willow riparian forest, mulefat scrub, arrow weed scrub, and southern coast live oak riparian forest in the mitigation area = attainment of interim target score for Hydrologic Regime criterion AND attainment of interim target scores for four of the remaining five criteria.

- Ultimate success of southern cottonwood–willow riparian forest, mulefat scrub, arrow weed scrub, and southern coast live oak riparian forest in the mitigation areas = attainment of ultimate target score for Hydrologic Regime criterion AND attainment of ultimate target scores for four of the remaining five criteria.

- Interim success of river wash in the mitigation area = attainment of both interim target scores.

- Ultimate success of river wash in the mitigation areas = attainment of both ultimate target scores.

TABLE 15
FHA Goals for Success of Mitigation Areas

Evaluation Criteria	Interim Target Score (Years 1–3)	Ultimate Target Score (Years 4–5)
Southern Cottonwood–Willow Riparian Forest, Mulefat Scrub, Arrow Weed Scrub		
Structural diversity	0.4	0.8
Coverage and spatial diversity	0.6	1.0
Percent exotic, invasive vegetation	0.6	0.8
Hydrological regime of riparian zone	0.7	1.0
Topographic complexity	0.5	0.8
Biogeochemical processes	0.6	0.8
Southern Coast Live Oak Riparian Forest		
Structural diversity	0.4	0.8
Coverage and spatial diversity	0.6	1.0
Biogeochemical processes	0.6	1.0
Percent exotic, invasive vegetation	0.6	0.8
Hydrological regime of riparian zone	0.2	0.5
River Wash		
Topographic complexity	0.5	0.8
Percent exotic, invasive vegetation	0.6	0.8

8.0 REPORTING

8.1 Annual Monitoring Report

An annual monitoring report will be submitted to the permitting agencies during the 5-year maintenance and monitoring period of the project. The monitoring reports will describe the existing conditions of the project areas derived from qualitative field observations and quantitative vegetation data collection. The reports will provide a comparison of annual success criteria with field conditions, will identify all shortcomings of the project, project implementation, etc., and will recommend remedial measures necessary for the successful completion of the wetlands mitigation project. Each yearly report will provide a summary of the accumulated data. Annual reports also will include the following:

- A list of names, titles, and companies of all persons who prepared the content of the annual report and participated in monitoring activities
- A copy of the resource agency permits, any special conditions, and any subsequent letters of modification
- Prints of biological monitoring photographs

- Maps identifying monitoring areas, planting zones, and weed-removal areas as appropriate
- Quantitative data from transect measurements in Years 1 through 5 of the mitigation project.

The annual monitoring report will be submitted to the resource agencies by April 1st of each year with the Annual Mitigation Status Report. The Annual Mitigation Status Report is required for projects installed under the Newhall Ranch Specific Plan Mitigation Measure 4.6-9 (County of Los Angeles 2003), and shall be submitted for 5 years after all mitigation has been completed.

8.2 Agency Notification at End of Monitoring Period

Upon submitting the annual report for the final year, Newhall Land will notify the permitting agencies that the final success criteria have been met at the end of the 5-year monitoring period, and request acceptance of the site, immediate release of any financial security posted for the project (letter of credit, bond, other), and confirmation that project mitigation has been satisfied. Early release may be possible if performance standards are met early and the resource agencies agree with the level of establishment. Removal of the irrigation system, temporary fencing, and signage would occur prior to final sign-off. In the event that Newhall Land gets no response from the permitting agencies within 60 days of submittal of the final report, Newhall Land will assume acceptance of the report. Newhall Land will then, at its option, formally notify the permitting agencies that the site has satisfied the agency permits and that no further maintenance or monitoring will be conducted, and Newhall Land may request immediate release of any financial securities held by any permitting agency for the project.

8.3 Regulatory Agency Confirmation

Following receipt of the notification of completion, CDFG, ACOE, and RWQCB may visit the site to confirm the completion of the mitigation effort and may issue formal letters of success prior to acceptance.

9.0 CONTINGENCY MEASURES

If performance criteria are not met for all or any portion of the mitigation project or if the final success criteria are not met, the project biologist and Newhall Land will prepare an analysis of the cause(s) of failure within the appropriate annual report and, if determined necessary by permitting agencies, propose remedial action for agency approval. If the mitigation site has not met the performance criteria by the end of the 5-year long-term maintenance and monitoring

period, Newhall Land's maintenance and monitoring obligations will continue until contingency measures are negotiated and implemented to bring the mitigation site into compliance with the established standards or until the permitting agencies grant final mitigation project permit compliance/approval.

In the event that the restoration, creation, or enhancement site is significantly damaged by an Act of God (fire, flood, landslide, or earthquake) or vandalism, then the following shall be used as guidance for the continuation of mitigation maintenance and monitoring:

- If in Years 1 through 2: replant once and restart 5-year maintenance and monitoring clock.
- If in Years 3 through 5:
  - and being documented as having satisfied the 3-year performance criteria, then the 5-year success criteria are suspended and the site is deemed to have satisfied permitting agency mitigation conditions. Weed control only shall be required for the time period of the original 5-year monitoring period.
  - and not documented as meeting 3-year performance criteria, then a one-time replant is required, as well as negotiation with permitting agencies, as suggested above, to determine the extent and duration of maintenance and monitoring.

9.1 Adaptive Management Plan

Adaptive management will be implemented in the event of unforeseen or probable but unpredictable circumstances. Adaptive management is defined, for the purposes of this mitigation project, as a flexible, iterative approach to the long-term management of biological resources that is directed over time by the results of ongoing monitoring activities and direct observation of environmental stressors that are producing adverse results within the mitigation area. Adaptive management will include the utilization of regular qualitative assessments and rapid qualitative assessment data gathered in the field prior to and during the mitigation project to assess the health and vigor of vegetation communities within the mitigation site. Following an event that causes damage to all or part of the mitigation site, the data will be used in part to drive management considerations for repair of the damaged areas. Achieving the key goals of mitigation completion and establishment of self-sustaining native vegetation communities will be the focus of all adaptive management decisions. Individual environmental stressors are discussed below, along with an anticipated range of management responses to correct any damage that may occur to the mitigation site. Enhancement of adjacent disturbed vegetation within the Santa Clara

River floodplain may be considered as an adaptive management measure in the event that certain vegetation communities are no longer supported at the project site.

9.1.1 Herbivory

Some grazing and browsing by native mammals is expected to occur within the mitigation area. The plant palettes for each vegetation community have been designed to accommodate a moderate level of plant browsing. If browse levels should become elevated (i.e., if significant plant mortality and cover reduction occurs) as indicated by qualitative or quantitative monitoring of the mitigation site, remedial measures will have to be implemented. Browse guards (fencing) may be installed around the base of trees and young shrub container plants in affected areas to reduce plant mortality.

9.1.2 Flooding

Flooding is anticipated to occur on occasion within the mitigation areas. Flooding may periodically reduce overall plant cover within the stream channel. If quarterly monitoring of the channel indicates that cover is being reduced below tolerable levels, remedial planting or seeding may be required. Additional mulch, cuttings, or container plants may be placed in strategic areas to address changed flow characteristics of the stream channel.

Due to the highly volatile nature of the Santa Clara River's flood regime, additional flow entrainment or velocity protection features may be recommended. In addition, vegetation communities with the lowest Manning's coefficient will be positioned in potential areas of highest flow rate in an attempt to reduce flood-related damage to the creation/restoration sites. In addition, larger tree trunks from clearing operations may be strategically placed to provide additional non-intrusive protection for mitigation areas, while also providing habitat for small mammals, reptiles, and other small wildlife.

9.1.3 Drought

Seasonal drought is a normal annual cycle in northern Los Angeles County and all plant palettes have been designed with drought-tolerant plant species that are capable of withstanding seasonal fluctuations in available moisture. However, an extended drought could potentially occur, including low seasonal rainfall and prolonged high temperatures that may negatively affect the mitigation site (e.g., lower native cover, higher plant mortality, or increased potential for pest infestations on site). Irrigation will reduce or eliminate the effects of drought on container plants and seedlings during the first 3 years of the mitigation project. Any remedial options that may be necessary after 2 years from the installation date will likely require an additional period of site

irrigation to relieve plants from drought stress and/or provide for new seed growth. All irrigation components may be left in place after Year 2 in case remedial seeding and/or container planting is required at a later project date. If the irrigation system is required at a later date, it should be used only as necessary (i.e., periodic watering versus regular daily watering).

10.0 REFERENCES

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APPENDIX A

Vascular Plant Species Observed at Newhall Ranch (2002, 2003, 2004, 2005, and 2006)

APPENDIX A
Vascular Plant Species Observed at Newhall Ranch (2002, 2003, 2004, 2005, and 2006)

LYCOPODIAE

SELAGINELLACEAE – SPIKE-MOSS FAMILY

Selaginella bigelovii – Bigelow's spike-moss

EQUISETAE

EQUISETACEAE – HORSETAIL FAMILY

Equisetum hyemale – common scouring-rush
Equisetum laevigatum – smooth scouring-rush
Equisetum telmateia – giant horsetail

FILACEAE

AZOLLACEAE – MOSQUITO FERN FAMILY

Azolla c.f. *filiculoides* – duckweed fern

DENNSTAEDTIACEAE – BRACKEN FAMILY

Adiantum jordanii – California maiden-hair
Pellaea andromedifolia – coffee fern
Pellaea mucronata var. *mucronata* – bird's-foot fern
Pentagramma triangularis – goldenback fern

DRYOPTERIDACEAE – WOOD FERN FAMILY

Dryopteris arguta – coastal wood fern

POLYPODIACEAE – POLYPODY FAMILY

Polypodium californicum – California polypody

CONIFERAE

CUPRESSACEAE – CYPRESS FAMILY

* *Cedrus deodara* – Deodar cedar
Juniperus californica – California juniper

PINACEAE – PINE FAMILY

* *Pinus halepensis* – Aleppo pine
* *Pinus pinea* – stone pine

ANGIOSPERMAE (DICOTYLEDONES)

AIZOACEAE – FIG-MARIGOLD FAMILY

* *Aptenia cordifolia* – baby sun-rose
* *Carpobrotus* sp. – sea-fig

AMARANTHACEAE – AMARANTH FAMILY

* *Amaranthus albus* – tumbleweed
Amaranthus blitoides – prostrate amaranth
* *Amaranthus hybridus* – amaranth
Amaranthus palmeri – Palmer's amaranth
Amaranthus powellii – Powell's amaranth
* *Amaranthus retroflexus* – rough pigweed

ANACARDIACEAE – SUMAC FAMILY

Malosma laurina – laurel sumac
Rhus ovata – sugar-bush
Rhus trilobata – squaw bush
* *Schinus molle* – Peruvian pepper-tree
Toxicodendron diversilobum – poison-oak

APIACEAE – CARROT FAMILY

* *Anethum graveolens* – dill
Apiastrum angustifolium – wild celery
* *Apium graveolens* – celery
Berula erecta – cutleaf water-parsnip
Bowlesia incana – American bowlesia
* *Conium maculatum* – poison hemlock
* *Coriandrum sativum* – cilantro
* *Daucus carota* – Queen Anne's lace
Daucus pusillus – rattlesnake weed
Lomatium utriculatum – common lomatium
Lomatium caruifolium – alkali parsnip
Sanicula bipinnata – poison sanicle
Osmorhiza brachypoda – California sweet-cicely

* *Petroselinum crispum* – parsley
Sanicula crassicaulis – Pacific sanicle
* *Torilis arvensis* – Japanese hedge-parsley
* *Torilis nodosa* – knot hedge-parsley
Yabea microcarpa – California hedge parsley

APOCYNACEAE – DOGBANE FAMILY
Apocynum cannabinum – Indian hemp
* *Vinca major* – periwinkle

ASCLEPIADACEAE – MILKWEED FAMILY
Asclepias californica – California milkweed
Asclepias fascicularis – narrow-leaf milkweed

ASTERACEAE – SUNFLOWER FAMILY
Achillea millefolium – yarrow
Achyrachaena mollis – blow-wives
Acourtia microcephala – sacapellote
Agoseris grandiflora – large-flowered agoseris
Agoseris retrorsa – spear-leaf agoseris
Ambrosia acanthicarpa – annual burweed
Ambrosia confertifolia – weak-leaved burweed
Ambrosia psilostachya – western ragweed
Artemisia californica – coastal sagebrush
Artemisia douglasiana – California mugwort
Artemisia dracunculus – tarragon
Artemisia tridentata – Great Basin sagebrush
Baccharis douglasii – marsh baccharis
Baccharis emoryi – Emory's baccharis
Baccharis pilularis – coyote brush
Baccharis salicifolia – mulefat
Baccharis sarothroides – chaparral broom
Brickellia californica – California brickellbush
Brickellia nevinii – Nevin's brickellbush
* *Carduus pycnocephalus* – Italian thistle
* *Centaurea melitensis* – star thistle
Chaenactis artemisiifolia – artemisia pincushion
Chaenactis glabriuscula – yellow pincushion
Chrysothamnus nauseosus – rubber rabbitbrush

Cirsium occidentale var. *californicum* – California thistle
Cirsium occidentale var. *occidentale* – cobwebby thistle
* *Cirsium vulgare* – bull thistle
* *Cnicus benedictus* – blessed thistle
Conyza canadensis – horseweed
Conyza coulteri – Coulter's conyza
Coreopsis bigelovii – Bigelow's coreopsis
* *Coreopsis tinctoria* – calliopsis
Corethrogyne filaginifolia – virgate cudweed aster
* *Cotula coronopifolia* – African brass-buttons
* *Cotula australis* – Australian brass-buttons
Deinandra increscens ssp. *increscens* – no common name
Encelia actoni – Acton's encelia
Encelia californica – California bush sunflower
Encelia farinosa – brittlebush, incensio
Ericameria palmeri var. *pachylepis* – goldenbush
Ericameria pinifolia – pine-bush
Erigeron foliosus – leafy daisy
Eriophyllum confertiflorum – long-stem golden yarrow
Euthamia occidentalis – western goldenrod
Filago californica – California fluffweed
* *Filago gallica* – narrow-leaf filago
* *Gazania linearis* – gazania
Gnaphalium bicolor – bicolor cudweed
Gnaphalium californicum – California everlasting
Gnaphalium canescens ssp. *microcephalum* – white everlasting
Gnaphalium leucocephalum – Sonora everlasting
Gnaphalium luteo-album – white cudweed
Gnaphalium sp. *nova* – everlasting
Gnaphalium palustre – lowland cudweed
Gnaphalium stramineum – cotton-batting plant
Grindelia sp. – gumplant
Hazardia squarrosa ssp. *grindelioides* – saw-toothed goldenbush
Helianthus annuus – common sunflower
Helianthus nuttallii c.f. ssp. *parishii* – Los Angeles sunflower
Hemizonia fasciculata – fascicled tarweed
Hemizonia kelloggii – Kellogg's tarweed
Heterotheca grandiflora – telegraph weed
Heterotheca sessiliflora – golden aster

Hypochaeris glabrata – smooth cat's ear
* *Hypochaeris radicata* – hairy cat's ear
Isocoma menziesii – goldenbush
Isocoma menziesii var. *menziesii* [*Haplopappus venetus*] – Menzies' goldenbush
Iva axillaris – poverty weed
* *Lactuca saligna* – willowleaf lettuce
* *Lactuca serriola* – prickly lettuce
Lagophylla ramosissima – common hareleaf
Lasthenia californica – coast goldfields
Layia glandulosa – white layia
Layia platyglossa – tidy tips
Lepidospartum squamatum – scale-broom
Lessingia filaginifolia – California aster
Lessingia glandulifera – lessingia
Madia exigua – small tarweed
Madia gracilis – slender madia
Malacothrix clevelandii – Cleveland's malacothrix
Malacothrix saxatilis – cliff malacothrix
* *Matricaria matricarioides* – pineapple weed
Micropus californicus – slender cottonweed
* *Picris echioides* – bristly ox-tongue
Pluchea odorata – marsh-fleabane
Pluchea sericea – arrow weed
Psilocarphus tenellus – slender woolly-heads
* *Pulicaria paludosa* – Spanish sunflower
Rafinesquia californica – California chicory
Senecio californicus – California butterweed
Senecio flaccidus var. *douglasii* – butterweed
* *Senecio vulgaris* – common groundsel
Silybum marianum – milk thistle
Solidago californica – California goldenrod
* *Sonchus asper* – prickly sow-thistle
* *Sonchus oleraceus* – common sow-thistle
* *Spartium junceum* – Spanish broom
Stebbinsoseris heterocarpa [*Microseris heterocarpa*] – brown puffs
Stephanomeria cichoriacea – chicory-leaved Stephanomeria
Stephanomeria exigua – small wreathplant
Stephanomeria pauciflora – wire-lettuce
Stephanomeria virgata – twiggy wreathplant

Stylocline gnaphaloides – everlasting nest-straw
Uropappus lindleyi [*Microseris lindleyi*] – silver puffs
Wyethia ovata – mule ears
Xanthium spinosum – spiny cocklebur
Xanthium strumarium – cocklebur

BETULACEAE – BIRCH FAMILY

Alnus rhombifolia – white alder

BORAGINACEAE – BORAGE FAMILY

Amsinckia menziesii var. *intermedia* – yellow fiddleneck
Amsinckia menziesii var. *menziesii* – yellow fiddleneck
Amsinckia tessellata – devil's lettuce
Cryptantha sp. – forget-me-not
Cryptantha decipiens – gravel cryptantha
Cryptantha intermedia – common forget-me-not
Cryptantha micrantha – redroot cryptantha
Cryptantha microstachys – Tejon cryptantha
Cryptantha muricata – prickly cryptantha
Heliotropium curassavicum – wild heliotrope
Pectocarya linearis – slender pectocarya
Pectocarya penicillata – pectocarya
Pectocarya setosa – pectocarya
Plagiobothrys arizonicus – popcorn flower
Plagiobothrys canescens – rusty popcorn flower
Plagiobothrys collinus – California popcorn flower
Plagiobothrys fulvus – common popcorn flower

BRASSICACEAE – MUSTARD FAMILY

Arabis sparsiflora – no common name
Athysanus pusillus – dwarf athysanus
* *Brassica nigra* – black mustard
* *Capsella bursa-pastoris* – shepherd's purse
Caulanthus lasiophyllus – California mustard
Descurainia pinnata ssp. *halictorum* – tansy mustard
Erysimum capitatum – wall flower
* *Hirschfeldia incana* – short-podded mustard
Lepidium lasiocarpum – peppergrass
* *Lepidium latifolium* – peppergrass

Lepidium oblongum – peppergrass
Lepidium virginicum – wild peppergrass
* *Lobularia maritime* – sweet-alyssum
* *Raphanus sativus* – wild radish
* *Rorippa nasturtium-aquaticum* – water cress
* *Sisymbrium altissimum* – tumble mustard
* *Sisymbrium irio* – London rocket
* *Sisymbrium officinale* – hedge mustard
* *Sisymbrium orientale* – oriental mustard
Stanleya pinnata var. *pinnata* – Prince's plume
Thysanocarpus curvipes – fringepod
Thysanocarpus laciniatus – lacepod
Tropidocarpum gracile – slender dobie-pod

CACTACEAE – CACTUS FAMILY
* *Cereus peruvianus* – Peruvian apple cactus
Opuntia basilaris var. *ramosa* – beaver-tail cactus
Opuntia californica var. *parkeri* – cane cholla
Opuntia littoralis – coastal prickly-pear
Opuntia × *vaseyi* – prickly-pear cactus
* *Trichocereus spachianus* – golden torch cactus

CAMPANULACEAE – BELLFLOWER FAMILY
Nemacladus ramosissimus – Nuttall's threadplant

CAPPARACEAE – CAPER FAMILY
Isomeris arborea – bladderpod

CAPRIFOLIACEAE – HONEYSUCKLE FAMILY
Lonicera interrupta – chaparral honeysuckle
Lonicera subspicata – southern honeysuckle
Sambucus mexicana – Mexican elderberry
Symphoricarpos sp. – snowberry
Symphoricarpos c.f. *mollis* – spreading snowberry

CARYOPHYLLACEAE – PINK FAMILY
* *Cerastium glomeratum* – sticky mouse-ear
* *Herniaria hirsuta* ssp. *cinerea* – gray herniaria
Loeflingia squarrosa – no common name
* *Silene gallica* – common catchfly

Spergularia sp. – stickwort, starwort
* *Spergularia rubra* – sand-spurrey
* *Spergularia* c.f. *villosa* – villous sand-spurrey
* *Stellaria media* – common chickweed
Stellaria nitens – shining chickweed

CASUARINACEAE – SHEET OAK FAMILY
* *Casuarina cunninghamiana* – Australian pine

CHENOPODIACEAE – GOOSEFOOT FAMILY
Atriplex canescens – four-winged saltbush
* *Atriplex heterosperma* – weedy orache
Atriplex lentiformis – big saltbush, quail brush
* *Atriplex rosea* – tumbling oracle
* *Atriplex semibaccata* – Australian saltbush
Atriplex serenana var. *serenana* – bractscale
Atriplex suberecta – Australian saltbush
Atriplex triangularis – spearscale
* *Bassia hyssopifolia* – five-hooked bassia
* *Beta vulgaris* – garden beet
* *Chenopodium album* – lamb's-quarters
* *Chenopodium ambrosioides* – Mexican tea
Chenopodium berlandieri – pitseed goosefoot
* *Chenopodium botrys* – goosefoot
Chenopodium californicum – California goosefoot
* *Chenopodium murale* – nettle-leaved goosefoot
Chenopodium rubrum – red goosefoot
* *Salsola tragus* – Russian-thistle
* *Spinacia oleracea* – spinach

CONVOLVULACEAE – MORNING-GLORY FAMILY
Calystegia macrostegia ssp. *cyclostegia* – morning-glory
Calystegia peirsonii – Peirson's morning-glory
* *Convolvulus arvensis* – bindweed

CRASSULACEAE – STONECROP FAMILY
Crassula connata – dwarf stonecrop
Dudleya cymosa – unidentified dudleya
Dudleya lanceolata – lanceleaf dudleya

CUCURBITACEAE – GOURD FAMILY

Cucurbita foetidissima – coyote-melon, calabazilla
Marah fabaceus – California manroot
Marah macrocarpus – wild cucumber

CUSCUTACEAE – DODDER FAMILY

Cuscuta californica – California dodder
Cuscuta pentagona – five-angled dodder
Cuscuta subinclusa – canyon dodder

DATISCACEAE – DATISCA FAMILY

Datisca glomerata – Durango root

ERICACEAE – HEATH FAMILY

Arctostaphylos glandulosa ssp. *mollis* – manzanita
Arctostaphylos glauca – bigberry manzanita

EUPHORBIACEAE – SPURGE FAMILY

Chamaesyce albomarginata – rattlesnake spurge
* *Chamaesyce maculata* – spotted spurge
Chamaesyce polycarpa – small-seed sand mat
Chamaesyce serpyllifolia – thyme-leafed spurge
Croton californicus – California croton
Eremocarpus setigerus – doveweed
Euphorbia spathulata – reticulate-seed spurge
* *Ricinus communis* – castor-bean
Stillingia linearifolia – linear-leaved stillingia

FABACEAE – PEA FAMILY

Amorpha californica var. *californica* – false indigo
* *Acacia baileyana* – golden wattle
Astragalus didymocarpus – white dwarf locoweed
Astragalus gambelianus – Gambel's locoweed
Astragalus trichopodus – Santa Barbara locoweed
Glycyrrhiza lepidota – wild licorice
Lathyrus laetiflorus – wild sweet pea
Lathyrus vestitus – wild pea
Lotus corniculatus – bird's-foot lotus
Lotus hamatus – grab lotus
Lotus humistratus – lotus

Lotus purshianus – Spanish-clover
Lotus salsuginosus – coastal lotus
Lotus scoparius var. *scoparius* – deerweed
Lotus strigosus – strigose deerweed
Lupinus bicolor – Lindley's annual lupine
Lupinus excubitus – Mountain Springs bush lupine
Lupinus excubitus var. *excubitus* – grape soda lupine
Lupinus excubitus var. *hallii* – grape soda lupine
Lupinus hirsutissimus – stinging lupine
Lupinus microcarpus var. *densiflorus* – chick lupine
Lupinus microcarpus var. *microcarpus* – chick lupine
Lupinus sparsiflorus – Coulter's lupine
Lupinus succulentus – arroyo lupine
Lupinus truncatus – collar lupine
* *Medicago polymorpha* – California burclover
* *Medicago polymorpha* var. *brevispina* – short-spined California burclover
* *Medicago sativa* – alfalfa
* *Melilotus alba* – white sweet-clover
* *Melilotus indica* – yellow sweet-clover
* *Robinia pseudoacacia* – black locust
Trifolium sp. – clover
Trifolium albopurpureum – rancheria clover
Trifolium ciliolatum – tree clover
* *Trifolium fragiferum* – strawberry clover
Trifolium fucatum – bull clover
Trifolium gracilentum – pin-point clover
* *Trifolium hirtum* – rose clover
Trifolium microcephalum – maiden clover
* *Trifolium repens* – white clover
Trifolium willdenovii – valley clover
Vicia americana – American vetch
Vicia exigua – slender vetch
Vicia hassei – Hesse's vetch
* *Vicia villosa* ssp. *villosa* – winter vetch

FAGACEAE – BEECH FAMILY

Quercus agrifolia – coast live oak
Quercus berberidifolia – scrub oak
Quercus chrysolepis – canyon live oak

Quercus douglasii × *lobata* – oak
Quercus douglasii – blue oak
Quercus lobata – valley oak

GERANIACEAE – GERANIUM FAMILY

* *Erodium brachycarpum* – shortfruit stork's bill
* *Erodium botrys* – long-beaked filaree
* *Erodium cicutarium* – red-stemmed filaree
* *Erodium moschatum* – white-stemmed filaree

GROSSULARIACEAE – CURRANT FAMILY

Ribes aureum – golden currant
Ribes californicum – California gooseberry
Ribes malvaceum – chaparral currant

HYDROPHYLLACEAE – WATERLEAF FAMILY

Emmenanthe penduliflora – whispering bells
Eriodictyon crassifolium var. *nigrescens* – yerba santa
Eucrypta chrysanthemifolia – common eucrypta
Nemophila menziesii – baby blue-eyes
Nemophila parviflora var. *quercifolia* – oak-leaved nemophila
Nemophila pedunculata – littlefoot nemophila
Phacelia cicutaria – caterpillar phacelia
Phacelia cicutaria var. *hispida* – caterpillar phacelia
Phacelia cicutaria var. *hubbyi* – caterpillar scorpionweed
Phacelia distans – blue fiddleneck
Phacelia imbricata ssp. *imbricata* – imbricate phacelia
Phacelia minor – wild Canterbury-bell
Phacelia ramosissima – shrubby phacelia
Phacelia viscida – sticky phacelia
Pholistoma auritum – fiesta flower

JUGLANDACEAE – WALNUT FAMILY

Juglans californica – Southern California black walnut

LAMIACEAE – MINT FAMILY

* *Lamium amplexicaule* – henbit
* *Marrubium vulgare* – horehound
Mentha citrata – orange mint
Monardella lanceolata – mustang mint

Salvia apiana – white sage
Salvia × *bernardina* – no common name
Salvia columbariae – chia
Salvia leucophylla – purple sage
Salvia mellifera – black sage
Scutellaria tuberosa – Danny's skullcap
Stachys ajugoides – bugle hedge-nettle
Stachys ajugoides var. *rigida* – rigid hedge-nettle
Stachys albens – white hedge-nettle
Trichostema lanatum – woolly bluecurls
Trichostema lanceolatum – vinegar weed

LAURACEAE – LAUREL FAMILY

Umbellularia californica – California laurel

LOASACEAE – STICK-LEAF FAMILY

Mentzelia sp. – blazing star
Mentzelia laevicaulis – blazing star
Mentzelia micrantha – small-flowered stick-leaf

LYTHRACEAE – LOOSESTRIFE FAMILY

Lythrum californicum – California loosestrife

MALVACEAE – MALLOW FAMILY

Malacothamnus fasciculatus ssp. *laxiflorus* – chaparral bush mallow
Malacothamnus fremontii – bush mallow
Malacothamnus marrubioides – bush mallow
* *Malva neglecta* – common mallow
* *Malva parviflora* – cheeseweed

MELIACEAE – MAHOGANY FAMILY

* *Melia azedarach* – Chinaberry

MORACEAE – FIG FAMILY

* *Ficus carica* – edible fig

MYRTACEAE – MYRTLE FAMILY

* *Eucalyptus* sp. – eucalyptus
* *Eucalyptus camaldulensis* – red gum
* *Eucalyptus globulus* – blue gum

* *Eucalyptus leucoxylon* – white ironbark
* *Eucalyptus polyanthemos* – silver dollar gum
* *Eucalyptus sideroxylon* – red ironbark

NYCTAGINACEAE – FOUR O'CLOCK FAMILY

Mirabilis laevis var. *crassifolia* [*M. californica*] – California wishbone-bush

OLEACEAE – OLIVE FAMILY

Fraxinus dipetala – California ash
* *Fraxinus uhdei* – tropical ash
Fraxinus velutina – velvet ash
* *Ligustrum lucidum* – glossy privet
* *Olea europaea* – mission olive

ONAGRACEAE – EVENING-PRIMROSE FAMILY

Camissonia bistorta – southern sun cup
Camissonia bistorta × *hirtella* – sun cup
Camissonia boothii – sun cup
Camissonia boothii ssp. *decorticans* – shredding evening primrose
Camissonia californica – mustard primrose
Camissonia hirtella – sun cup
Camissonia micrantha – miniature sun cup
Camissonia strigulosa – sun cup
Clarkia cylindrical – speckled clarkia
Clarkia purpurea – winecup clarkia
Clarkia speciosa – clarkia
Clarkia unguiculata – elegant clarkia
Epilobium brachycarpum – willow herb
Epilobium canum ssp. *canum* – California fuchsia
Epilobium ciliatum – California cottonweed
Ludwigia peploides – yellow waterweed
Ludwigia repens – water primrose
Oenothera elata – evening primrose
* *Oenothera laciniata* – evening primrose

OROBANCHACEAE – BROOM-RAPE FAMILY

Orobanche fasciculata – clustered broom-rape
Orobanche parishii ssp. *parishii* – broom-rape
Orobanche sp. – broom-rape

PAEONIACEAE – PEONY FAMILY

Paeonia californica – California peony

PAPAVERACEAE – POPPY FAMILY

Argemone corymbosa – prickly poppy
Dendromecon rigida – tree poppy
Dicentra chrysantha – golden ear-drops
Dicentra ochroleuca – yellow bleeding heart
Eschscholzia californica – California poppy
Meconella denticulata – small-flower meconella
Papaver californicum – fire poppy
Platystemon californicus – California creamcups

PLANTAGINACEAE – PLANTAIN FAMILY

Plantago erecta – dot-seed plantain
* *Plantago indica* – plantain
* *Plantago lanceolata* – English plantain
* *Plantago major* – common plantain
Plantago c.f. *ovata* – woolly plantain

PLATANACEAE – SYCAMORE FAMILY

Platanus racemosa – western sycamore

POLEMONIACEAE – PHLOX FAMILY

Allophyllum divaricatum – purple false gillyflower
Allophyllum glutinosum – sticky false gillyflower
Eriastrum densifolium – woollystar
Eriastrum densifolium ssp. *densifolium* – woollystar
Eriastrum densifolium ssp. *elongatum* – elongate eriastrum
Eriastrum densifolium ssp. *mohavense* – Mohave eriastrum
Eriastrum sapphirinum – sapphire eriastrum
Gilia angelensis – angel gilia
Gilia capitata – globe gilia
Gilia splendens – splendid gilia
Leptodactylon californicum – prickly phlox
Linanthus androsaceus – common linanthus
Linanthus pygmaeus – linanthus
Navarretia atractyloides – holly-leaf skunkweed
Phlox gracilis – slender phlox

POLYGONACEAE – BUCKWHEAT FAMILY

Chorizanthe fimbriata – fringed spineflower
Chorizanthe parryi var. *fernandina* – San Fernando Valley spineflower
Chorizanthe staticoides – turkish rugging
Eriogonum angulosum – angle-stem buckwheat
Eriogonum baileyi – Bailey's buckwheat
Eriogonum brachyanthum – short-flowered buckwheat
Eriogonum elongatum – long-stemmed buckwheat
Eriogonum fasciculatum ssp. *foliolosum* – California buckwheat
Eriogonum fasciculatum ssp. *polifolium* – California buckwheat
Eriogonum gracile var. *gracile* – slender woolly buckwheat
Eriogonum gracillimum – rose and white buckwheat
Eriogonum maculatum – spotted buckwheat
Eriogonum nudum – naked buckwheat
Eriogonum c.f. *viridescens* – buckwheat
Lastarriaea coriacea – lastarriaea
* *Polygonum arenastrum* – common knotweed
* *Polygonum argyrocoleon* – smartweed
Polygonum lapathifolium – willow weed
Polygonum punctatum – perennial smartweed
Pterostegia drymarioides – granny's hairnet
* *Rumex conglomeratus* – whorled dock
* *Rumex crispus* – curly dock
Rumex hymenosepalus – wild rhubarb
Rumex maritimus – golden dock
Rumex obtusifolius – dock
Rumex salicifolius – willow dock

PORTULACACEAE – PURSLANE FAMILY

Calandrinia ciliata – redmaids
Calyptridium sp. – pussypaws
Claytonia parviflora – small-leaved montia
Claytonia perfoliata – miner's lettuce
* *Portulaca oleracea* – common purslane

PRIMULACEAE – PRIMROSE FAMILY

* *Anagallis arvensis* – scarlet pimpernel

RANUNCULACEAE – BUTTERCUP FAMILY

Clematis ligusticifolia – yerba de chiva
Clematis pauciflora – ropevine
Delphinium cardinale – scarlet larkspur
Delphinium parryi ssp. *parryi* – Parry's larkspur

RHAMNACEAE – BUCKTHORN FAMILY

Ceanothus crassifolius – hoary-leaved ceanothus
Ceanothus foliosus – southern blue lilac
Ceanothus leucodermis – white-bark ceanothus
Ceanothus tomentosus – woolyleaf ceanothus
Rhamnus crocea – redberry
Rhamnus ilicifolia – holly-leaf redberry

ROSACEAE – ROSE FAMILY

Adenostoma fasciculatum – chamise
Cercocarpus betuloides – mountain-mahogany
Cercocarpus betuloides var. *betuloides* – birch-leaf mountain-mahogany
Cercocarpus betuloides var. *blancheae* – island mountain-mahogany
Heteromeles arbutifolia – toyon
Prunus ilicifolia – holly-leaf cherry
Prunus virginiana var. *demissa* – western choke-cherry
Rosa californica – California rose
Rubus ursinus – California blackberry
* *Sanguisorba minor* – garden burnet

RUBIACEAE – MADDER FAMILY

Galium angustifolium – narrow-leaved bedstraw
* *Galium aparine* – goose grass
Galium nuttallii ssp. *nuttallii* – San Diego bedstraw
Galium porrigens – climbing bedstraw

SALICACEAE – WILLOW FAMILY

Populus fremontii – Fremont cottonwood
Populus tremuloides – quaking aspen
Salix exigua – narrow-leaved willow
Salix gooddingii – black willow
Salix laevigata – red willow
Salix lasiolepis – arroyo willow
Salix lucida ssp. *lasiandra* – golden willow

SAURURACEAE – LIZARD'S-TAIL FAMILY

Anemopsis californica – yerba mansa

SAXIFRAGACEAE – SAXIFRAGE FAMILY

Lithophragma bolanderi – Bolander's woodland star
Saxifraga californica – California saxifrage

SCROPHULARIACEAE – FIGWORT FAMILY

Antirrhinum coulterianum – white snapdragon
Antirrhinum multiflorum – withered snapdragon
Castilleja affinis – coast paintbrush
Castilleja densiflora – dense-flowered owl's-clover
Castilleja exserta – common owl's-clover
Castilleja foliolosa – woolly Indian paintbrush
Collinsia heterophylla – purple Chinese houses
Collinsia parviflora – maiden blue eyed Mary
Cordylanthus rigidus – bird's beak
Keckiella cordifolia – heart-leaf penstemon
Linaria canadensis – toadflax
Mimulus aurantiacus – bush monkeyflower
Mimulus aurantiacus var. *pubescens* – bush monkeyflower
Mimulus brevipes – yellow monkeyflower
Mimulus guttatus – seep monkeyflower
Mimulus pilosus – downy monkeyflower
Penstemon centranthifolius – scarlet bugler
Scrophularia californica – California figwort
* *Verbascum thapsus* – woolly mullein
* *Verbascum virgatum* – wand mullein
* *Veronica anagallis-aquatica* – water speedwell
* *Veronica persica* – Persian speedwell

SIMAROUBACEAE – QUASSIA FAMILY

* *Ailanthus altissima* – tree of heaven

SOLANACEAE – NIGHTSHADE FAMILY

Datura wrightii – western jimsonweed
* *Nicotiana glauca* – tree tobacco
Nicotiana quadrivalvis – Indian tobacco
* *Solanum americanum* – small-flowered nightshade
Solanum douglasii – white nightshade

* *Solanum elaeagnifolium* – silver leaf horse-nettle
* *Solanum sarrachoides* – hairy nightshade
Solanum xanti – chaparral nightshade

TAMARICACEAE – TAMARISK FAMILY
* *Tamarix* sp. – tamarisk
* *Tamarix ramosissima* – tamarisk

ULMACEAE – ELM FAMILY
* *Ulmus pumila* – Siberian elm

URTICACEAE – NETTLE FAMILY
Hesperocnide tenella – western nettle
Parietaria hespera – western pellitory
Urtica dioica – giant creek nettle
* *Urtica urens* – dwarf nettle

VERBENACEAE – VERVAIN FAMILY
Verbena lasiostachys – western verbena

VIOLACEAE – VIOLET FAMILY
Viola pedunculata – Johnny jump-ups

VISCACEAE – MISTLETOE FAMILY
Phoradendron macrophyllum – big leaf mistletoe
Phoradendron villosum – oak mistletoe

VITACEAE – GRAPE FAMILY
Parthenocissus vitacea – woodbine, Virginia creeper
Vitis girdiana – desert wild grape

ZYGOPHYLLACEAE – CALTROP FAMILY
* *Tribulus terrestris* – puncture vine

ANGIOSPERMAE (MONOCOTYLEDONES)

ARECACEAE – PALM FAMILY
* *Washingtonia robusta* – Mexican fan palm

CYPERACEAE – SEDGE FAMILY

Carex alma – sturdy sedge
Carex praegracilis – clustered field sedge
Carex sp. – sedge
Cyperus eragrostis – tall cyperus
Cyperus esculentus – yellow nut-grass
* *Cyperus involucratus* – nutsedge
Cyperus odoratus – coarse cyperus
Eleocharis montevidensis – slender creeping spike-rush
Eleocharis parishii – Parish's spikerush
Eleocharis rostellata – beaked spikerush
Scirpus acutus – hard-stemmed bulrush
Scirpus americanus – winged three-square
Scirpus maritimus – alkali bulrush
Scirpus microcarpus – bulrush
Scirpus robustus – Pacific coast bulrush

IRIDACEAE – IRIS FAMILY

Sisyrinchium bellum – blue-eyed grass

JUNCACEAE – RUSH FAMILY

Juncus sp. – rush
Juncus acutus ssp. *leopoldii* – southwestern spiny rush
Juncus balticus – wire rush
Juncus bufonius – toad rush
Juncus longistylis – rush
Juncus mexicanus – Mexican rush
Juncus rugulosus – wrinkled rush
Juncus textilis – Indian rush
Juncus torreyi – rush
Juncus triformis – Yosemite dwarf rush
Juncus xiphioides – iris-leaved rush

LEMNACEAE – DUCKWEED FAMILY

Lemna minuscula – duckweed
Lemna valdiviana – duckweed

LILIACEAE – LILY FAMILY

* *Allium cepa* – onion
Allium porrum – leek

* *Amaryllis belladonna* – naked lady
* *Asparagus officinalis* – asparagus
Bloomeria crocea – common goldenstar
Brodiaea terrestris ssp. *kernensis* – dwarf brodiaea
Calochortus clavatus var. *gracilis* – slender mariposa lily
Calochortus venustus – mariposa lily
Calochortus weedii var. *vestus* – late-flowered mariposa lily
Chlorogalum pomeridianum – soap plant
Dichelostemma capitatum – blue dicks
Muilla maritima – common muilla
Yucca whipplei – Our Lord's candle
Yucca schidigera – Mojave yucca

POACEAE – GRASS FAMILY

Achnatherum coronatum – giant needlegrass
* *Agrostis* sp. – bentgrass
* *Agrostis viridis* – water bent
Aristida adscensionis – six-weeks three-awn
* *Arundo donax* – giant reed
* *Avena barbata* – slender oat
* *Avena fatua* – wild oat
Avena sativa – cultivated oat
* *Bromus arenarius* – Australian brome
Bromus carinatus – California brome
Bromus catharticus – California brome
Bromus catharticus var. *catharticus* – California brome
* *Bromus diandrus* – ripgut grass
Bromus grandis – tall brome
* *Bromus hordeaceus* – soft chess
* *Bromus madritensis* ssp. *rubens* – foxtail chess
* *Bromus sterilis* – sterile brome
* *Bromus tectorum* – cheat grass
* *Cortaderia jubata* – pampas grass
* *Crypsis schoenoides* – prickle grass
* *Cynodon dactylon* – Bermuda grass
* *Digitaria sanguinalis* – hairy crabgrass
Distichlis spicata – salt grass
* *Echinochloa colonum* – jungle-rice
Echinochloa crus-galli – barnyard grass

* *Eleusine indica* – goose grass
Elymus elymoides – bottlebrush squirreltail
Elymus glaucus – western wild-rye
Elymus multisetus – big squirreltail
Eragrostis mexicana – lovegrass
* *Festuca arundinacea* – tall fescue
* *Hordeum marinum* – Mediterranean barley
* *Hordeum murinum* – glaucous foxtail barley
Koeleria macrantha – Junegrass
* *Lamarckia aurea* – goldentop
* *Leptochloa uninervia* – Mexican sprangletop
Leymus condensatus – giant ryegrass
Leymus triticoides – beardless wild rye
* *Lolium multiflorum* – Italian ryegrass
* *Lolium perenne* – perennial ryegrass
* *Lolium temulentum* – darnel
Melica imperfecta – California melic
Muhlenbergia asperifolia – scratch-grass
Muhlenbergia microsperma – littleseed muhly
Nassella cernua – nodding needlegrass
Nassella lepida – foothill needlegrass
Nassella pulchra – purple needlegrass
Panicum capillare – western witchgrass
* *Panicum miliaceum* – broom corn millet
* *Parapholis incurva* – sickle grass
Paspalum distichum – knotgrass
* *Phalaris aquatica* – Harding grass
* *Phalaris minor* – Mediterranean canary grass
* *Piptatherum miliaceum* – smilo grass
* *Poa annua* – annual bluegrass
Poa secunda – Malpais bluegrass
* *Polypogon interruptus* – ditch beard grass
* *Polypogon monspeliensis* – rabbit's-foot grass
Schismus barbatus – abumashi
Sorghum bicolor – sorghum
Sorghum halepense – Johnsongrass
Sporobolus airoides – alkali scation
* *Triticum aestivum* – cultivated wheat
Vulpia microstachys – fescue

* *Vulpia myuros* – rattail fescue
Vulpia octoflora – six-weeks fescue

POTAMOGETONACEAE – PONDWEED FAMILY
Potamogeton foliosus – leafy pondweed

TYPHACEAE – CATTAIL FAMILY
Typha angustifolia – narrow leaved cattail
Typha domingensis – slender cattail
Typha latifolia – broad-leaved cattail

* signifies introduced (non-native) species

DRAFT

Newhall Ranch Mitigation Feasibility Study

JANUARY 2007

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SUMMARY OF FINDINGS

Dudek conducted general biological surveys, including vegetation mapping and sensitive species surveys/habitat assessments within the proposed open space and preserve areas of the 12,000-acre Newhall Ranch Specific Plan Area (NRSP), including the 4,205-acre Newhall Ranch High Country Specific Management Area (NRHC SMA), and the 1,518-acre Salt Creek area. This study excludes the open space areas within the canyon tributaries to the Santa Clara River (with the exception of Salt Creek) because mitigation within each of these canyons will be designed according to the proposed impacts for each individual canyon. Collectively, the proposed open space and preserve areas evaluated in this feasibility study are referred to as the Study Area in this report. The surveys were conducted in order to determine mitigation opportunities for slender mariposa lily (*Calochortus clavatus* ssp. *gracilis*), California sagebrush scrub, oak trees and oak tree vegetation communities and wetlands creation/restoration and enhancement.

For slender mariposa lily mitigation, Dudek estimated that there are approximately 559 acres of land suitable for slender mariposa lily transplantation. Potential transplantation areas were prioritized from 1 to 3 (with 1 being the highest priority sites and most suitable for transplantation) based on factors important to successful transplantation of this species. Based on this prioritization scheme, there are 280 acres of priority 1 suitable areas, 193 acres of priority 2 suitable areas and 86 acres of priority 3 suitable areas for slender mariposa lily mitigation.

For purposes of addressing California sagebrush scrub mitigation, suitable restoration areas identified within the Study Area have been subdivided into Areas A through G and total approximately 780 acres. The potential California sagebrush scrub mitigation areas were prioritized according to their perceived suitability similar to the potential slender mariposa lily mitigation areas described above. Areas identified as A, B and C are considered to be the most suitable (or priority 1 areas) for California sagebrush scrub restoration totaling approximately 354 acres. Priority 2 California sagebrush scrub restoration areas (Areas F and G) total 181 acres and Priority 3 California sagebrush scrub restoration areas (Areas D and E) total 246 acres.

Dudek evaluated potential areas for oak mitigation at the vegetation community level and oak mitigation on an individual oak tree basis. Approximately 205 acres were identified as having potential for incorporation of additional individual oak trees as mitigation. In addition to incorporating additional oaks within existing oak communities, there are approximately 111 acres considered suitable for creating specific oak vegetation communities, including 86 acres of valley oak savannah, 24 acres coast live oak woodland and 1 acre valley oak woodland.

Wetlands mitigation opportunities were evaluated in the context of the Hybrid Functional Assessment of Wetland and Riparian Habitats for the Newhall Ranch Habitat Management Plan

(HFA; URS 2004). There are 17 stream reaches within the open space and preserve areas within the Study Area that were examined for potential wetlands mitigation in this study. Based on the conceptual layout of wetlands creation/restoration and enhancement described in this report, it is estimated that a combined total of approximately 64.6 acres of wetlands vegetation communities could be created and that approximately 52.1 acres of wetlands enhancement credit is available within the Study Area.

After evaluating mitigation potential for each mitigation type individually, all mitigation types were evaluated collectively based on specific mitigation needs for the project in relation to mitigation availability. Based on this comprehensive evaluation, there are a total of 1,378 acres of area available for upland mitigation, including 417 acres available for slender mariposa lily mitigation, 470 acres available for California sagebrush scrub mitigation, 87 acres available for a combination of California sagebrush scrub and slender mariposa lily mitigation, 189 acres available for individual oak tree planting, 87 acres available for valley oak savannah mitigation, 11 acres available for live oak woodland mitigation and 0.4 acre available for valley oak woodland mitigation. In addition to the acreage for upland mitigation, there are 64.6 acres available for wetlands creation/restoration and 52.1 acres available for wetlands enhancement.

1.0 INTRODUCTION

This report discusses potential mitigation opportunities for slender mariposa lily (*Calochortus clavatus* ssp. *gracilis*), California sagebrush scrub, oak trees and wetlands creation/restoration and enhancement in proposed open space and preserve areas within the 12,000-acre Newhall Ranch Specific Plan Area (NRSP), including the 4,205-acre Newhall Ranch High Country Specific Management Area (NRHC SMA), and the 1,518-acre Salt Creek area. This study excludes the open space areas within the canyon tributaries to the Santa Clara River (with the exception of Salt Creek) because mitigation within each of these canyons will be designed according to the proposed impacts for each individual canyon. Collectively, the proposed open space and preserve areas evaluated in this feasibility study are referred to as the Study Area in this report. Mitigation for the state-listed endangered San Fernando Valley spineflower (*Chorizanthe parryi* var. *Fernandina*; SFVS) is not included in this plan and can be found in the *Draft Spineflower Conservation Plan* (Dudek 2007). This report is a companion document for the *Biological Resources Technical Report for Newhall Ranch Specific Plan Area, Los Angeles County, California* (Dudek 2006a), and the *Biological Resources Technical Report for the Newhall Ranch High Country Specific Management Area, Los Angeles County, California* (Dudek, 2006b) and detailed discussions of biological resources within the Study Area can be found in those documents.

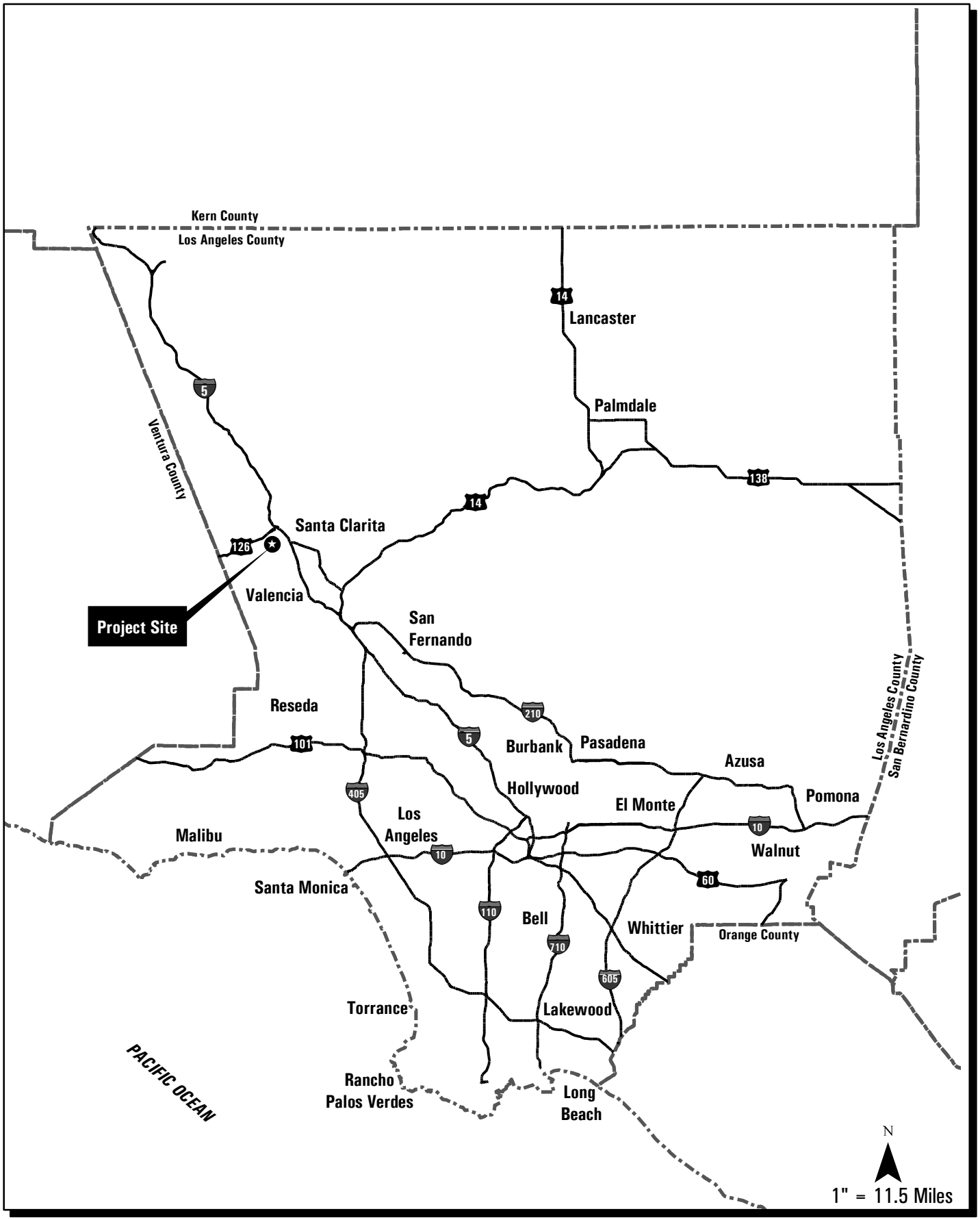
2.0 SITE DESCRIPTION

The Study Area is located in an unincorporated portion of the Santa Clara River Valley and straddles the Los Angeles/Ventura County Line (*Figures 1* and *2*). It lies roughly six miles west of Interstate 5 and west-southwest of the junction of I-5 and State Route 126 (SR-126). The City of Santa Clarita is located to the east of the Study Area.

Newhall Land (Newhall) leases out portions of the Study Area for oil and natural gas production, cattle grazing and agricultural operations (e.g., food crop production, dryland farming, honey farming). All such operations are currently ongoing. Southern California Edison and Southern California Gas Company have distribution lines within easements onsite and these easements/transmission lines are actively maintained.

2.1 Plant Communities and Land Covers

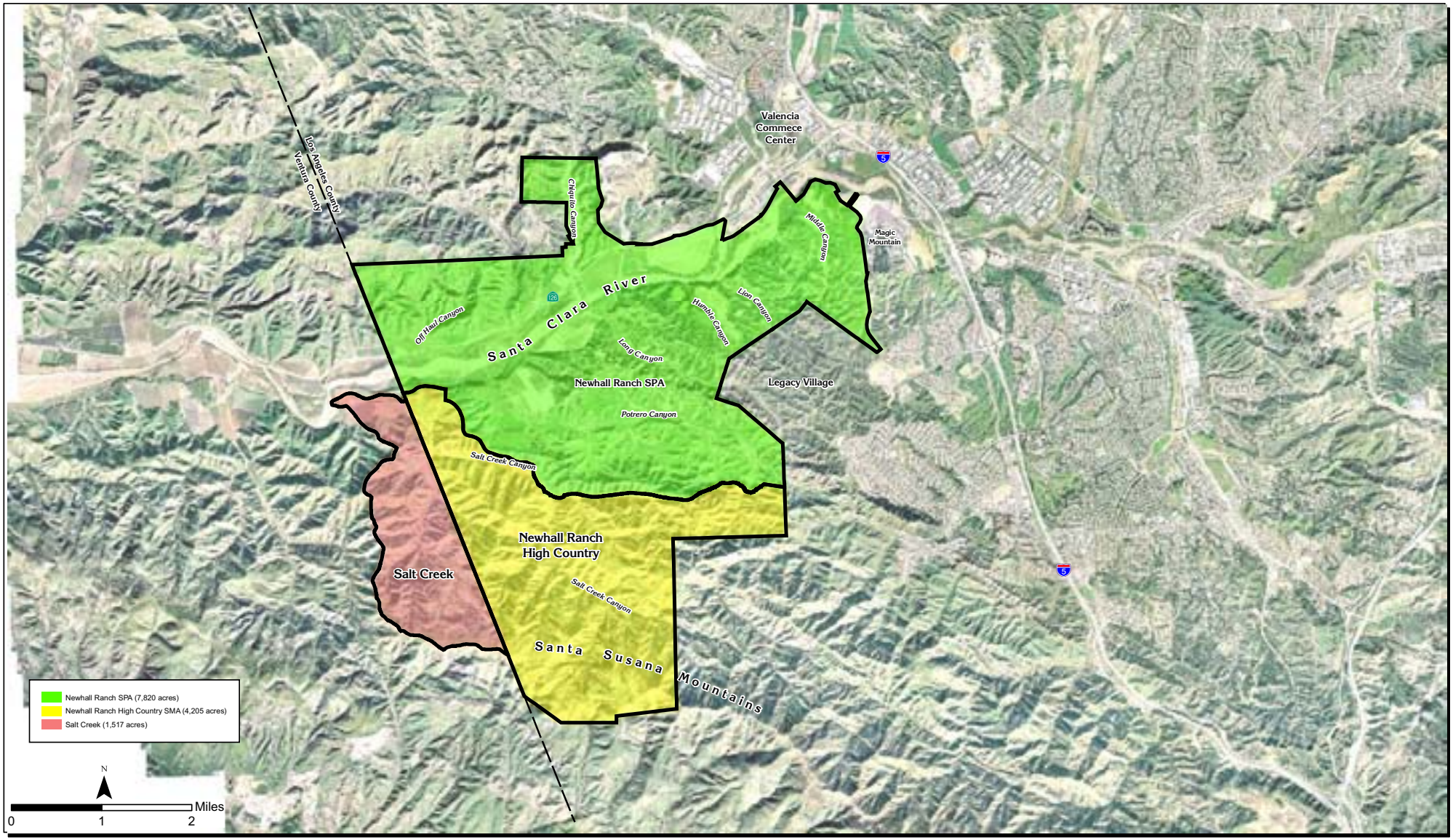
Native and naturalized vegetation communities within the Study Area are representative of those found in this region and provide examples of those plant communities found in the Santa Susana Mountains and the Santa Clara River ecosystems. (See *Figure 3* in map pocket).



Newhall Ranch Feasibility Mitigation Study

Regional Map

FIGURE 1



Newhall Ranch Feasibility Mitigation Study

Vicinity Map

FIGURE 2

Upland vegetation communities dominate the landscape within the Study Area north and south of the Santa Clara River. The majority of the site consists of the following upland plant communities:

California sagebrush scrub and sub-associations, chaparral and sub-associations, coast live oak woodland, valley oak woodland and savannah, California walnut woodland and California annual grasslands. The Santa Clara River and its tributaries support a variety of riparian vegetation communities. These include cottonwood willow riparian forest, southern willow scrub, mulefat scrub, arrowweed scrub, big sagebrush scrub, alluvial scrub, herbaceous wetland, coastal and valley freshwater marsh, bulrush-cattail wetland, elderberry scrub, river wash, oak riparian forest, cismontane alkali wetland, tamarisk scrub and giant reed.

2.2 Topography Geology and Soils

The Study Area is dominated by rugged terrain with east-, west-, and northwest- trending primary ridges, and north- and south-trending secondary ridges. Slope gradients range from moderate to very steep in most of the site to gentle within the Santa Clara River floodplain, tributary canyons and associated mesas. The major tributaries include south-to-north Tapo and Salt Canyon drainage areas, the west-to-east Potrero and Long Canyon drainages, north to south San Martinez Grande and Chiquito Canyon drainages, Castaic Creek, as well as numerous other smaller drainages. Site elevations range from approximately 800 feet above mean sea level (AMSL) in the Santa Clara River bottom in Ventura County to approximately 3,200 feet AMSL on the ridgeline of the Santa Susana Mountains along the southeastern boundary. Distinctive geographic features include Sawtooth Ridge; Razorback Ridge; Windy Gap; Ayers Rock; and Potrero, Grapevine, and Airport Mesas.

Geologically, the Study Area is located within the Transverse Ranges geomorphic province of southern California in the eastern portion of the Ventura depositional basin. This basin was produced by tectonic downwarping in the geologic past to produce a large-scale synclinal structure in which a thick sequence of Cenozoic sediments has accumulated. These sediments have been lithified into a sequence of sedimentary rock that has subsequently been uplifted, tilted, and tectonically deformed. The geologic strata are displaced by segments of the Del Valle and Salt Creek faults (Allan E. Seward 2002).

Soils in the Study Area are mapped as Balcom-Castaic-Saugus association, 30 to 50 percent slopes, eroded (NRCS 1969). Specifically, soils onsite include: Castaic and Saugus soils (30 to 65 percent slopes, severely eroded), Castaic-Balcom silty clay loams (9 to 15 percent slopes), Castaic-Balcom silty clay loams (15 to 30 percent slopes), Castaic-Balcom silty clay loams (30 to 50 percent slopes), Castaic-Balcom silty clay loams (30 to 50 percent slopes, eroded), Castaic-

Balcom silty clay loams (50 to 65 percent slopes, eroded), Chino loam, Cortina sandy loam (0 to 2 percent slopes), Gaviota rocky sandy loam (15 to 30 percent slopes, eroded), Gaviota rocky sandy loam (30 to 50 percent slopes, eroded), Gazos clay loam (30 to 50 percent slopes), Hanford sandy loam (0 to 2 percent slopes), Hanford sandy loam (2 to 9 percent slopes), Metz loamy sand (0 to 2 percent slopes), Metz loamy sand (2 to 9 percent slopes), Mocho loam (0 to 2 percent slopes), river wash, sandy alluvial land, Saugus loam (30 to 50 percent slopes), Saugus loam (30 to 50 percent slopes, eroded), Sorrento loam (0 to 2 percent slopes), Sorrento loam (2 to 5 percent slopes), terrace escarpments, Yolo loam (0 to 2 percent slopes), Yolo loam (2 to 9 percent slopes), Zamora loam (2 to 9 percent slopes), and Zamora loam (9 to 15 percent slopes) (USDA 1969).

Soils found onsite are characterized generally by steep to very steep, often eroded slopes. The soils are well drained, with moderate to moderately slow subsoil permeability, and medium to very rapid runoff. The erosion hazard is moderate to very high, largely dependent on slope steepness.

3.0 METHODS FOR EVALUATING MITIGATION POTENTIAL

Vegetation maps of the Study Area were used in the field to identify potential mitigation areas, opportunities, and constraints. Only areas within the proposed open space/preserve boundaries were evaluated. In general, areas supporting sensitive plant species were not considered suitable for mitigation in order to avoid impacts to sensitive plants. *Figure 3* includes the vegetation map of the Study Area with known locations of sensitive plants.

Dudek habitat restoration specialists Doug Gettinger, Marc Doalson, Scott Boczkiewicz, and Andy Thomson conducted the mitigation potential surveys in the NRHC SMA and the Salt Creek area on November 7-10, November 14-18 and December 19-21, 2005. In the remaining areas of the NRSP, Dudek habitat restoration specialists Doug Gettinger, Jeremy Sison, Mike Sweesy, and Andy Thomson conducted the mitigation potential surveys on August 15-16, 2006.

3.1 Slender Mariposa Lily Mitigation

A brief description of the species and general guidelines for salvaging and transplanting slender mariposa lilies is included in this section to provide some background and context for the process of evaluating potential slender mariposa lily receptor sites within the Study Area.

Slender mariposa lily is a perennial bulbiferous herb that is adapted to a mild, dry climate. It occurs in many natural habitat areas within the Study Area. It tends to grow in well-drained soils

on ridgelines and steep to moderately steep slopes, often on west-, north and east-facing slopes; however it has also been observed on gentle slopes as well as on south-facing slopes. It generally occurs in California sagebrush scrub and grasslands habitats, but has been observed in other habitats, including chaparral and oak savannah habitats, among others. It tends to occur in large patches at low density. The corms are generally located 2-4 inches below ground surface. Whether or not this species blooms in a given year depends largely on weather conditions, primarily determined by rainfall.

The species can be transplanted by removing the underground storage structure, technically termed a corm (underground stem with thin papery leaves), and re-planting in an area with appropriate environmental conditions. The seed can also be salvaged and planted.

Salvaging the corms is probably best accomplished by digging up individual corms by hand with a shovel or digging spade. Ideally, the corms should be salvaged with their surrounding soil and associated biomass intact. However, due to the soil types that support this species, the soil mass surrounding individual corms may not stay consolidated as a solid mass when the corms are collected. Additionally, the species often occurs in steep, rugged terrain. Therefore, scooping out large sections of soil containing multiple corms with a backhoe, or similar construction equipment may not be practical. Nevertheless, if feasible, salvaging the associated soil along with the corms is preferable to ensure that the appropriate soil type, and associated biomass are present at the receptor site.

If soil is salvaged, the receptor site will need to be prepared in advance by excavating existing soils down approximately 8 inches. Then salvaged soil can be spread out in an approximately 4- to 8-inch deep layer at the receptor site. Salvaged corms can then be planted at an appropriate depth (approximately 2 to 4 inches) within the salvaged soil.

Because the species is adapted to a mild, dry climate, it is anticipated that the slender mariposa lily corms will be able to survive and become established without the installation of a temporary irrigation system. However, supplemental water may be required during the first and second years to mimic average rainfall conditions in the event of below-average rainfall.

If seed collection is included as part of a mitigation program, it should be collected from the plants when the seed is mature, but before the seed capsules open to disperse the seed. Collected seed should be temporarily stored in paper bags until it can be either transported to a nursery or dispersed at the receptor site.

From seed, mariposa lilies should be planted one-quarter to one-half inch deep (McDonald 1997). The success of seed planted directly in the field will depend on whether rainfall

conditions are adequate for successful germination and establishment. Seed grown under nursery conditions typically results in approximately 70 percent germination, but field conditions could be much less. Mariposa lilies grown from seed typically take three years to produce flowers (Schmidt 1975). Mariposa lilies can be grown from seed in a nursery, and then transplanted to a receptor site after they are mature. The planting areas should be marked for future monitoring, which is typically required to evaluate the success of a particular slender mariposa lily mitigation program.

Slender mariposa lily can be subject to herbivory from rodents, ground squirrels, rabbits, deer, and snails. Additionally, cattle and other grazing animals are detrimental to slender mariposa lily populations. Therefore, protective structures (i.e., exclusionary fencing and/or plant cages) are crucial to the success of a transplantation program.

In general, most annual weeds do not appear to be a competitive threat to the survival of this species. However, some invasive exotic weeds can become a problem. Weeds should be monitored and controlled so they don't inhibit establishment.

A flexible management approach that is responsive to the future needs of the site should be used when maintaining translocated plants and seeded areas at receptor sites. Slender mariposa lily will likely require minimal maintenance; however, unforeseen maintenance issues can arise, which may require intervention to ensure project success. Regular monitoring of the transplanted population during an establishment period (establishment may take several years) is an important measure to determine the success of a program, and if/when maintenance measures should be implemented.

Dudek evaluated the suitability of potential receptor sites for slender mariposa lily throughout the Study Area. (See *Figure 4* in map pocket). In general, areas that appeared to have appropriate conditions for supporting this species were mapped and prioritized. Potential transplantation areas were prioritized from 1 to 3 (with 1 being the highest priority sites and most suitable for transplantation) based on factors important to successful transplantation of this species. Potential receptor sites were chosen based on similar environmental conditions to the areas where plants are present, including soils, slope aspect and gradient, and associated vegetation communities. Specifically, sites considered suitable generally have well-drained soils (e.g., gravelly loam, sandy loam or rocky clay soils), were on ridgelines or slopes, were in California sagebrush scrub or grasslands habitats, and had western, northern or eastern aspects. Additional sites with some minor variations from these conditions were also considered suitable. Sites were qualitatively ranked from 1 to 3 based on the perceived biological suitability of each individual site, in combination with non-biological considerations such as vehicular access, ruggedness of terrain and access to an irrigation water source. Sites were usually ranked 2 or 3

due to access constraints and/or ruggedness of terrain, not because they were less favorable for the species from an environmental standpoint.

An additional consideration for selecting suitable sites was the presence of previously mapped slender mariposa lily. While the presence of slender mariposa lily signifies that suitable conditions are present for this species, transplantation to a site already supporting this species might result in impacts to the species. This is particularly true for large-scale transplanting projects and projects involving soil translocation.

For small-scale projects, individuals could be planted in gaps between the locations of known individuals without impacting the existing plants. Thus, some areas that support slender mariposa lily were still included as potential transplantation sites, and could be utilized for small-scale transplantation projects, if needed. It is critical that if an area already supporting this species is utilized for a receptor site, that previous detailed mapping of existing individuals with a global positioning system (GPS), or flagging individual locations in the field, is performed prior to implementing a transplantation program.

3.2 California Sagebrush Scrub Mitigation

California sagebrush scrub typically occurs on dry sites, often steep, rocky slopes, with low moisture availability or soils containing heavy clays that do not readily release stored water (Holland 1986). These types of soils are common in the Study Area. Slopes with northern exposures could also be established with California sagebrush scrub, but could be expected to convert to chaparral or oak woodland over time, limiting their suitability for California sagebrush scrub mitigation. (See *Figure 5* in map pocket).

To provide for greater habitat value, California sagebrush scrub mitigation areas should be adjacent to existing California sagebrush scrub, chaparral, oak woodlands, and/or wetlands to the greatest extent possible. California sagebrush scrub mitigation areas could be planted with scattered oaks adjacent to stream courses or at higher elevations where deeper soils with greater moisture availability could support oaks. Mariposa lilies could also be planted within the California sagebrush scrub mitigation areas, where appropriate, as this species often grows within or adjacent to California sagebrush scrub plants and is a minor constituent of this habitat type.

California sagebrush scrub mitigation will be easier to plant, maintain, and monitor on more gentle slopes that are relatively close to access roads, but may be accomplished in a more passive manner on steeper slopes further away from access roads. On the steeper slopes, California sagebrush scrub mitigation would be expected to take longer to become established due to

harsher environmental conditions. The steeper slopes would also be more difficult to plant, maintain, and monitor. The steepest slopes in the Study Area would not be suitable for anything other than preservation, as they are often cliffs or rock outcrops.

Competition from non-native annual grasses and broadleaf weeds such as black mustard (*Brassica nigra*), milk thistle (*Silybum marianum*) and tocalote (*Centaurea melitensis*), would likely pose the greatest challenge to establishing California sagebrush scrub in most areas. These quick to germinate, fast growing weeds are dominant in the potential mitigation areas and will compete with the California sagebrush scrub seedlings for water, nutrients, and sunlight. Weed control would be all but impossible on the steeper slopes, but could be successfully conducted in other areas.

California sagebrush scrub mitigation on the steeper slopes would be more at risk of being lost due to erosion, as occurred in numerous locations within the Study Area during heavy rains in the 2004-2005 rainy season. Entire sections of hillside slid down the slope, stripping all or most of the vegetation in the process. These inherently unstable slopes are one of the characteristics of the Balcom-Castaic-Saugus association, 30 to 50 percent slopes, eroded soils mapped within the Study Area.

Soils in the potential California sagebrush scrub mitigation areas include Castaic-Balcom silty clay loams, 15-30 percent slopes; Castaic-Balcom silty clay loams, 30-50 percent slopes; Castaic-Balcom silty clay loams, 30-50 percent slopes; Castaic-Balcom silty clay loams, 30-50 percent slopes, eroded; Castaic-Balcom silty clay loams, 50-65 percent slopes, eroded; Castaic and Saugus soils, 30-65 percent slopes, severely eroded; Gaviota rocky sandy loam, 15-30 percent slopes, eroded; Metz loamy sand, 2-9 percent slopes; Saugus loam, 30-50 percent slopes; Sorrento loam, 2-5 percent slopes; Terrace escarpments; Yolo loam, 0-2 percent slopes; Yolo loam, 2-9 percent slopes; Zamora loam, 2-9 percent slopes, and Zamora loam, 9-15 percent slopes.

Soils types onsite can greatly affect the success of California sagebrush scrub restoration. In general, the soils appear to be suitable throughout. For the Balcom-Castaic-Saugus association soils and the San Andreas and San Benito soils found onsite, soil depth ranges between 20 and 56 inches, but would likely be deeper along drainages and shallower near rock outcrops. The available water holding capacity ranges from 2.5 to 8.5 inches, depending on soil type and depth. Most soils onsite should hold from 3.75 to 5.5 inches of water at saturation. Inherent soil fertility ranges from low for the Saugus soils to moderate for the Balcom, Castaic, and San Andreas soils, to high for the San Benito soils. Soil reaction in the soil profile ranges from medium acid to moderately alkaline.

3.3 Oak Mitigation

Dudek evaluated the potential for oak mitigation within the Study Area. (See *Figure 6* in map pocket). In general, potential oak mitigation sites considered in this analysis were sites mapped as oak vegetation communities (e.g., coast live oak woodland, valley oak woodland, mixed oak woodland or valley oak savannah) that were sparse and could support additional oaks or sites that are disturbed (agricultural land, California annual grassland, or disturbed land) that could potentially support oak vegetation communities or individual oak trees. Only areas that are mapped as non-native habitats should be considered for oak mitigation at the vegetation community level. Most oak habitat that burned in the 2003 wildfire is slowly recovering with stump-sprouting trees and is not proposed for mitigation. As a component of the evaluation for oak mitigation, the potential to mitigate for impacts to California black walnut (*Juglans californica*) by incorporating this species into oak mitigation were also analyzed.

Soil types most appropriate for planting oaks tend to be deeper and have a greater water holding capacity for the trees to make use of during the dry season. Alternatively, oaks may be planted in many other soil types if there is a water source nearby for the trees to exploit, such as a perched water table or stream. The soil types with a greater water storage capacity that would be suitable for oaks include Metz loamy sand, Mocho loam, Yolo loam, and Zamora loam. These soils can store between four and 11 inches of water that can be available for the trees to draw on. Gazos clay loam is also suitable for oaks, but it tends to be shallower and only holds between 3 and 6 inches of water that would be available for the oaks to exploit. Areas with shallower soils and less water holding capacity would tend to support oaks at a lower density than deeper soils with greater water storage capacity.

Oak-dominated vegetation communities tend to occur in canyons and on north-facing slopes within the Study Area. Canyons and north-facing slopes tend to be more mesic than other areas due to decreased direct solar radiation.

In determining suitable oak tree mitigation sites, Dudek evaluated existing and adjacent vegetation, soils, slope, aspect, vehicular access (for installation and maintenance) and water availability (for irrigation). Potential oak mitigation sites included areas with appropriate soils, moderate slopes, northern aspect, vehicular access, water availability for irrigation, and adjacent native vegetation communities.

3.4 Wetlands Mitigation

Dudek examined the proposed open space and preserve areas within the Study Area for potential wetlands habitat creation/restoration and enhancement opportunities. The Salt Creek portion of

the Study Area was evaluated by Dudek Biologists/Habitat Restoration Specialists Andy Thomson and Scott Boczkiewicz in November and December 2005. The remaining portions of the Study Area were evaluated by Dudek Biologists/Habitat Restoration Specialists Doug Gettinger and Andy Thomson on August 15-16, 2006.

Dudek referenced the *Hybrid Functional Assessment of Wetland and Riparian Habitats for the Newhall Ranch Habitat Management Plan* (HFA; URS 2004), which included the NRSP and portions of the Salt Creek watershed area in the assessment. To maintain consistency with this document, Dudek divided the stream channels within the Study Area into reaches as in the HFA for discussing wetlands creation/restoration and enhancement potential. There are a total of 57 reaches that were evaluated within the HFA, with 46 of these occurring within proposed open space and preserve areas. Stream reaches within the tributary canyons (with the exception of Salt Creek) were evaluated separately from this study and will be used for onsite mitigation. Therefore, 15 stream reaches were evaluated for wetlands mitigation potential in this study, including seven Santa Clara River Reaches (SCR-SA, SCR-PO, SCR-LO-DNST, SCR-LO-MID, SCR-LO-UPST, SCR-HU and SCR-MI), one Castaic Reach (CA) and seven Salt Creek Reaches (SA-E1, SA-2, SA-W1, SA-3, SA-4, SA-5 and SA-6) (See *Figure 7* in map pocket). Additionally, for purposes of this analysis, reaches SA-W1 and SA-E1 were each subdivided into two subreaches due to considerable topographic, habitat, and hydrologic variation between the upper portions of these reaches compared to the lower portions. The lower portions of these two reaches were labeled SA-W1-L and SA-E1-L and the upper portions were labeled SA-W1-U and SA-E1-U, respectively. Therefore, there are a total of 17 stream reaches discussed in this report.

Dudek considered three types of wetlands restoration potential, including wetlands enhancement, stream bank stabilization, and wetlands creation. Stream bank stabilization includes a component of wetlands creation. However, it is assumed that potential mitigation sites associated with stream bank stabilization will be approximately 50 percent wetlands mitigation with the other 50 percent of the area as upland transitional buffer. This is due to the deeply incised channels in most areas, and the likelihood that the upper portions of channel banks will not support wetlands vegetation.

For wetlands enhancement, the percent cover of non-native, invasive plants was estimated in wetland vegetation communities in potential wetlands enhancement areas within the Study Area. The estimated non-native, invasive plant cover percentages were applied to each area to get an estimate of the wetlands enhancement credit that could be achieved for each wetlands vegetation community.

For the Santa Clara River, there are substantial wetlands enhancement opportunities in various wetland vegetation communities. However, due to the extensive effort required to estimate and

map invasive plant cover percentages, and the high potential for this to change between the present conditions and future implementation, specific enhancement opportunities were not evaluated in the Santa Clara River and associated wetlands vegetation communities.

For wetlands creation, Dudek evaluated the suitability of potential mitigation opportunities in the Study Area based on several factors pertinent to determining suitability of wetlands mitigation projects, including hydrology, soil conditions, existing vegetation, habitat connectivity, stream bank stability, construction/maintenance access, grading requirements, planting and irrigation requirements, mitigation credit, and long-term management considerations, as described below in *Section 3.5.1*. Each of the criteria used to evaluate the suitability of wetlands habitat creation/restoration and enhancement opportunities in the various reaches within the Study Area were prioritized based on their suitability for potential wetlands creation mitigation.

3.4.1 Suitability Factors

Each of the criteria used to evaluate the suitability of wetlands habitat creation/restoration opportunities in the various reaches within the Study Area is described in this section.

Hydrology

Hydrology is the most critical factor in determining potential suitability for wetlands creation/restoration. Hydrology along each of the reaches in the Study Area was evaluated based on a number of factors, including the location in the watershed, presence and/or persistence of surface water, source of water, and amount of surface water. Potential sites with the presence and/or persistence of surface water, a natural water source, and a higher amount of surface water were considered to have greater restoration potential, and therefore, were ranked higher in this analysis. The HFA classified each of the reaches as ephemeral, ephemeral/intermittent, riverine persistent or perennial (see *Section 4.5*). The HFA classifications for each stream reach were taken into consideration when evaluating and ranking hydrology in this analysis.

Soil Conditions

Soil conditions were evaluated based on the type of soils present, which relates to erosive potential and water holding capacity, presence of organic matter, and soil disturbance. In general, soil types throughout the Study Area were of the same type, Balcom-Castaic-Saugus association, which is a combination of silty clay loam and loam. The soils are derived from weakly consolidated sediments, soft sandstone and soft shale, and are generally highly erosive and well-drained. In the upper reaches (higher elevations), there seemed to be a greater composition of rock in the soil; however the soil remained unconsolidated and highly erosive.

Other soil types present in more limited areas include Chino loam, which occurs on nearly level land. It is a deep soil with a seasonally high water table present within three to four feet from the surface. This soil type is suitable for wetland mitigation. Sandy alluvial land, Cortina sandy loam, Hanford sandy loam, Sorrento loam, and Yolo loam are soils found along the Santa Clara River and its tributaries and are generally suitable for wetland mitigation. Castaic and Saugus soils are another soil type found in potential mitigation areas that are severely eroded and highly erosive.

In this analysis, soils with lower erosion potential, greater water holding capacity, higher presence of organic matter, and less soil disturbance were considered to have greater suitability for wetlands creation/restoration. However, nearly all soils within the Study Area appeared to have high erosion potential and high soil disturbance.

Existing Vegetation

The existing vegetation was evaluated based on the vegetation communities present, age and structural heterogeneity, including canopy development, presence of non-native, invasive plants and riparian corridor connectivity. Potential mitigation sites adjacent to stream channels with intact native wetland vegetation, diverse age and structural heterogeneity, a well-developed tree canopy, lack of non-native invasive plants and the presence of a riparian corridor were ranked higher in this analysis based on the rationale that if these conditions are present, then there are potentially adequate conditions to create additional wetlands habitat.

Habitat Connectivity

For potential wetlands enhancement areas, this criterion was evaluated based on connectivity of riparian habitat to adjacent transitional upland habitats. For potential wetlands creation areas and stream bank stabilization areas, this criterion was evaluated based on connectivity of the restored wetlands habitat after the hypothetical installation of the wetlands mitigation areas. The level of disturbance of the transitional uplands habitat was the primary consideration. Potential sites with degraded vegetated buffers dominated by non-native vegetation are more vulnerable to erosion and more likely to contribute weed seed to potential wetlands mitigation sites. Therefore, sites with native vegetated buffers were ranked higher than those with degraded, non-native buffers. An additional consideration was connectivity to permanent unnatural features such as roadways or developed areas. Adjacency to these types of areas was ranked moderate based on the fact that roadways or developed areas are less likely to be vulnerable to erosion, but depending on how edge areas are planted/maintained, can be more or less likely to contribute weed seed to potential wetlands mitigation sites.

Stream Bank Stability

A general assessment of channel morphology was conducted to identify areas with the highest stream bank stability. Features that provide insight into this issue include the presence of cut banks, slip faces, underfit/overfit stream courses, degree of braided flow and bed grain size. The stability of the stream banks along each of the reaches was evaluated based on the development of flood plain terraces, angle of the bank cuts, and stability of the bank soils. Areas with stream banks that have multiple terraces, gentle angles on the bank cuts and more stable bank soils were considered more suitable, and ranked higher, than those without terraces, steep bank cuts and instable bank soils.

Construction/Maintenance Access

Each of the reaches was evaluated based on construction and/or maintenance access to potential wetlands mitigation sites. Roads that are suitable for grading equipment was a key factor in the identification of wetland creation sites. Sites that are adjacent to existing roads or those that could be easily accessed from existing roads were considered more suitable potential wetlands creation/restoration sites than sites that are inaccessible to vehicles.

Grading Requirements

The amount of grading required to construct potential wetlands creation/restoration sites was evaluated. Potential sites where minimal grading would be needed to achieve creation/ restoration goals were considered more suitable sites, and therefore ranked higher than potential sites that would require extensive grading. No detailed calculations were made to determine actual volume of material that would have to be removed to restore or create wetlands vegetation communities. Estimations of grading requirements were generally based on the depth of cut required and the surface area to be graded.

Irrigation Availability

Irrigation availability was evaluated along each reach. Potential wetlands creation/restoration sites with access to a potential irrigation source were ranked higher than those without.

Mitigation Credit

The amount of acreage available for wetlands mitigation credit was evaluated at each potential site. Areas where greater wetlands mitigation acreage could be achieved were ranked higher than sites that would result in minimal wetlands mitigation acreage. In general, sites less than 1

acre were ranked low, sites between 1 and 5 acres were ranked moderate, and sites greater than 5 acres were ranked high for this factor.

Long-Term Management Considerations

Long-term management considerations include evaluating the potential for issues that could create long-term management problems in the future after the installation of wetlands mitigation. Factors such as the degree to which a site would be self-sustaining in the long-term, the potential for re-invasion of non-native invasive plant species, future access constraints, potential to be subject to damage from flooding, or contribute to flooding in unwanted areas, were evaluated for each potential wetlands creation/restoration site. Sites that would be self-sustaining, have minimal potential for re-invasion of invasive, non-native plant species, provide uninhibited long-term access, and be less prone to damage from flooding, or contribute flooding in unwanted areas were considered to have greater suitability in terms of minimizing long-term management problems, and therefore, ranked higher in this analysis.

4.0 RESULTS

4.1 Slender Mariposa Lily Mitigation Opportunities

Based on this analysis, there are a total of approximately 559 acres considered suitable for slender mariposa lily mitigation (*Table 1*). *Table 1* lists the amount of acreage within the NRHC SMA and Salt Creek area by the priority rankings 1-3 (with a priority ranking of 1 being the most suitable).

TABLE 1
Slender Mariposa Lily Mitigation Opportunities

Priority	NRHC SMA (acres)	Salt Creek (acres)	Total (acres)
Priority 1	154	126	280
Priority 2	145	48	193
Priority 3	51	35	86
Total	350	209	559

While a considerable amount of acreage was determined to be suitable for slender mariposa lily mitigation, it is anticipated that not all of this acreage will be available for large-scale translocation. Areas that currently support this species will generally be excluded from potential mitigation sites to avoid impacting existing populations. As previously mentioned, small-scale

translocation projects could feasibly occur within a known population of this species if the presence of slender mariposa lily was accurately mapped during an average or greater than average rainfall year. However, areas adjacent to existing populations, rather than within them, are preferred, in order to avoid potential impacts to this species.

4.2 California Sage Brush Scrub Mitigation Opportunities

There are considerable opportunities for California sagebrush scrub mitigation within the Study Area (*Figure 5*). Agricultural land, California annual grassland, and disturbed areas may all be converted to California sagebrush scrub in areas with generally southern, western, or eastern exposures. Most of the road network within the Study Area needs to be maintained, but selected old road segments could potentially be abandoned and planted with California sagebrush scrub.

For purposes of discussing California sagebrush scrub mitigation, the Study Area has been subdivided into Areas A through G (*Figure 5*). Each area is discussed below with regards to its suitability for mitigation. The approximate maximum area available for mitigation within each of the area designations is given in *Table 2*.

TABLE 2
California Sagebrush Scrub Mitigation Opportunities

Area	Priority Ranking	NRHC SMA (acres)	Salt Creek (acres)	River Corridor (acres)	Total (acres)
Area A	1	64	83	--	147
Area B	1	44	94	--	138
Area C	1	68	--	1	69
Area D	3	145	--	--	145
Area E	3	101	--	--	101
Area F	2	15	119	--	134
Area G	2	47	--	--	47
Total		483	296	1	780

Area A – Area A is located at the western end of the Study Area along the lower reach of Salt Creek and consists primarily of gently sloping agricultural land surrounded by existing habitat (*Figure 5*). This area is ideally suited for mitigation, as it is easily accessible for plant installation, maintenance, and monitoring. Irrigation could also be provided for at least a portion of the area, if desired.

Area B – Area B is located in the valley southeast of Area A along Salt Creek and its tributaries. The area consists primarily of sloping rangeland and the valley bottom surrounded by existing habitat (*Figure 5*). Much of this area has been heavily grazed and is well suited for California sagebrush scrub mitigation. It is easily accessible for plant installation, maintenance, and monitoring. Some of the steeper slopes would be difficult to maintain and monitor, but could be restored in a more passive manner, possibly over a longer period of time. Temporary irrigation during the establishment period could be provided for at least a portion of the area by trucking in water.

Area C – Area C consists of rangeland located on the slopes and valley bottom, and agricultural land, both surrounded by existing habitat (*Figure 5*). The areas have dirt road access, so most of it is easily accessible for plant installation, maintenance, and monitoring. Some of the steeper slopes would be difficult to maintain and monitor, but could be restored in a more passive manner, possibly over a longer period of time. Temporary irrigation during the establishment period could be provided for at least a portion of the area by trucking in water.

Area D – Area D is rangeland located along a ridgeline and down the slopes below it. The area is surrounded by existing habitat (*Figure 5*), and some mariposa lilies have been found within the area. Most of this area is steep with no vehicular access available, so it would be difficult to plant, maintain, and monitor for California sagebrush scrub mitigation. All materials would have to be hauled in on foot or on pack animals, and irrigation would not be feasible. The steeper slopes would be difficult to maintain and monitor, but could be restored in a more passive manner, possibly over a longer period of time.

Area E – Area E is primarily rangeland located along the eastern portion of the Study Area (*Figure 5*). The potential California sagebrush scrub mitigation areas are surrounded by existing habitat. Most of this area is steep with no vehicular access available, so it would be difficult to plant, maintain, and monitor for California sagebrush scrub mitigation. A portion of the area has road access nearby, so it would be somewhat easier to reach, but access would still be on foot. All materials would have to be hauled in on foot or on pack animals, and irrigation would not be feasible. The steeper slopes would be difficult to maintain and monitor, but could be restored in a more passive manner, possibly over a longer period of time.

Area F – Area F is primarily rangeland located at higher elevations at the southwestern corner of the Study Area. It is surrounded by existing habitat, primarily oak woodlands and California annual grassland (*Figure 5*). There is also some agricultural land, with an old olive orchard that would have to be removed if this area were to be used for mitigation. Most of this land is on slopes facing north, so its suitability for California sagebrush scrub mitigation is limited. These areas might be more suitable for valley oak savannah or coast live oak woodland. Most of the

area is reasonably close to roads, so access is generally good. However, irrigation may not be feasible.

Area G – Area G is primarily rangeland located at higher elevations at the southeastern portion of the Study Area. It is surrounded by existing habitat, primarily oak woodlands or savannah or chaparral (*Figure 5*). Most of this land is on slopes generally facing north, so its suitability for California sagebrush scrub mitigation is limited. These areas might be more suitable for valley oak savannah or coast live oak woodland. Most of the area is close to roads, so access is generally good. However, irrigation may not be feasible.

4.3 Oak Mitigation Opportunities

Potential mitigation sites for three oak vegetation communities were identified onsite, including valley oak savannah, coast live oak woodland and valley oak woodland (*Figure 6*). These areas have appropriate soils known to support oaks and are often adjacent to existing oak woodlands or oak savannah. Most of the proposed oak mitigation areas are easily accessible for planting, maintenance and monitoring. Irrigation could also be provided for at least a portion of these areas, if desired. Other locations are on steeper land away from access roads, making them more difficult to plant, maintain, and monitor. Irrigation would not be feasible in these areas unless there is a flowing stream nearby, which would allow bucket watering. In addition to oak mitigation at the vegetation community level, individual oak trees could be planted in several areas within the Study Area (*Figure 6*). This analysis identified areas for individual oak tree planting that would be suitable for coast live oak or valley oak. *Table 3* below includes the acreage estimated for oak mitigation within NRHC SMA, Salt Creek and River Corridor.

TABLE 3
Oak Mitigation Opportunities

Oak Mitigation	NRHC SMA (acres)	Salt Creek (acres)	River Corridor (acres)	Total (acres)
Individual Oaks	100	105	--	205
Coast Live Oak Woodland	5	13	6	24
Valley Oak Savannah	21	65	--	86
Valley Oak Woodland	1	--	--	1
Total	127	183	6	316

As mentioned in *Section 3.3*, the potential to mitigate for impacts to California black walnut by incorporating this species into oak mitigation was analyzed. California black walnut is a common component of coast live oak woodland, particularly on north-facing slopes, and could

be appropriately planted for mitigation at the selected sites for coast live oak woodland described above and depicted in *Figure 6*.

4.4 Wetlands Mitigation Opportunities

This section provides the results of the wetlands mitigation feasibility analysis for stream reaches located within the Study Area.

The majority of the stream courses within the Study Area are highly dynamic, with relatively steep flow gradients and erosive soils throughout. Many areas of the stream channels are deeply incised (up to 30 feet below the adjacent floodplain terrace) within the site, isolating much of the remaining floodplain from the influence of seasonal hydrology. Additionally, the tributaries to the main drainages are deeply incised (up to 15 feet below the adjacent floodplain terrace). Ephemeral stormwater flows of significant velocity and volume can occur within the stream channels, as evidenced by recent erosion, sediment deposition and vegetation distribution within the channels. The margins of the channels are largely disturbed, particularly throughout the lower reaches, with mostly non-native upland buffers such as California annual grassland and agricultural land. The native habitat that is occasionally present along the margins is usually sparse from repeated disturbance. The instability of the stream courses within the Study Area was further exacerbated by the recent wildfire that burned through much of the Study Area in October 2003, denuding vegetation, and leaving the watershed and stream banks exposed to erosive flows during the rainy season of 2003-2004. Further, heavy rainfall in the region in 2004-2005 resulted in severe soil erosion throughout much of the Study Area, altering stream courses in some areas, eroding the stream banks, and uprooting emergent vegetation within the channels and along margins of the channels.

At the time of this assessment, wetland vegetation communities in the drainage channels that connect to the Santa Clara River were primarily in an early stage of development (with patchy exceptions), recovering from either the impacts of the recent wildfire or the recent stream bank and channel erosion during the last two years following the 2003 wildfire. Several of the burned trees and shrubs along the channels survived the wildfire and young re-sprouts from the burned vegetation are beginning to establish. Native seedlings were abundant throughout the drainage channels, particularly within the channel bottom and at the base of newly eroded stream banks. Vegetation within the Santa Clara River drainage also suffered extensive disturbance during severe flooding during the 2004-2005 rainy season. Large intact stands of mature cottonwood willow riparian woodland (among other vegetation communities) remain, but there are numerous areas recently scoured by flooding, with sparse vegetation.

Wetland vegetation communities present within the Study Area were listed above in *Section 2.1*. Each of the wetland vegetation communities are described in the biological resources technical reports for the Study Area (Dudek 2006a and 2006b). All of the wetland vegetation communities mapped onsite are native vegetation communities dominated primarily by native species, with the exception of giant reed and tamarisk scrub, which are dominated by non-native giant reed (*Arundo donax*) and tamarisk (*Tamarix* sp.), respectively. Adjacent vegetation communities are largely disturbed due to agriculture in the lower reaches and grazing in the middle and upper reaches.

4.4.1 Stream Reaches

According to the HFA, stream reaches were divided based on criteria such as substrate type (e.g., sand vs. silt), water regime (e.g., ephemeral vs. perennial stream segments) and adjacent land use (open space, paved road, agricultural field, etc.). Additionally, each reach was classified according to wetland and riparian habitat categories. In this analysis, reaches in the same vicinity or on the same channel with similar hydrology, biogeochemical and habitat were grouped together for discussion. The HFA scores are out of a total possible 1.00. The 17 stream reaches within the Study Area were classified as follows:

***Santa Clara River Reaches*:** The Santa Clara River Reaches include SCR-SA, SCR-PO, SCR-LO-DNST, SCR-LO-MID, SCR-LOW-UPST, SCR-HU and SCR-MI. These reaches are classified as a perennial river with southern cottonwood-willow riparian forest, mulefat scrub, giant reed, arrowweed scrub and herbaceous wetland. The Santa Clara River Reaches are surrounded by a mix of agriculture (primarily on the northern side) and natural habitat (primarily on the southern side). The average HFA score for these reaches was 0.75, with an average score of 0.83 for hydrology, 0.75 for biogeochemical and 0.76 for habitat (URS 2004).

***Castaic Creek Reach CA*:** Reach CA is classified as an intermittent tributary with patches of mulefat scrub and tamarisk scrub. This reach is the downstream portion of Castaic Creek before it joins the Santa Clara River. It is located in the northeastern portion of the Study Area. It is surrounded by disturbed land on the west side and development on the east side of the channel. The channel itself is sparsely vegetated river wash. The overall HFA score for this reach was 0.64, with a score of 0.83 for hydrology, 0.75 for biogeochemical and 0.51 for habitat (URS 2004).

***Salt Creek Reach SA-W1 (SA-W1-U and SA-W1-L)*:** Reach SA-W1 is classified as an ephemeral/intermittent tributary with patches of southern willow scrub. This reach is a group of tributaries to Salt Creek that are located in the western portion of the Study Area. The majority of this reach (SA-W1-U) was not considered for wetlands creation/restoration due to steep

topography, access constraints, and limited mitigation credit available. Only the lower (northern) section (SA-W1-L) of this reach was considered to have some suitability for wetlands creation/restoration. This reach is surrounded by primarily natural habitat in the upper portions and disturbed, non-native habitat in the lower portions. The areas surrounding this reach are currently used for grazing cattle. Wetland vegetation communities along this reach include mulefat scrub and southern willow scrub in SA-W1-L. The overall HFA score for this reach was 0.79, with a score of 0.79 for hydrology, 0.85 for biogeochemical and 0.70 for habitat (URS 2004).

***Salt Creek Reach SA-E1 (SA-E1-U and SA-E1-L) and SA-2*:** Reach SA-E1 is classified as ephemeral tributary with patches of mulefat scrub. This reach was split into two contiguous reaches, SA-E1-U and SA-E1-L. The upper portion of Reach SA-E1 (SA-E1-U) is the upper portion (headwaters) of Salt Creek and a group of tributaries to Salt Creek located to the south and to the east of SA-2. Reach SA-E1-U is composed of primarily narrow, relatively steep, incised stream channels that are largely inaccessible for equipment and would provide limited mitigation credit. Reach SA-E1-L and SA-2 have a relatively mild gradient compared to SA-E1-U, with a broad flood plain. Reaches SA-E1 and SA-2 are surrounded by natural habitat and lands currently used for grazing. Wetland vegetation communities along these reaches include cismontane alkali wetland, mulefat scrub, river wash, big sagebrush scrub riparian, southern willow scrub and alluvial scrub. The overall HFA score for reach SA-E1 was 0.74, with a score of 0.64 for hydrology, 0.78 for biogeochemical and 0.70 for habitat. For SA-2, the overall HFA score was 0.81, with a score of 0.73 for hydrology, 0.87 for biogeochemical and 0.78 for habitat (URS 2004).

Salt Creek Reaches SA-3 and SA-4: Reaches SA-3 and SA-4 are classified as riverine-persistent with patches of cismontane alkali wetland and southern willow scrub. These two reaches are contiguous and are grouped together in this analysis, based on their similar characteristics. These reaches are surrounded by land that is currently used for grazing. Wetland vegetation communities along these reaches of Salt Creek include southern willow scrub, mulefat scrub, cismontane alkali wetland, coastal and valley freshwater marsh and river wash. The overall HFA score for reach SA-3 was 0.98, with a score of 0.96 for hydrology, 0.98 for biogeochemical and 0.98 for habitat. For SA-4, the overall HFA score was 0.96, with a score of 0.92 for hydrology, 0.96 for biogeochemical and 0.98 for habitat (URS 2004).

Salt Creek Reach SA-5: Reach SA-5 is an ephemeral tributary with patches of mulefat scrub and tamarisk. This reach is on the main stem of Salt Creek. It is surrounded on both sides by land that is currently used for grazing. Wetland vegetation communities along this reach include river wash and southern willow scrub. The overall HFA score for this reach was 0.73, with a score of 0.88 for hydrology, 0.83 for biogeochemical and 0.65 for habitat (URS 2004).

Salt Creek Reach SA-6: Reach SA-6 is a perennial tributary with patches of southern willow scrub. This reach is on the main stem of Salt Creek and is the reach of Salt Creek that connects to the Santa Clara River. It is surrounded on both sides by agricultural land through much of the reach. Wetland vegetation communities along this reach include arrowweed scrub, tamarisk scrub, alluvial scrub, mulefat scrub, river wash, elderberry scrub and southern willow scrub. The overall HFA score for this reach was 0.54, with a score of 0.54 for hydrology, 0.49 for biogeochemical and 0.65 for habitat (URS 2004).

4.4.2 Stream Reaches with Mitigation Potential

Out of the total 17 stream reaches that were evaluated in this study, there are 14 that are considered to have wetlands creation mitigation potential, including SCR-SA, SCR-PO, SCR-LO-DNST, SCR-LO-MID, SCR-LO-UPST, SCR-HU, SCR-MI, CA, SA-W1-L, SA-E1-L, SA-2, SA-3, SA-5, SA-6. Additionally, 15 of the reaches have wetlands enhancement potential, including SCR-SA, SCR-PO, SCR-LO-DNST, SCR-LO-MID, SCR-LO-UPST, SCR-HU, SCR-MI, SA-W1-L, SA-E1-L, SA-2, SA-3, SA-4, SA-5, SA-6 and CA.

As previously mentioned, all suitability criteria are ranked from high suitability to low suitability for potential wetlands creation mitigation in each reach (*Table 4*). In order to facilitate comparison of the relative suitability of potential mitigation opportunities between the reaches, rankings of high were given a score of three, rankings of moderate were given a score of two and rankings of low were given a score of one. All scores for each of the criteria were combined to produce a cumulative score for each reach. The total possible score is 30. Rankings are relative to each other within this study.

4.4.3 Wetlands Enhancement and Creation/Restoration Opportunities

Wetlands Enhancement Opportunities

Wetlands enhancement opportunities are abundant throughout the Study Area. There were 15 stream reaches in the Study Area that were considered to have wetlands enhancement potential. The Santa Clara River reaches in particular have extensive amounts of non-native invasive plants, including giant reed and salt cedar. While the presence of these non-native plant species is consistent throughout the Santa Clara River reaches, the abundance or proportion of these species varies widely, with some areas completely dominated, sometimes to the exclusion of all other species. Detailed percent cover estimates of non-native invasive plants were not made for the Santa Clara River reaches or the Castaic Reach in this study; however, it is estimated that cover of non-native invasive plants is in the range of five percent overall, with some areas lower and other areas much higher. In the Salt Creek drainage and many of the other tributary

drainages, tree tobacco and salt cedar were prevalent, occupying up to 50 percent of the shrub cover in some areas, with most areas having around 10 percent cover of non-native plants.

TABLE 4
Potential Wetlands Creation Mitigation Evaluation Criteria Rankings

Reach	Hydrology	Soil Conditions	Existing Vegetation	Habitat Connectivity	Stream Bank Stability	Construction and Maintenance Access	Grading Requirements	Irrigation Availability	Mitigation Credit	Long-Term Management Considerations	Score
SCR-SA	H	H	H	H	M	H	M	H	H	H	28
SCR-PO	H	H	H	H	H	H	M	H	H	H	29
SCR-LO-DNST	H	H	H	H	M	H	M	H	M	H	27
SCR-LO-MID	H	H	H	H	M	H	M	H	H	H	28
SCR-LO-UPST	H	H	H	H	M	H	M	H	H	H	28
SCR-HU	H	H	H	H	M	H	M	H	H	H	28
SCR-MI	H	H	H	H	M	H	M	H	H	H	28
CA	L	M	M	L	L	H	L	H	L	M	17
SA-W1-L	M	L	M	L	L	H	M	L	H	M	18
SA-E1-L	L	L	L	M	L	M	M	L	M	M	15
SA-2	L	L	M	M	L	H	M	L	L	M	16
SA-3	H	L	M	M	L	H	M	L	L	M	18
SA-5	M	L	M	M	L	H	M	M	M	M	19
SA-6	H	L	M	L	L	H	L	H	H	M	20

Mitigation credit, in the form of wetlands enhancement, could be gained in multiple wetland vegetation communities occurring in the stream reaches, including alluvial scrub, arrowweed scrub, big sagebrush scrub, bulrush-cattail wetland, cismontane alkali wetland, cottonwood willow riparian forest, elderberry scrub, mulefat scrub, river wash and southern willow scrub (*Table 5*). In the Salt Creek reaches a total of approximately 5.4 acres of enhancement potential was identified within the Study Area. Within the Santa Clara River and Castaic reaches, there are extensive areas with opportunity for wetlands enhancement. While a detailed estimate was not performed, it is estimated that there are in the range of 40.9 acres of wetlands enhancement available within vegetation communities within the Santa Clara River stream reaches and the Castaic Reach, with the bulk of the potential enhancement acreage in cottonwood willow riparian

forest, river wash and herbaceous wetlands. The combined total wetlands enhancement acreage is estimated to be approximately 52.07 acres (*Table 5*).

TABLE 5
Estimated Potential Wetlands Enhancement Acreages

Vegetation Community	NRHC SMA (acres)	Salt Creek (acres)	River Corridor[1] (acres)	Total (acres)
alluvial scrub	0.03	0.04	--	0.07
arrowweed scrub	--	0.03	0.25	0.28
big sagebrush scrub	0.97	--	--	0.97
bulrush-cattail wetland	0.14	--	--	0.14
cismontane alkali wetland	0.29	--	--	0.29
cottonwood willow riparian forest	--	--	13.94	13.94
elderberry scrub	0.05	0.04	--	0.09
giant reed[2]	--	--	5.51	5.51
herbaceous wetland	--	--	8.91	8.91
mulefat scrub	0.23	3.99	0.52	4.74
river wash	0.73	0.74	9.52	10.99
southern willow scrub	2.89	0.34	0.45	3.68
tamarisk scrub[2]	--	0.19	2.27	2.46
Total	5.33	5.37	41.37	52.07

[1]Acreage calculations for wetlands enhancement within the Santa Clara River Reaches are based on an estimated 5 percent cover of non-native invasive plants with the exception of giant reed and tamarisk scrub which are assumed to be 100 percent non-native.

[2]Giant reed and tamarisk scrub are non-native vegetation communities that are assumed to be composed of 100 percent non-native plant species.

Wetlands Creation/Restoration Opportunities

In general, wetlands creation/restoration in the Study Area will be challenging due to the highly erosive, well-drained alluvial soils throughout much of the Study Area and the extreme flood flow volume and velocity that can occur. Careful site selection is critical due to the potential for disturbance or loss of newly created or restored wetlands from intense storm events and consequent loss of soil and plant material. These factors were carefully considered when evaluating wetlands habitat mitigation opportunities in the Study Area.

As a consequence of the erosive alluvial soils in the Study Area and extreme flood flow volumes and velocities, particularly in winter 2004-2005 when record rainfall occurred, many of the

channel reaches are deeply incised with vertical to nearly vertical, eroded banks lacking vegetation. Ten- to 15-foot vertical cut banks were not uncommon, particularly in the lower reaches, and were on average approximately eight to ten feet high. Structural stream bank restoration could potentially occur within many reaches in the Study Area, with the exception of some of the upper reaches where machinery access does not exist and reaches with intact vegetated buffers. Structural stream bank restoration would be particularly important in regions of the drainage where the stream buffer is used for agriculture or is heavily grazed and/or composed of non-native vegetation. It would require extensive grading in most areas to change the angle of the stream banks such that they could support vegetation and would require stream bank and stream bed stabilization structures (e.g., gabions, rip-rap, articulated concrete block, etc.), in addition to vegetation, to hold the soil on the banks in place. Some mitigation credit could be gained in the form of wetlands creation; however, the amount of acreage gained compared to the level of effort/cost to successfully implement this type of structural restoration might diminish the appeal of this type of restoration in much of the Study Area.

As previously mentioned, wetlands creation opportunities were identified in 14 reaches within the Study Area. Wetlands creation opportunities within these reaches are discussed in more detail below.

Santa Clara River Reaches (SCR-SA, SCR-PO, SCR-LO-DNST, SCR-LO-MID, SCR-LO-UPST, SCR-HU and SCR-MI)

The Santa Clara River Reaches scored the highest in the wetlands creation evaluation criteria rankings among the reaches determined to have wetlands creation potential within the Study Area. Scores ranged between 27 and 29 out of a possible 30. The areas identified for creation include agricultural land along the margins of the Santa Clara River. These areas are actively being farmed, but represent areas along the Santa Clara River where the flood plain has been restricted. In these areas, wetlands creation could be achieved by converting the agricultural areas into flood plain areas for the Santa Clara River. This would be achieved by grading these areas down to a level appropriate for establishing wetlands vegetation. In most cases, this is approximately a 6-12 foot grade cut. The grade would gradually increase in elevation moving away from the river. At some point, the vegetation would transition into uplands vegetation, where mitigation credit could be achieved for California sagebrush scrub or the creation of similar uplands vegetation communities.

There is flexibility in the types of wetlands vegetation communities and the individual acreage totals of those vegetation communities that could be created in the Santa Clara River stream reaches. Recommended wetland communities proposed as mitigation herein are generally based on surrounding vegetation communities. *Tables 6* and *7* below list the estimated acreages for

wetlands creation by vegetation community. Specifically, *Table 6* lists the acreages by stream reach, and *Table 7* lists the acreages by preserve area. The acreages reported in these tables are based on the conceptual layout as shown in *Figure 7*.

TABLE 6
Estimated Potential Wetlands Creation Acreages by Stream Reach

Stream Reach	Vegetation Community (acres)					
	AS	BSS	CWRF	MFS	SWS	Total
SCR-SA	0	0	2.1	3.2	0	5.3
SCR-PO	0	0	10.8	0	0	10.8
SCR-LO-DNST	0	0	3.4	0	0	3.4
SCR-LO-MID	0	0	5.1	0	1.3	6.4
SCR-LO-UPST	0	0	6.4	0.3	0.6	7.3
SCR-HU	0	0	6.9	3.0	0	9.9
SCR-MI	0	0	0.01	2.3	0	2.3
CA	0	0	0	0.2	0	0.2
SA-W1-L	0	0	0	7.7	1.3	9.0
SA-E1-L	0	0.6	0	0.8	0	1.4
SA-2	0	0	0	0.9	0	0.9
SA-3	0	0	0	0.3	0	0.3
SA-5	0	0	0	1.3	0	1.3
SA-6	5.2	0	0	0.8	0	6.0
Total	5.2	0.6	34.7	20.9	3.3	64.5

AS = Alluvial Scrub; BSS = big sagebrush scrub; CWRF = Cottonwood Willow Riparian Forest; MFS = Mule Fat Scrub; SWS = Southern Willow Scrub

TABLE 7
Estimated Potential Wetlands Creation Acreages by Preserve Area

Vegetation Community	NRHC SMA (acres)	Salt Creek (acres)	River Corridor (acres)	Total (acres)
alluvial scrub	--	5.24	--	5.24
Big sagebrush scrub		0.6		0.6
cottonwood willow riparian forest	--	--	34.53	34.53
mulefat scrub	3.36	8.52	9.02	20.90
southern willow scrub	0.13	1.27	1.95	3.35
Total	3.49	15.63	45.50	64.62

Castaic Creek Reach (CA)

This reach is the downstream portion of Castaic Creek before it joins the Santa Clara River. According to the HFA, Reach CA is classified as an intermittent tributary with patches of mulefat scrub and salt cedar. This reach scored 17 out of a possible 30 in the wetlands creation evaluation criteria rankings among the reaches determined to have wetlands creation potential within the Study Area. Some of the reasons for the low score for this reach are the minimal amount of acreage of mitigation credit that could be achieved, poor habitat connectivity, minimal hydrology, extensive grading requirements compared to the amount of mitigation credit available and instability of the existing stream banks. The area identified for wetlands creation includes an area mapped as California annual grassland that lies between agricultural land and the western margin of the channel. In this area, wetlands creation could be achieved by expanding the flood plain of Castaic Creek toward the west by grading down the California annual grassland to a level appropriate for establishing wetlands vegetation. This area is immediately adjacent to an area proposed in Reach SCR-HU. Therefore, wetlands mitigation in this area would be conducted in concert with wetlands mitigation in SCR-HU. Similar to the scenario described for potential wetlands creation areas along the Santa Clara River, the grade would gradually increase in elevation moving away from the river. At some point, the vegetation would transition into uplands vegetation, where mitigation credit could be achieved for California sagebrush scrub or the creation of similar uplands vegetation communities.

Based on the conceptual layout as shown in *Figure 7*, it is estimated that approximately 0.2 acre of mulefat scrub could be established at this location in the River Corridor (*Table 6*).

Salt Creek Reach (SA-W1)

The upper (upstream) portions of reach SA-W1 (SA-W1-U) is composed of narrow tributaries in steep, rugged terrain. The upper portion of reach SA-W1 was not considered suitable for potential wetlands habitat creation/restoration because of the lack of vehicular access due to rugged terrain and steep topography. However, a comprehensive wetlands enhancement effort could include SA-W1-U to control non-native invasive plant species, such as tree tobacco and salt cedar. Non-native invasive weeds in the upper portions of the reach could potentially contribute seed that could be washed down into the lower reaches and present a maintenance issue in the long-term.

The lower (northern) portion of this reach (SA-W1-L) was considered suitable for both wetlands creation/restoration and wetlands enhancement potential. The gentle slope, broad flood plain, disturbed, primarily non-native, adjacent vegetation and easy vehicular access to this site were factors that led to this area being considered to have potential for wetlands creation/restoration.

This reach scored 18 out of a possible 30 in the wetlands creation evaluation criteria rankings among the reaches determined to have wetlands creation potential within the Study Area. Some of the reasons for the low score for this reach are the erosive soil conditions, poor habitat connectivity, unstable stream banks, and poor irrigation availability.

This lower portion of the reach is deeply incised (up to 15 feet in some areas and approximately eight feet on average throughout), with vertical to nearly vertical stream banks. The stream buffers are highly disturbed and currently support primarily non-native grasslands and ruderal land.

This reach was classified in the HFA as an ephemeral intermittent tributary. While there was surface water flowing through much of this reach during the site visits in fall 2005, the amount of surface water was minimal. Consequently, suitable vegetation communities for this reach would include primarily more drought-tolerant wetland vegetation communities, such as mulefat scrub, with occasional pockets of southern willow scrub.

Two creation/restoration approaches were considered for this reach. One approach would be to grade the angle of the stream banks back to form more gentle angles, and plant the newly formed stream bank slopes with wetland species to stabilize the slopes and create wetland habitat. This approach would help to stabilize the side slopes of the channel and allow the creation of wetlands habitat, but the channel slopes would still be vulnerable to extreme flood flow velocities with erosive forces likely great enough to potentially cause stream bed migration and wash out new restoration work. In order to improve the restoration success with this approach, hydrologic modeling to determine expected flow velocities and volumes at various regions in the channel and the installation of stream bank stabilization structures engineered with the capacity to withstand these types of storm flow events would likely be needed. Temporary irrigation would be important with this type of approach to help get plant material established on the side slopes of the channel in between rainy seasons in order to stabilize soils. Additionally, an extensive amount of grading would be required to gain a relatively small amount of mitigation acreage.

A second approach would be to install periodic check dams through the reach to slow storm flow velocities, capture sediment and improve percolation and groundwater recharge in order to facilitate the recruitment of wetlands vegetation. This approach is preferred for wetlands creation/restoration at this particular site because it would help to restore the incised channel and improve water quality by capturing sediment, improve groundwater recharge, and help restore the relationship between the stream channel and the floodplain. Planting and irrigation requirements would be minimized because a more passive restoration design could be utilized, wherein native wetland plant species would be expected to naturally recruit in suitable areas with adequate hydrology. Further, it is anticipated that a greater amount of wetlands mitigation

acreage could be achieved because of improved groundwater recharge and improved relationship to the flood plain. Also, the area immediately behind the check dams could be excavated down to improve water holding capacity in the channel and increase the area of hydrologic influence, thereby increasing the amount of mitigation acreage. Excavated material behind each of the check dams could be pushed up to form natural berms on both sides of the check dams to improve water holding capacity and infiltration.

Similar types of check dam structures have been installed along this reach in the past, including a check dam structure to protect a gas pipeline and soil berms in some of the tributary canyons along this reach. The check dam at the gas pipeline crossing failed due to excessive erosion around one side of the check dam. The bermed areas appeared to function for a period of time (based on the amount of sediment deposited and the establishment of mulefat scrub behind the berms), but eventually, water flow over the soil berms resulted in erosion and down-cutting of the berms. Based on these examples, and after evaluating the channel conditions, it is critical that the construction of check dams along this reach are engineered and constructed appropriately to handle high flows during storm periods. They would need to be keyed deep into the side slopes of the channel and be constructed with non-erodable high flow and low flow outfalls and energy dissipators to prevent failure of the check dams over time.

Based on the installation of five check dams in SA-W1-L as shown in *Figure 7*, it is estimated that approximately 9.0 acres of wetlands vegetation communities could be established in this reach, including 7.7 acres of mulefat scrub and 1.3 acres of southern willow scrub (*Table 6*).

Salt Creek Reach (SA-E1)

Similar to SA-W1, the upper (upstream) portions of this reach (SA-E1-U) are primarily composed of narrow tributaries in steep, rugged terrain. This portion of SA-E1 was not considered suitable for potential wetlands habitat creation/restoration because of the lack of vehicular access due to rugged terrain and steep topography. However it was considered suitable for a comprehensive wetlands enhancement program to remove non-native, invasive plant species such as tree tobacco and salt cedar.

The lower portion of reach SA-E1 (SA-E1-L) was considered suitable for stream bank stabilization in several areas (*Figure 7*). This reach scored 15 out of a possible 30 in the wetlands creation evaluation criteria rankings among the reaches determined to have wetlands creation potential within the Study Area. Some of the reasons for the low score for this reach are the lack of adequate hydrology, erosive soil conditions, disturbed existing vegetation, instable stream banks and poor irrigation availability.

Stream bank stabilization in this portion of the reach would require grading the angles of the stream banks back to form more gentle angles, installing an erosion control blanket on the slopes, and planting the newly formed stream bank slopes with wetland species to stabilize the slopes and create wetland habitat. As previously mentioned, in order to improve the restoration success with this approach, hydrologic modeling to determine expected flow velocities and volumes at various regions in the channel, and the installation of stream bank stabilization structures engineered with the capacity to withstand these types of storm flow events, would likely be needed.

Based on the hypothetical design of stream bank stabilization in this portion of SA-E1 as shown in *Figure 7*, approximately 0.8 acre of mulefat scrub and 0.6 acre big sagebrush scrub could be established, with a 1.4-acre California sagebrush scrub upland transitional buffer (*Table 6*).

Salt Creek Reach (SA-2)

Reach SA-2 has a broad flood plain, with a gentle grade from upstream to downstream and a braided channel within vertical, eroded channel banks between approximately 3 feet and 15 feet high. It is currently primarily river wash habitat in the main channel, with occasional patches of mulefat scrub, southern willow scrub and big sagebrush scrub.

Wetlands habitat creation/restoration potential is limited in this reach because of the high quality native upland habitat surrounding much of this reach. This reach scored 16 out of a possible 30 in the wetlands creation evaluation criteria rankings among the reaches determined to have wetlands creation potential within the Study Area. Some of the reasons for the low score for this reach are the lack of adequate hydrology, erosive soil conditions, instable stream banks, minimal mitigation credit and poor irrigation availability. A few areas were proposed for stream bank restoration based on the excessively eroded stream banks; however, in two of these areas, native California sagebrush scrub habitat would be impacted by the implementation of stream bank stabilization. Based on this analysis, a total of 0.9 acre of mulefat scrub with a 1.3-acre California sagebrush scrub upland transitional buffer could be achieved in this reach (*Table 6*). This reach of the Salt Creek is entirely located in NRHC SMA.

Salt Creek Reach (SA-3)

Reach SA-3 scored very high in the HFA with an overall score of 0.98. While this reach still retains high wetlands functions and values, there has been substantial erosion, especially along the southern bank of the channel through this reach. The southern bank is a vertical to nearly vertical, unvegetated cut bank from ten to 15 feet high. This area scored 18 out of a possible 30 in the wetlands creation evaluation criteria rankings among the reaches determined to have

wetlands creation potential within the Study Area. Some of the reasons for the low score are the minimal amount of acreage of mitigation credit that could be achieved, erosive soil conditions, instability of the existing stream banks and likely difficulty getting irrigation to the proposed site.

Potential wetlands mitigation in this reach would consist of structural stream bank restoration at one location, and would result in approximately 0.3 acre of mulefat scrub creation with a 0.2-acre California sagebrush scrub upland transitional buffer (*Table 6*).

Salt Creek Reach (SA-5)

Similar to reach SA-2, reach SA-5 has a broad flood plain, with a gentle grade from upstream to downstream and a braided channel within vertical, eroded channel banks between approximately six feet and 10 feet high. It is currently primarily river wash habitat in the main channel, with one area mapped as southern willow scrub at the upstream end of this reach, near reach SA-4.

Wetlands habitat creation/restoration potential is limited in this reach because of the minimal surface and subsurface water flow in comparison to the width of the channel, as evidenced by the vegetation distribution and density, and native habitat buffers on the southwest side of the channel in this reach. This area scored 19 out of a possible 30 in the wetlands creation evaluation criteria rankings among the reaches determined to have wetlands creation potential within the Study Area. Some of the reasons for the low score are the erosive soil conditions and instability of the existing stream banks. A few areas proposed for stream bank restoration on the southwest side of the channel are in native California sagebrush scrub habitat, and would be impacted by the implementation of stream bank stabilization. Stream bank stabilization on the northeast side of the channel would affect California annual grassland, and potentially some agricultural land. Based on this analysis, a total of approximately 1.3 acres of mulefat scrub creation with a 1.6-acre California sagebrush scrub upland transitional buffer could be achieved in this reach (*Table 6*).

Salt Creek Reach (SA-6)

Reach SA-6 was classified in the HFA as a perennial tributary to the Santa Clara River. It consists of a deeply incised channel, with very steep to vertical side cuts ranging from six feet high to approximately 30 feet high. It is surrounded by primarily agricultural land, and currently supports river wash and alluvial scrub wetland vegetation communities, with occasional patches of mulefat scrub, southern willow scrub, elderberry scrub, tamarisk scrub and arrowweed scrub.

This area scored 20 out of a possible 30 in the wetlands creation evaluation criteria rankings among the reaches determined to have wetlands creation potential within the Study Area. Some

of the reasons for the moderate score are the erosive soil conditions, poor habitat connectivity, instability of the existing stream banks and extensive amount of grading required to achieve goals.

Stream bank stabilization in this reach would be a considerable and complex challenge based on the current conditions of the channel and apparent stormwater flows of significant velocity and volume through this reach. Extensive measures would be required to stabilize current erosion problems and prevent the possibility of future erosion problems. Depending on what is planned for the areas to the north and south of this channel outside of the NRHC SMA, portions of this reach of the Salt Creek Drainage might be a candidate for a buried bank stabilization project, similar to the type of structures being constructed by Newhall Land along sections of the Santa Clara River to protect development projects.

Similar to the other reaches where stream bank stabilization was considered, stream bank stabilization in this reach would require grading the angles of the stream banks back to form more gentle angles, and planting the newly formed stream bank slopes with wetland species to stabilize the slopes and create wetland habitat. Hydrologic modeling would be needed to ensure that the selected design would be adequate for the expected conditions in the channel. The installation of a temporary irrigation system would be needed in order to encourage vegetation establishment in between the annual rainy seasons.

Bank stabilization, as depicted in the hypothetical design on *Figure 7*, would result in the creation of approximately 6.1 acres of wetlands vegetation communities, including 5.2 acres of alluvial scrub and 0.8 acre of mulefat scrub, with a transitional upland buffer of approximately 4.9 acres of California sagebrush scrub (*Table 6*). While bank stabilization work would result in limited wetlands mitigation credit compared to the amount of work required, if this section of the channel is left untreated it will continue to result in significant erosion of the side banks and exacerbate already deteriorating conditions.

5.0 RECOMMENDATIONS

This section provides the mitigation recommendations for slender mariposa lily, California sagebrush scrub, oak trees, and wetlands for the Study Area.

5.1 Slender Mariposa Lily Mitigation Recommendations

The areas classified as having suitability for slender mariposa lily mitigation, which are not within areas already supporting this species, are recommended as priority areas for mitigation

(*Figure 4*). Areas classified as having suitability that already have slender mariposa lily growing in them are recommended for planting of individual corms in locations that have been verified as not containing mariposa lilies. The NRHC SMA and the Salt Creek area provide the vast majority of suitable transplantation areas for slender mariposa lily.

Some of the areas considered suitable for slender mariposa lily mitigation are also considered suitable for California sagebrush scrub restoration. Since slender mariposa lily often occurs within California sagebrush scrub habitat, a slender mariposa lily transplantation program could be accomplished in conjunction with California sagebrush scrub restoration in the same area.

This preliminary analysis should be followed up by a more detailed analysis of the potential transplantation areas during the development of a conceptual mitigation plan. A more detailed analysis should include sampling and testing soils at potential transplantation sites to ensure that appropriate soil conditions are present if soil salvage is not proposed. The conceptual mitigation plan should include a description of the exact methods of transplantation, maintenance, and monitoring guidelines for the transplantation program.

5.2 California sagebrush scrub Mitigation Recommendations

Areas identified as A, B, and C have a priority ranking of 1 for California sagebrush scrub restoration (*Figure 5*). Dudek estimates there are a total of approximately 354 acres of land within Areas A, B and C within the Study Area that would be suitable for California sagebrush scrub restoration. More detailed analysis of the areas would be required to determine the exact acreage suitable for restoration and how much of this acreage is too steep or otherwise constrained. Areas F and G have a priority ranking of 2 and total approximately 181 acres, while Areas D and E have a priority ranking of 3 and total approximately 246 acres. Additionally, because soil mapping was done at a generalized level and conditions vary widely depending on specific soil type, agricultural suitability soil tests should be performed and analyzed before mitigation is undertaken in any area. The test results may help determine specific plant assemblages and will help determine what soil amendments and/or fertilizers may be required, if any, for mitigation to be successful in the allotted time frame. This more detailed analysis would also determine the exact methods of restoration, maintenance, and monitoring that would be employed.

5.3 Oak Mitigation Recommendations

The areas classified suitable for oak mitigation at the vegetation community level include areas mapped with non-native vegetation communities that are adjacent to existing oak vegetation communities (*Figure 6*). Areas considered suitable for planting individual oak trees are

California annual grassland areas adjacent to valley oak savannah and areas mapped as existing oak habitat, but with sparse oak cover. Also, California black walnut could be appropriately planted for mitigation within a portion of the 24 acres considered suitable for coast live oak woodland mitigation.

Some of the areas considered suitable for oak tree mitigation were also considered suitable for slender mariposa lily mitigation (*Section 5.1*), California sagebrush scrub restoration (*Section 5.2*), and wetlands mitigation (*Section 5.4*). Oak mitigation could be appropriately incorporated into these types of mitigation and done in conjunction in some areas.

This preliminary analysis should be followed up by a more detailed analysis of the potential oak tree mitigation areas during the development of a conceptual mitigation plan. Agricultural suitability soil tests should be performed and analyzed before mitigation is undertaken in any area. The test results may help verify that the soil is suitable for oaks and will help determine what soil amendments and/or fertilizers may be required, if any, for mitigation to be successful in the allotted time frame. This more detailed analysis would also determine the exact methods of restoration, maintenance, and monitoring that would be employed.

5.4 Wetlands Mitigation Recommendations

Each of the 17 stream reaches within the Study Area that were evaluated for wetlands mitigation potential in this analysis had potential for wetlands enhancement, wetlands creation/restoration or both. There is flexibility in the types of wetlands vegetation communities and the individual acreage totals of those vegetation communities that could be created within the Study Area. In general, most potential creation/restoration sites that are located on the margins of the existing channels that are tributaries to the Santa Clara River are expected to be more suited to the creation of wetlands vegetation communities that require less water (e.g., mulefat scrub, alluvial scrub and big sagebrush scrub). The Santa Clara River provides greater opportunities for the creation of wetlands vegetation communities such as southern cottonwood-willow riparian forest and southern willow scrub due to the presence of perennial water.

Based on the criteria evaluated above for each reach within the Study Area, and the proposed design described above and depicted in *Figure 7*, the Santa Clara River reaches (SCR-PO SCR-LO-MID, SCR-LO-UPST, SCR-HU 28, SCR-MI, SCR-SA and SCR-LO-DNST) would provide the most suitable wetlands creation/restoration mitigation sites within the Study Area. Stream reaches SA-6, SA-5, SA-3, SA-W1-L, CA, SA-2 and SA-E1-L were also considered to have wetlands creation/restoration potential.

Wetlands enhancement opportunities are also abundant throughout the Study Area. The wetlands enhancement acreage estimate provide in *Table 4* is a very general estimate, and is expected to vary depending on flood conditions and potential expansion or invasion of additional areas by non-native invasive plant species over time. The actual percent cover of non-native invasive plants should be re-evaluated at the time of wetlands enhancement implementation. This estimate is also considered to be a conservative estimate, which is largely affected by the overall estimate of five percent cover that was made for wetlands vegetation communities within the Santa Clara River stream reaches. Actual acreage could vary considerably and detailed mapping of non-native invasive plants within the Santa Clara River stream reaches will be needed to refine the estimate.

If wetlands enhancement is implemented, a comprehensive wetlands enhancement program for interconnected reaches within the Study Area is highly recommended. Due to the invasive nature of the species present within the Study Area (e.g., giant reed, salt cedar, tree tobacco, etc.), enhancement in only portions of interconnected reaches would likely be temporary, as upstream or adjacent plant propagules from these invasive plant species are likely to re-invade habitat areas and become established. Ideally, a wetlands enhancement program would be accomplished in conjunction with the wetlands creation/restoration opportunities described in this report to provide a comprehensive treatment of wetland habitats within the Study Area.

As alluded to above, upland mitigation opportunities are often possible in conjunction with wetlands creation/restoration. For example, transitional buffers surrounding several of the proposed wetlands creation/restoration areas could be planted with California sagebrush scrub or coast live oak woodland to gain upland mitigation credit and to improve the overall functions and values of the system. Further, mitigation for impacts to mainland (holly-leaf) cherry (*Prunus illicifolia* ssp. *ilicifolia*), if needed, could be accomplished by incorporating this species into planting palettes for vegetation communities along the margins of wetlands creation/restoration areas. Comprehensive mitigation planning is recommended in order to both meet the mitigation needs for the project, and to provide the best restoration scenarios for functional, sustainable habitat.

This analysis is a generalized evaluation of wetlands mitigation suitability. Site specific studies are recommended prior to implementation of any of the ideas presented in this report. Due to the highly dynamic nature of the stream reaches evaluated within the Study Area, implementation of wetlands creation/restoration sites could be subject to extreme flow volumes and velocities, resulting in loss of restored areas. Detailed soils analyses, hydrologic studies, ground water studies, etc. should be conducted to ensure that the proposed mitigation design is adequate for potential conditions.

5.5 Specific Area Mitigation Recommendations

Figure 8 combines all of the various potential mitigation areas and prioritizes them into one comprehensive map based on current anticipated project acreage needs. Some potential mitigation areas could be used for more than one purpose and *Figure 8* depicts which species or habitat types were prioritized for areas with multiple mitigation possibilities. These choices were based on anticipated acreage needs for the various habitat types or individual species mitigation needs. Results of the combined mitigation analysis segregated by preserve area are included in *Table 8*.

TABLE 8
Combined Mitigation Acreage Estimate

Mitigation Type	NRHC SMA (Acres)	Salt Creek (Acres)	River Corridor (Acres)	Total (Acres)
Slender Mariposa Lily	249	168	--	417
Slender Mariposa Lily and California Sagebrush Scrub	52	35	--	87
California Sagebrush Scrub	354	115	1	470
Oaks				
Individual Trees	97	92	--	189
Coast Live Oak Woodland	2	8	1	11
Valley Oak Savannah	21	66	--	87
Valley Oak Woodland	0.4	--	--	0.4
Subtotal	120.4	166	1	287.4
Wetlands Enhancement	5.33	5.37	41.37	52.07
Wetlands Creation	3.49	15.63	45.50	64.62
Total	784.22	505.00	88.87	1,378.09

All of these acreages depicted in *Figure 8* and listed in *Table 8* are approximate and could change after more detailed and specific site investigations that are beyond the scope of this overview analysis. Detailed soils type and depth analyses, hydrologic studies, ground water studies, etc. should be conducted to ensure that the proposed mitigation designs are adequate for actual site conditions.

6.0 ACKNOWLEDGMENTS

Andy Thomson, Doug Gettinger, Marc Doalson and Mike Sweesy contributed to the preparation of this report, with review by Sherri Miller and staff at Newhall. Mark McGinnis provided graphics and GIS mapping analyses. Yamina Gruebel provided word processing.

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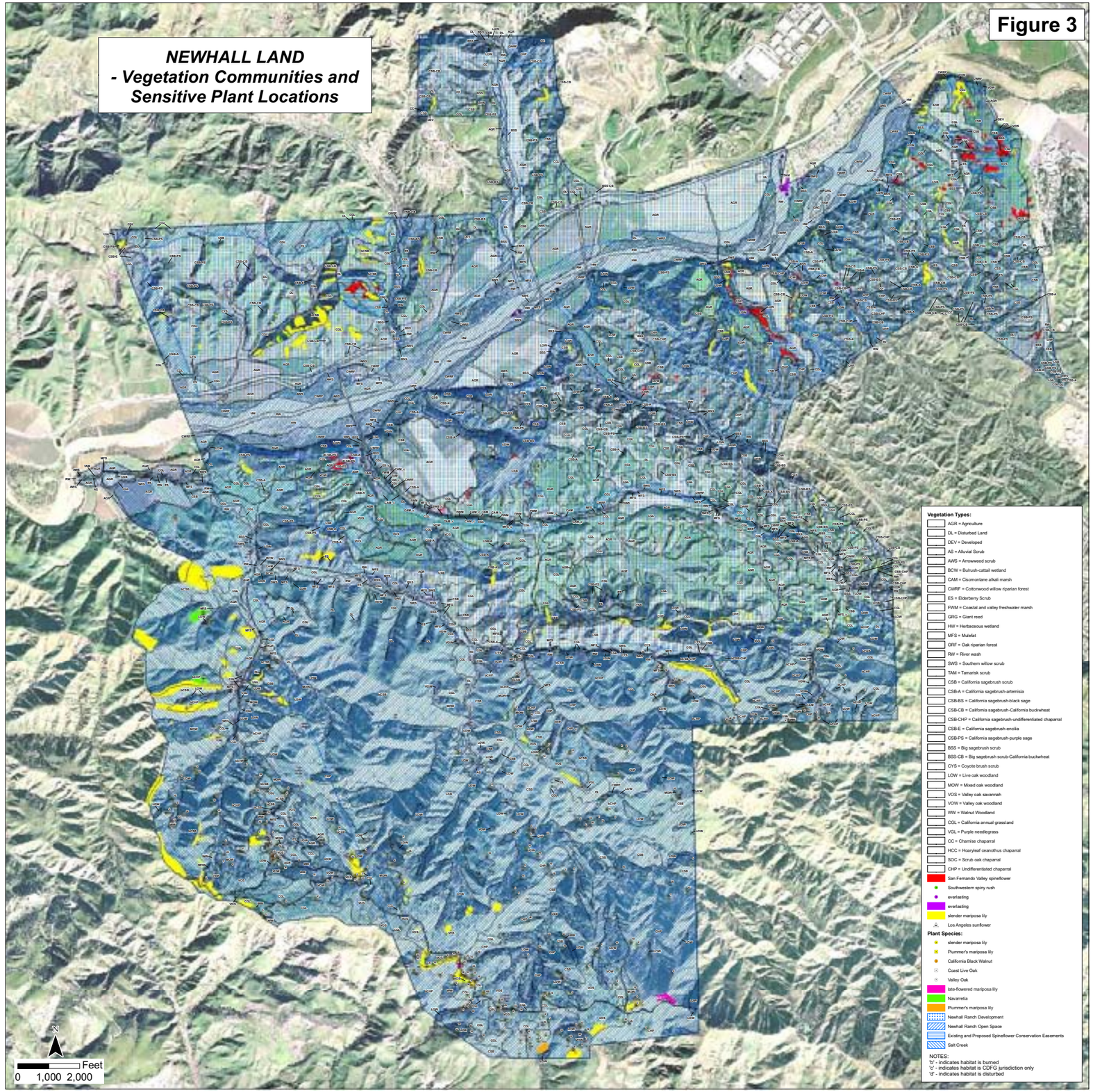
Figure 3
NEWHALL LAND
- Vegetation Communities and
Sensitive Plant Locations
Vegetation Types:
AGR = Agriculture
DL = Disturbed Land
DEV = Developed
AS = Alluvial Scrub
AWS = Arrowweed scrub
BCW = Bulrush-cattail wetland
CAM = Cismontane alkali marsh
CWRF = Cottonwood willow riparian forest
ES = Elderberry Scrub
FWM = Coastal and valley freshwater marsh
GRG = Giant reed
HW = Herbaceous wetland
MFS = Mulefat
ORF = Oak riparian forest
RW = River wash
SWS = Southern willow scrub
TAM = Tamarisk scrub
CSB = California sagebrush scrub
CSB-A = California sagebrush-artemisia
CSB-BS = California sagebrush-black sage
CSB-CB = California sagebrush-California buckwheat
CSB-CHP = California sagebrush-undifferentiated chaparral
CSB-E = California sagebrush-encilia
CSB-PS = California sagebrush-purple sage
BSS = Big sagebrush scrub
BSS-CB = Big sagebrush scrub-California buckwheat
CYS = Coyote brush scrub
LOW = Live oak woodland
MOW = Mixed oak woodland
VOS = Valley oak savannah
VOW = Valley oak woodland
WW = Walnut Woodland
CGL = California annual grassland
VGL = Purple needlegrass
CC = Chamise chaparral
HCC = Hoarylleaf ceanothus chaparral
SOC = Scrub oak chaparral
CHP = Undifferentiated chaparral
San Fernando Valley spineflower
Southwestern spiny rush
everlasting
everlasting
slender mariposa lily
Los Angeles sunflower
Plant Species:
slender mariposa lily
Plummer's mariposa lily
California Black Walnut
Coast Live Oak
Valley Oak
late-flowered mariposa lily
Navarretia
Plummer's mariposa lily
Newhall Ranch Development
Newhall Ranch Open Space
Existing and Proposed Spineflower Conservation Easements
Salt Creek
NOTES:
'b' - indicates habitat is burned
'c' - indicates habitat is CDFG jurisdiction only
'd' - indicates habitat is disturbed
N
Feet
0 1,000 2,000

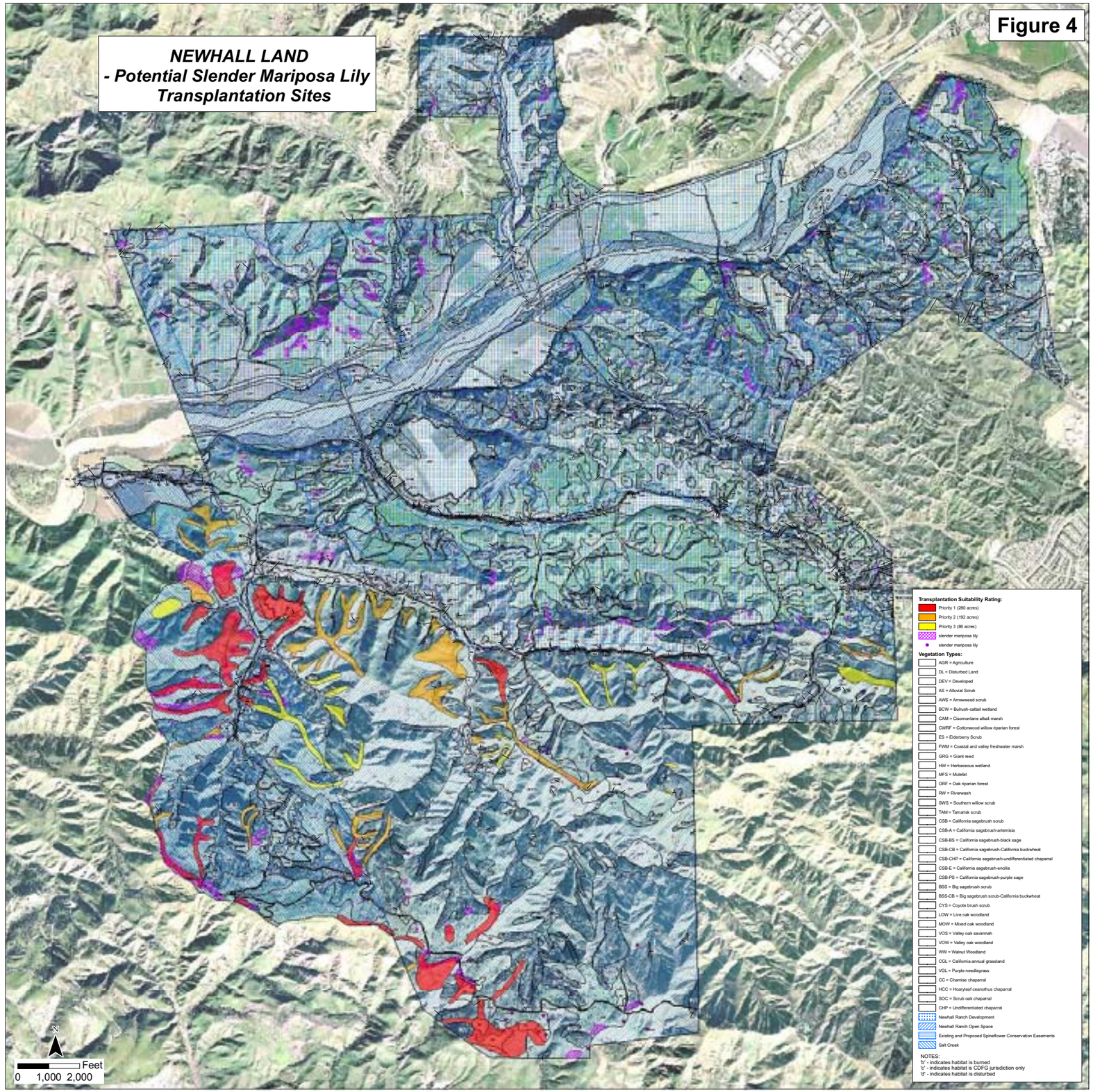
Figure 4
NEWHALL LAND
- Potential Slender Mariposa Lily
Transplantation Sites
Transplantation Suitability Rating:
Priority 1 (280 acres)
Priority 2 (192 acres)
Priority 3 (86 acres)
slender mariposa lily
slender mariposa lily
Vegetation Types:
AGR = Agriculture
DL = Disturbed Land
DEV = Developed
AS = Alluvial Scrub
AWS = Arrowweed scrub
BCW = Bulrush-cattail wetland
CAM = Cismontane alkali marsh
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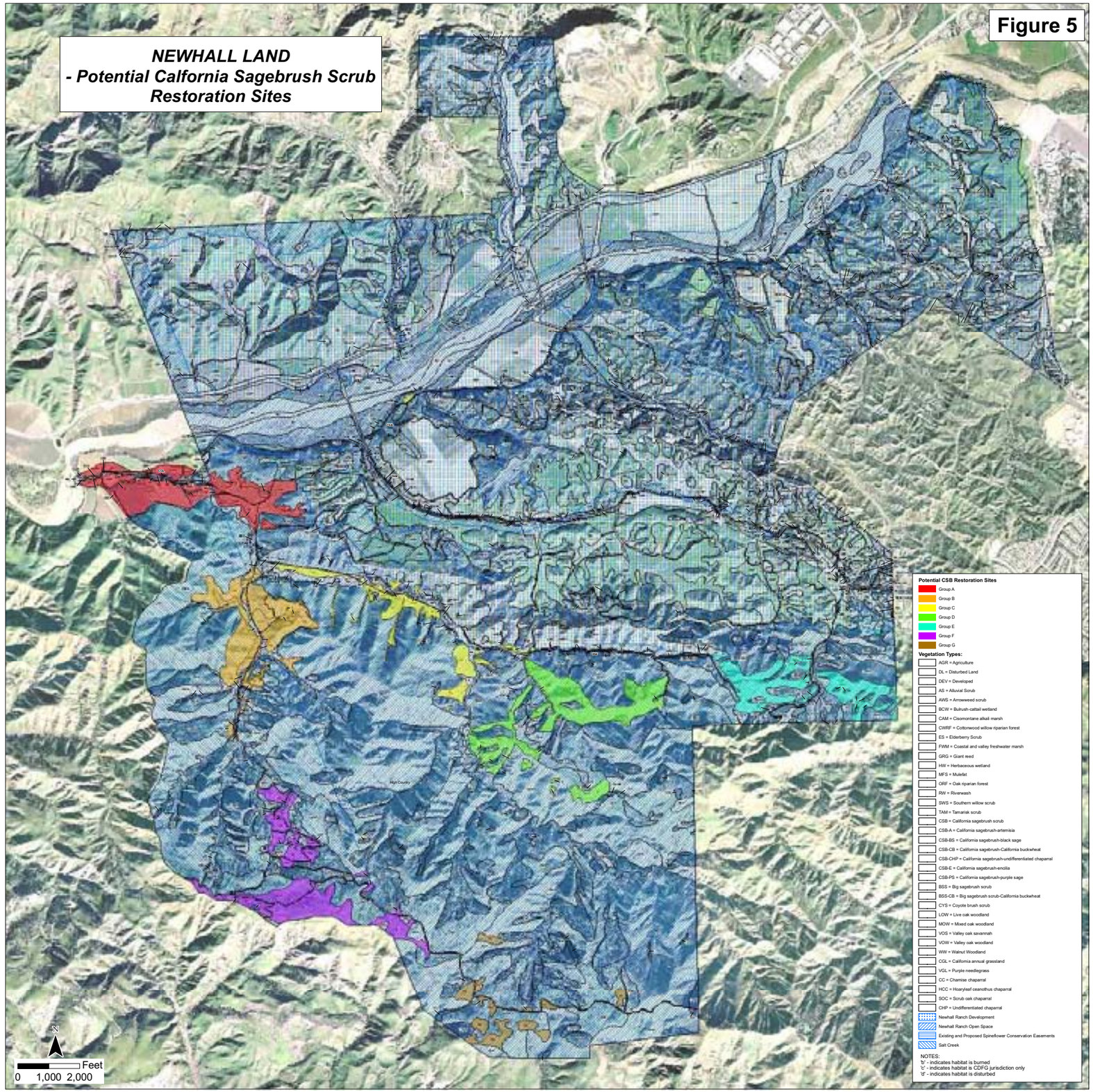
Figure 5
NEWHALL LAND
- Potential Calfornia Sagebrush Scrub
Restoration Sites
Potential CSB Restoration Sites
Group A
Group B
Group C
Group D
Group E
Group F
Group G
Vegetation Types:
AGR = Agriculture
DL = Disturbed Land
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CAM = Cismontane alkali marsh
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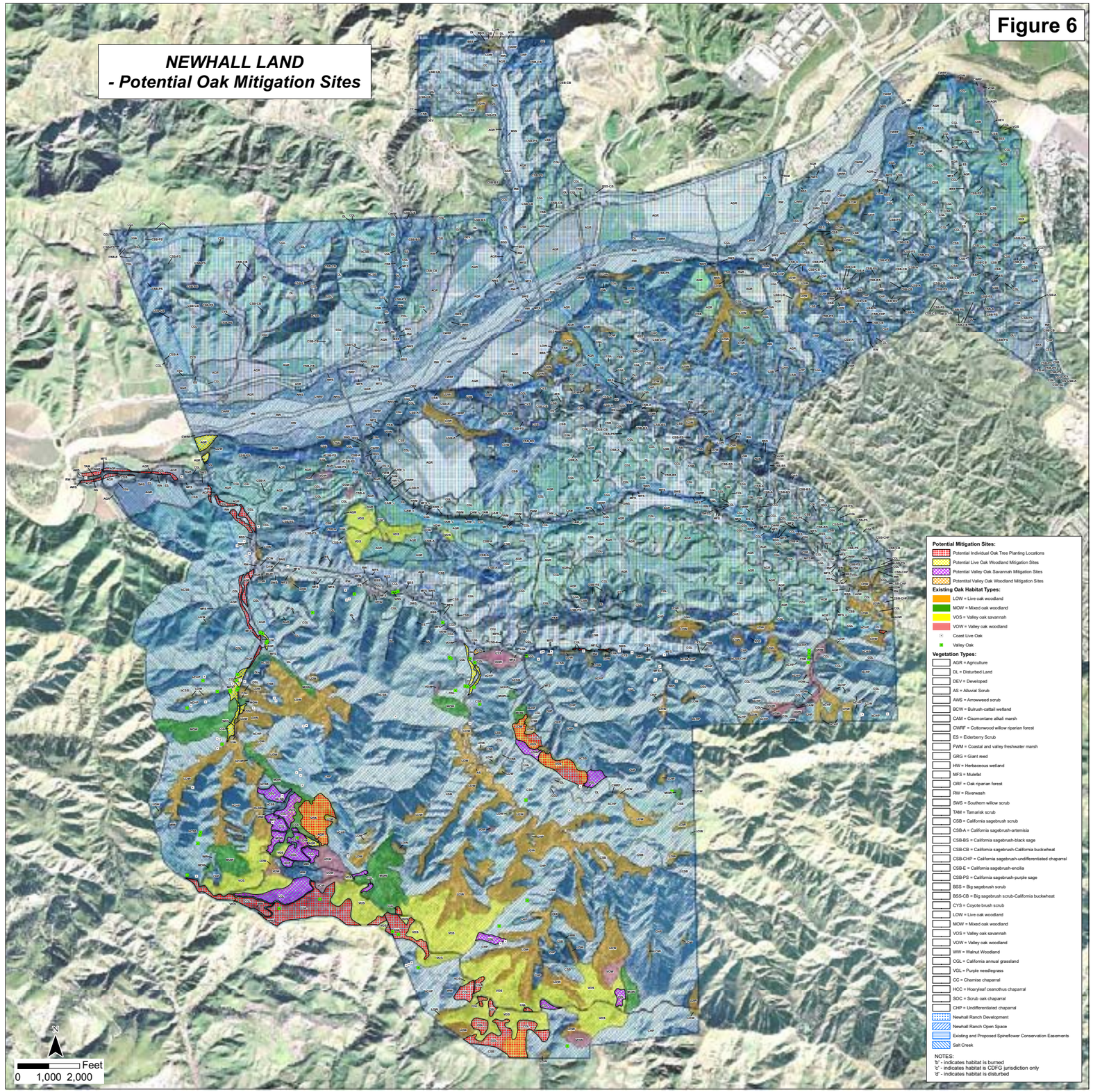
Figure 6
NEWHALL LAND
- Potential Oak Mitigation Sites
Potential Mitigation Sites:
Potential Individual Oak Tree Planting Locations
Potential Live Oak Woodland Mitigation Sites
Potential Valley Oak Savannah Mitigation Sites
Potentital Valley Oak Woodland Mitigation Sites
Existing Oak Habitat Types:
LOW = Live oak woodland
MOW = Mixed oak woodland
VOS = Valley oak savannah
VOW = Valley oak woodland
Coast Live Oak
Valley Oak
Vegetation Types:
AGR = Agriculture
DL = Disturbed Land
DEV = Developed
AS = Alluvial Scrub
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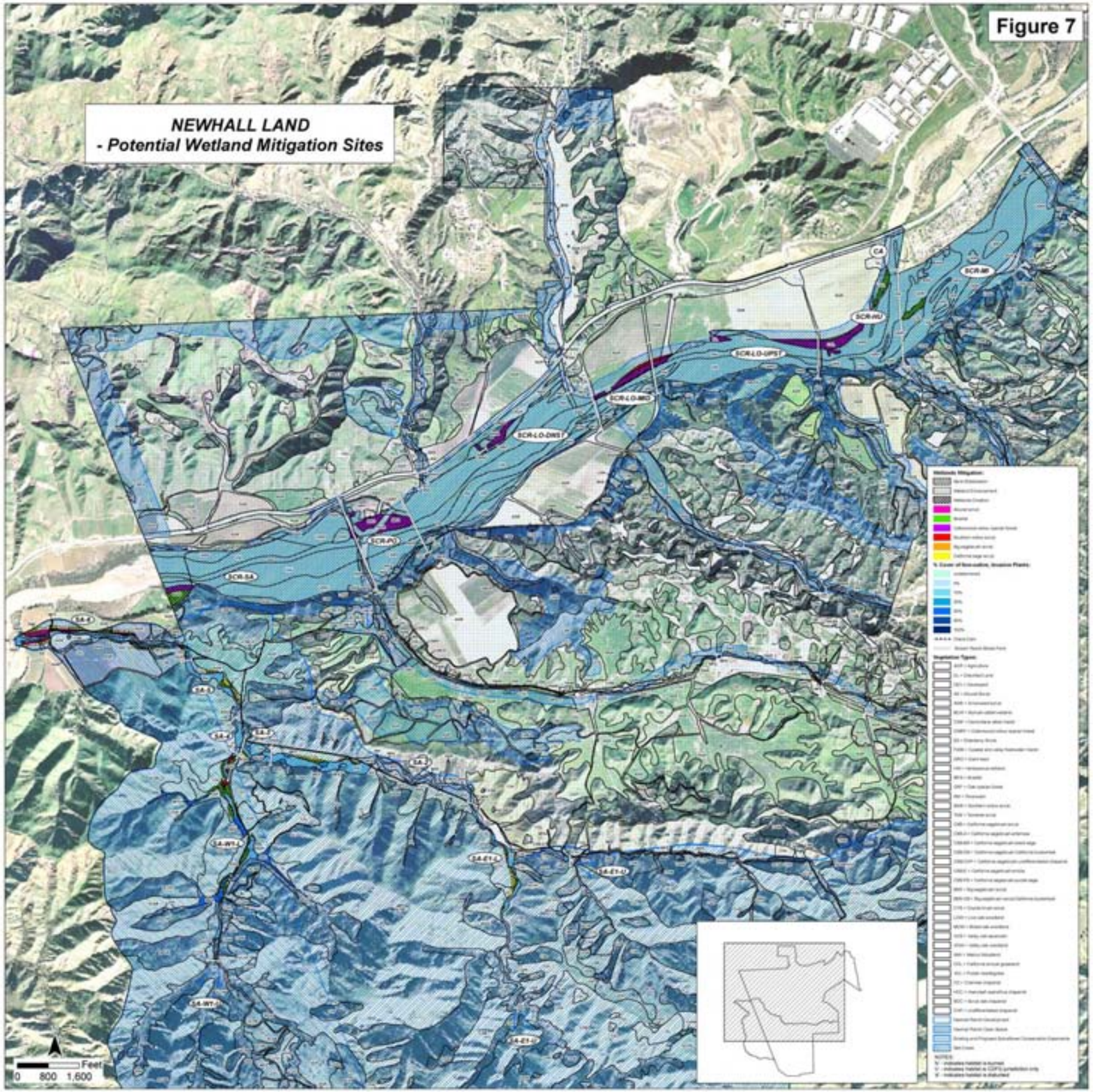
Figure 7
NEWHALL LAND
- Potential Wetland Mitigation Sites
SCR-LO-UPST
SCR-LO-DIST
SCR-PO
SCR-SA
SA-E
SA-I
SA-J
SA-WT-L
SA-E1-L
SA-E1-U
SA-WT-U
SA-E1-I
CA
SCR-MI
SCR-HU
Feet
0 800 1,600

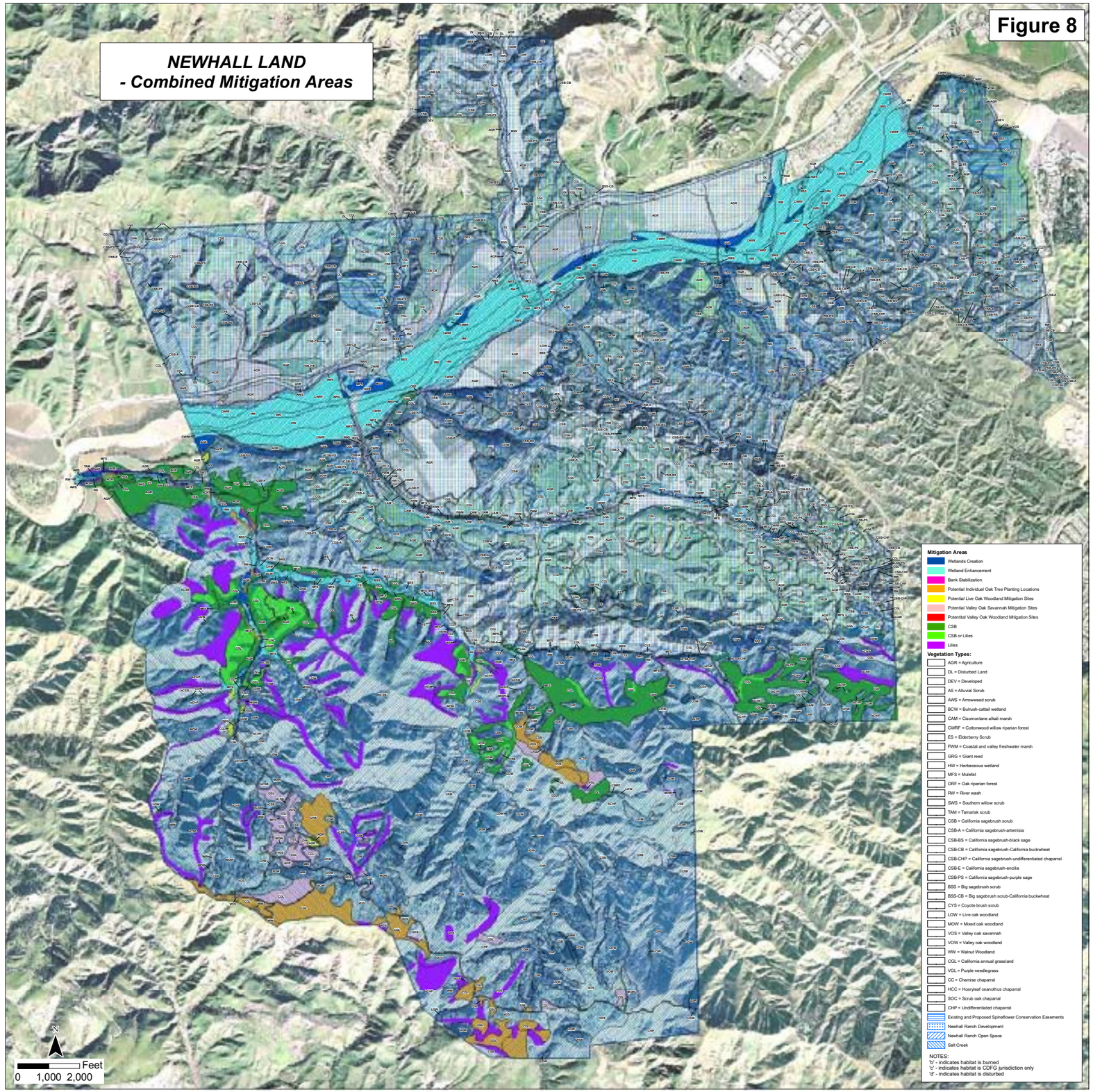
Figure 8
NEWHALL LAND
- Combined Mitigation Areas
Mitigation Areas
Wetlands Creation
Wetland Enhancement
Bank Stabilization
Potential Individual Oak Tree Planting Locations
Potential Live Oak Woodland Mitigation Sites
Potential Valley Oak Savannah Mitigation Sites
Potenitial Valley Oak Woodland Mitigation Sites
CSB
CSB or Lilies
Lilies
Vegetation Types:
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Feet
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Letter report on Focused California Gnatcatcher Surveys
Dudek, July 2007

DUDEK

CORPORATE OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 · T 800.450.1818 · F 760.632.0164

July 9, 2007 3738-123

U.S. Fish and Wildlife Service
Attn: Recovery Permit Coordinator
6010 Hidden Valley Road
Carlsbad, CA 92009

Subject: ***Focused California Gnatcatcher Survey, Landmark Village Project, Los Angeles County, California***

Dear Recovery Permit Coordinator:

This report documents the results of six protocol-level presence/absence surveys for the coastal California gnatcatcher (*Polioptila californica californica*; gnatcatcher) that were conducted for the approximately 1,043.3-acre Landmark Village project area by Dudek in spring 2007. The surveys were conducted in all areas of suitable habitat, (*i.e.*, California sagebrush scrub habitat and sagebrush sub-associations with less than 50% slopes). Approximately 143 acres of California sagebrush scrub habitat and sagebrush sub-associations present onsite were surveyed.

The California gnatcatcher is a federally-listed threatened species and a California Department of Fish and Game (CDFG) species of special concern. It is closely associated with coastal sage scrub habitat and typically occurs below 950 feet elevation and on slopes less than 40%, but gnatcatchers have been observed at elevations greater than 2,000 feet. The species is threatened primarily by loss, degradation, and fragmentation of coastal sage scrub habitat and is also impacted by brown-headed cowbird (*Molothrus ater*) nest parasitism.

LOCATION AND EXISTING CONDITIONS

The 292.6-acre Landmark Village tract map site is located on the Val Verde 7.5-minute U.S. Geological Survey (USGS) quadrangle map (*Figures 1 and 2*), and is in northwestern Los Angeles County, approximately 30 miles northwest of downtown Los Angeles. The site lies on flat terraces above the Santa Clara River. The majority of the site is currently used for agricultural purposes and is subject to agricultural disking. Topography across the site is relatively flat, with elevations ranging from 800 feet to 960 feet above mean sea level (msl). Habitat on the tract map site varies in quality from high biological value in riparian areas associated with the Santa Clara River channel, to highly disturbed habitat such as upland agricultural areas.

To facilitate development of the Landmark Village tract map site, several off-site, project-related components would be implemented on an additional 750.9 acres of land within the boundaries of the approved Specific Plan. The Adobe Canyon borrow site south of the river is characterized by sloping hillsides and adjacent agricultural use. The borrow site is dominated by California sagebrush scrub – black sage, but also includes areas of undifferentiated chaparral, California annual grassland, and coast live oak woodland. Elevations on the borrow site range from approximately 920 feet (near the river) rising to 1,260 feet above msl further south. The Chiquito Canyon grading site is dominated by California annual grassland, California sagebrush scrub, and agricultural/disturbed areas, with smaller amounts of California sagebrush scrub – California buckwheat and California sagebrush scrub – purple sage. Elevations at this off-site grading site range from approximately 970 feet near State Route 126 (SR-126) rising to 1,190 feet above msl further north.

The utility corridor alignment and the water tank site in the Valencia Commerce Center represent disturbed, vacant land containing ruderal vegetation and disturbed/developed uses. Vegetation on the reclaimed water tank site within Chiquito Canyon is dominated by California sagebrush scrub.

The Long Canyon Road Bridge and portions of the buried bank stabilization would be placed on land within the river corridor. Plant communities such as mulefat scrub, river wash, southern cottonwood-willow riparian forest, herbaceous wetlands, and seasonal aquatic habitats dominate these areas.

VEGETATION COMMUNITIES

A total of 17 plant communities (and associated alliances) and two existing land use areas (active agriculture and developed areas) were identified and characterized as occurring on the project site during the field investigations. Ten of these plant communities (and associated alliances), including California annual grassland, southern cottonwood-willow riparian forest, coast live oak woodland, California sagebrush scrub, undifferentiated chaparral, arrow weed scrub, mulefat scrub, southern willow scrub, southern coast live oak riparian forest, and big sagebrush scrub correspond with CDFG's *Vegetation Classification and Mapping Program, List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database.* The remaining six described communities, disturbed land, herbaceous wetlands, California sagebrush scrub/undifferentiated chaparral, open channel – developed, river wash, and alluvial scrub, do not fit a defined plant community classification and, therefore, are defined by their dominant plant species. The plant communities and land uses mapped on the project site are shown on *Figure 3*; their acreages are shown in *Table 1*.

TABLE 1
VEGETATION COMMUNITIES AND LAND COVER TYPES

VEGETATION COMMUNITY/ LAND COVER TYPE	MAP SYMBOL	ACREAGE
Agriculture	AGR	404.92
Alluvial Scrub	AS	0.47
Arrow Weed Scrub	AWS	6.93
Big Sagebrush Scrub	BSS	11.59
Big Sagebrush Scrub - California Buckwheat	CB-BSS	0.54
Chamise Chaparral	CC	2.84
California Annual Grassland	CGL	49.95
Undifferentiated Chaparral	CHP	48.64
Southern Coast Live Oak Riparian Forest	CLORF	0.64
Coast Live Oak Woodland	CLOW	1.81
California Sagebrush Scrub	CSB	84.57
California Sagebrush Scrub – Artemisia californica	CSB-A	0.42
California Sagebrush Scrub - Black Sage	CSB-BS	5.58
California Sagebrush Scrub – California Buckwheat	CSB-CB	40.93
California Sagebrush Scrub/Undifferentiated Chaparral	CSB-CHP	62.05
California Sagebrush Scrub - Purple Sage	CSB-PS	14.45
Southern Cottonwood/Willow Riparian Forest	CWRF	26.66
Developed	DEV	9.52
Disturbed Land	DL	239.93
Herbaceous Wetlands	HW	2.35
Mulefat Scrub	MFS	10.74
Open Channel developed	OC (DEV)	0.02
River Wash	RW	14.07
Southern Willow Scrub	SWS	3.70
TOTAL		1043.32

Vegetation communities that provide potential habitat for the California gnatcatcher (California sagebrush scrub – *Artemisia californica* dominated, California sagebrush scrub - black sage, California sagebrush scrub – California buckwheat, California sagebrush scrub/undifferentiated, and California sagebrush scrub - purple sage) are described below. There are a total of 208 acres of these vegetation types within the project area; in accordance with the agreements with the USFWS only those areas with less than 50% slope and below 1,800 feet elevation were surveyed, approximately 143 acres.

There are 84.5 acres of California sagebrush scrub on the project site. This community predominantly occurs on gentle to steep hill slopes within the Chiquito Canyon grading site, the water tank sites, and the borrow site, as well as in an isolated area in the northwest portion of the tract map site and within the utility corridor. Dominant native species found in this plant community include California buckwheat (*Eriogonum fasciculatum* var. *foliolosum*) and

California sagebrush (*Artemisia californica*). Other common plants include various sages (*Salvia leucophylla, S. mellifera, S. apiana*), California broom (*Lotus scoparius*), California aster (*Lessingia filaginifolia* var. *filaginifolia*), California encelia (*Encelia californica*), giant wild-rye (*Leymus condensatus*), and chaparral mallow (*Malacothamnus fasciculatus*). The understory generally is sparse and contains native grasses, including foothill needlegrass (*Nassella lepida*) and native herbs such as wishbone bush (*Mirabilis californica*) and morning glory (*Calystegia macrostegia*).

California sagebrush scrub associations were also mapped onsite. Each one is dominated by a particular species that characterizes the association. In some cases, the dominant plant species could be the only species present. These associations are listed below.

- California Sagebrush- Artemisia californica (dominated only by California sagebrush) (32.010.01) – 0.4 acre
- California Sagebrush Scrub-Purple Sage Scrub (32.010.04), including disturbed – 14.5 acres
- California Sagebrush Scrub-Black Sage (modified) – 5.6 acres
- California Sagebrush Scrub-California Buckwheat (modified) – 40.9 acres
- California Sagebrush Scrub-Undifferentiated Chaparral (equal dominance of California sage scrub and chaparral scrub species) (modified from 32.300.00) – 62.0

METHODS

The focused survey for the California gnatcatcher was conducted for the project site between March 17 and June 14, 2007 by Dudek biologists Jeff D. Priest (JDP; permit # TE-840619), Tricia Wotipka (TLW; #TE-840619), Kam Muri (KJM; #TE-051250), Paul Lemons (PL; #TE-051248), and Brock Ortega (BAO; #TE-813545). The survey was conducted following the currently accepted protocol of the U.S. Fish and Wildlife Service, Coastal California Gnatcatcher (*Polioptila californica californica*) Presence/Absence Survey Protocol (July 28, 1997). The survey included the six visits at a minimum of weekly intervals. Partial and complementary surveys were performed on April 17, May 15, 18, 30 and 31 and June 7, 2007. On all other dates the surveys were completed in a single day. Survey routes were arranged to ensure complete coverage of the suitable habitat onsite (*Figures 4 - 6*). Binoculars (7 x 50) were used to aid in detecting and identifying bird species. The weather conditions were within protocol limits as shown in *Table 2* below. A tape of recorded vocalizations was used frequently in order to elicit a response from the species. The tape was played approximately every 50 to 100 feet and when a gnatcatcher was detected, the playing of the tape ceased in order to avoid harassment.

TABLE 2
SURVEY DATES AND CONDITIONS

DATE	HOURS	PERSONNEL	CONDITIONS
4/17/07	0745- 1215	JWP, TLW (NW and NE areas)	0 - 10% cloud cover (cc), wind 0 - 6 miles per hour (mph), 60 – 71° Fahrenheit (F)
5/1/07	0715-1210	KJM, TLW (all areas)	10%-100% cc, wind 0-3 mph, 55-69° F
5/8/07	0630-1130	KJM, BAO (all areas)	0% cc; wind 0-3 mph; 55-81° F
5/15/07	0640 - 1015	KJM (NW and NE areas)	10 – 100% cc; wind 0 – 7 mph; 59- 74° F
5/18/07	0730 - 1230	PL (southern area)	0 – 100% cc; wind 2 – 6 mph; 61- 81° F
5/30/07	0800 - 1300	PL (NW and NE areas)	0% cc; wind 0 – 4 mph; 60- 86° F
5/31/07	0545 -1115	PL (southern area)	0% cc; wind 0 – 4 mph; 50- 75° F
6/7/07	0650 -0945	JDP (southern area)	0% cc; wind 0 – 4 mph; 60- 75° F
6/14/07	0720 - 1040	TLW (NW and NE areas)	0% cc; wind 0 – 4 mph; 70- 85° F
6/14/07	0615 – 1100	PL (southern area)	0% cc; wind 0 – 5 mph; 61- 85° F

RESULTS

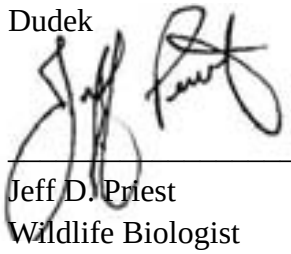
No coastal California gnatcatcher were detected onsite.

Sixty-two species of wildlife were observed during the surveys, comprising two species of reptile, 49 bird species, nine mammal species, and two species of butterfly. A full list of wildlife species observed during the survey is provided in *Appendix A*. Please feel free to contact me at (760) 479-4287 with questions or if you require additional information.

I certify that the information in this survey report and attached exhibits fully and accurately represents my work.

Very truly yours,

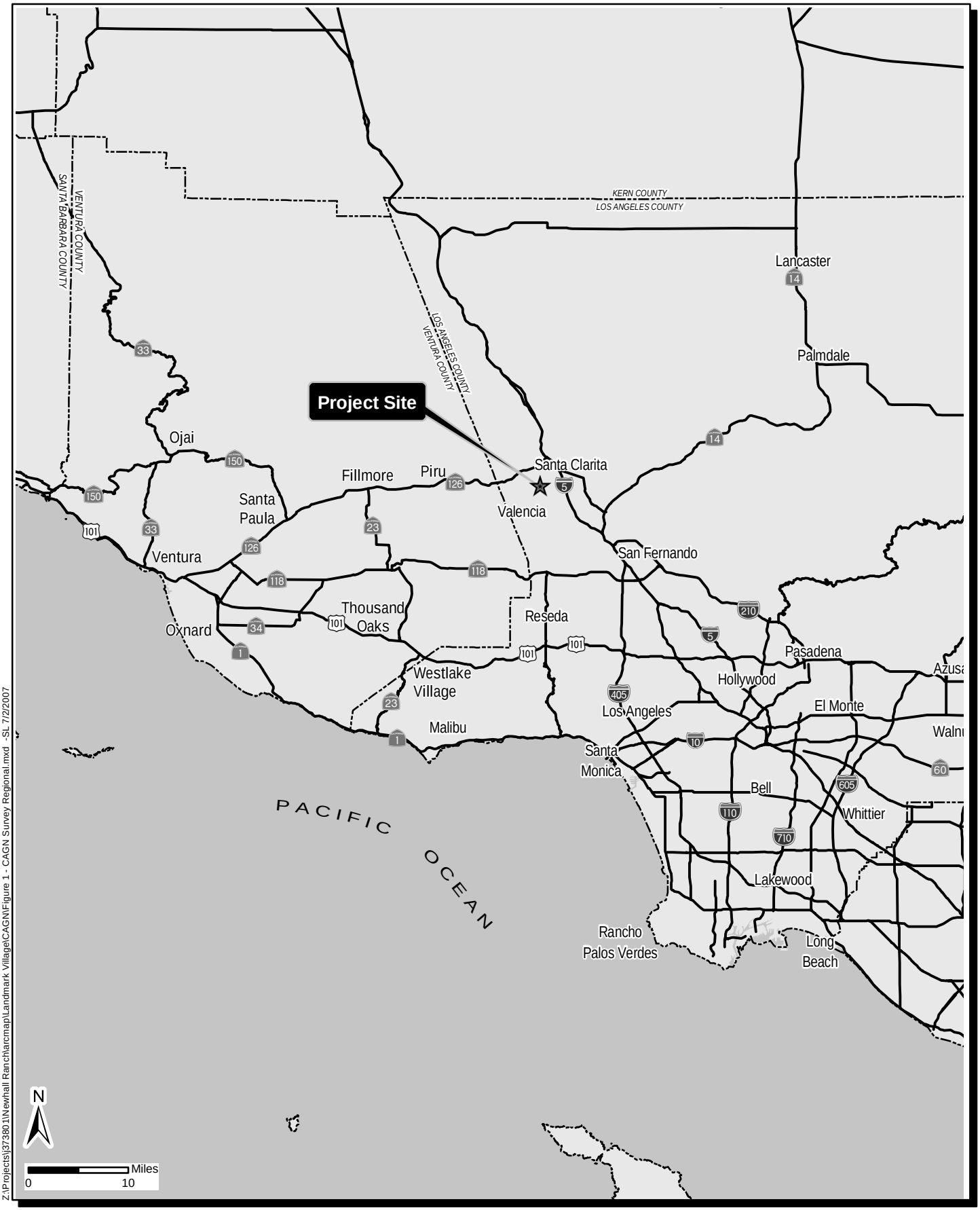
Dudek



Jeff D. Priest
Wildlife Biologist

att: *Figures 1-6*
Appendix A

Cc: *Matt Carpenter, Newhall Land*
Glenn Adamick, Newhall Land
Brock Ortega, Dudek
Kam Muri, Dudek
Tricia Wotipka, Dudek
Paul Lemons, Dudek
Sherri Miller, Dudek



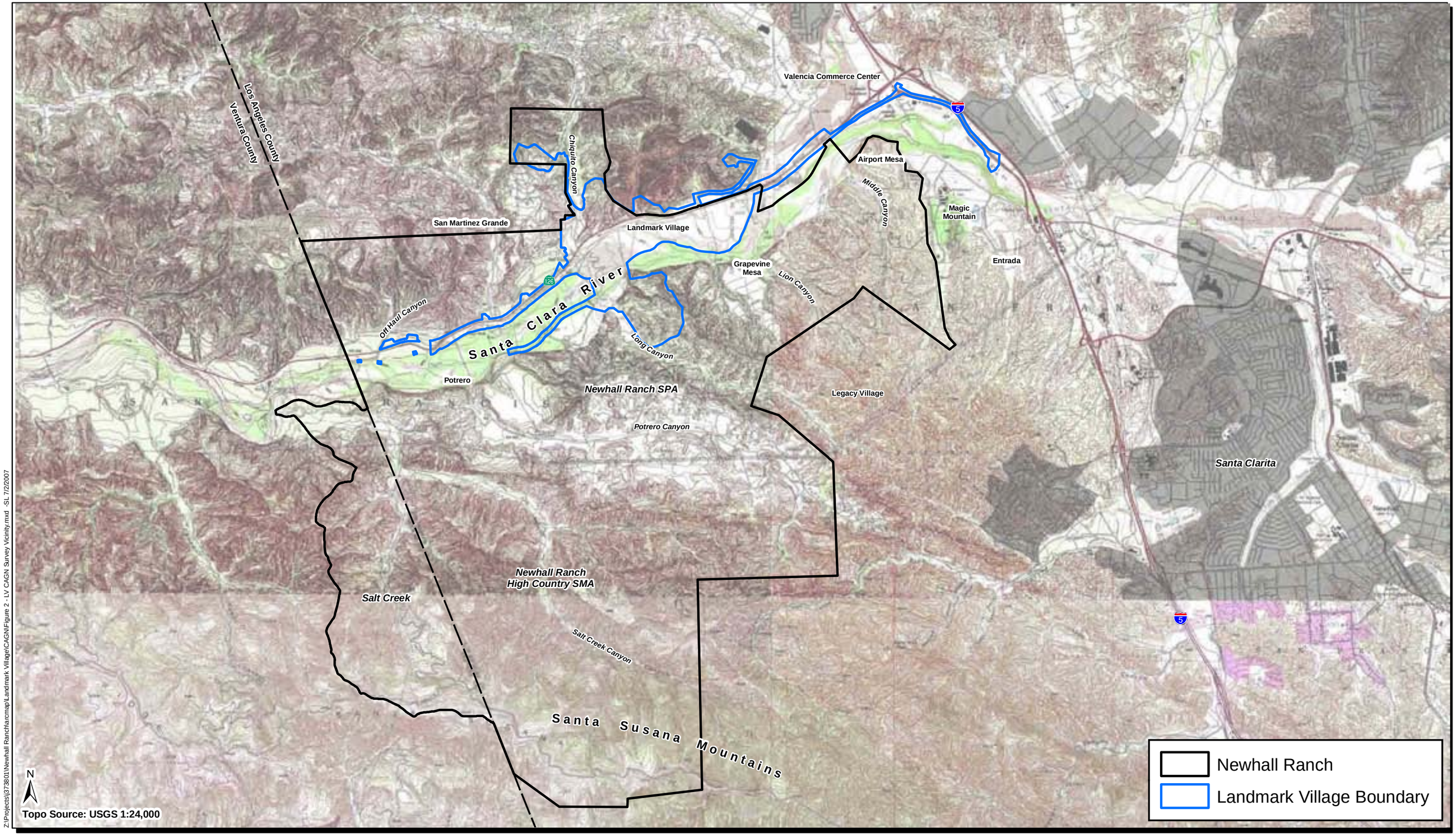
Z:\Projects\j373801\Newhall Ranch\arcmap\Landmark Village\CAGN\Figure 1 - CAGN Survey Regional.mxd -SL 7/2/2007

DUDEK
Santa Barbara GIS Division
621 Chapala St
Santa Barbara, Ca 93101
(805)963-0651

Landmark Village California Gnatcatcher Survey

Regional Map

FIGURE
1



Z:\Projects\j373801\Newhall Ranch\arcmap\Landmark Village\CAGN\Figure 2 - LV CAGN Survey Vicinity.mxd -SL 7/2/2007

DUDEK

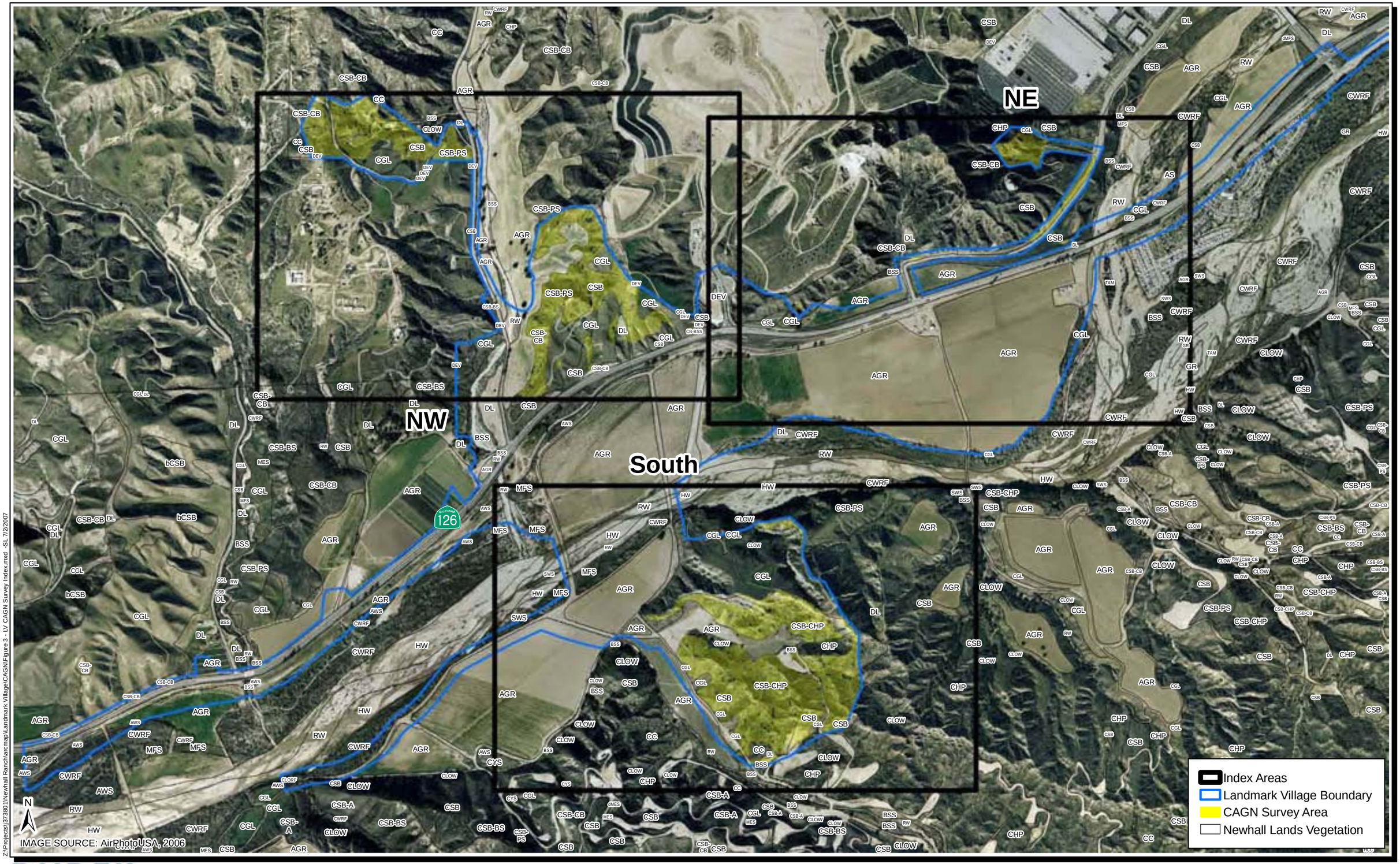
Santa Barbara GIS Division
621 Chapala St
Santa Barbara, Ca 93101
(805)963-0651

0 0.75 1.5 Miles

Landmark Village California Gnatcatcher Survey

Vicinity Map

FIGURE 2



Z:\Projects\373801\Newhall Ranch\arcmap\Landmark Village\CAGN\Figure 3 - LV CAGN Survey Index.mxd SL 7/2/2007

DUDEK
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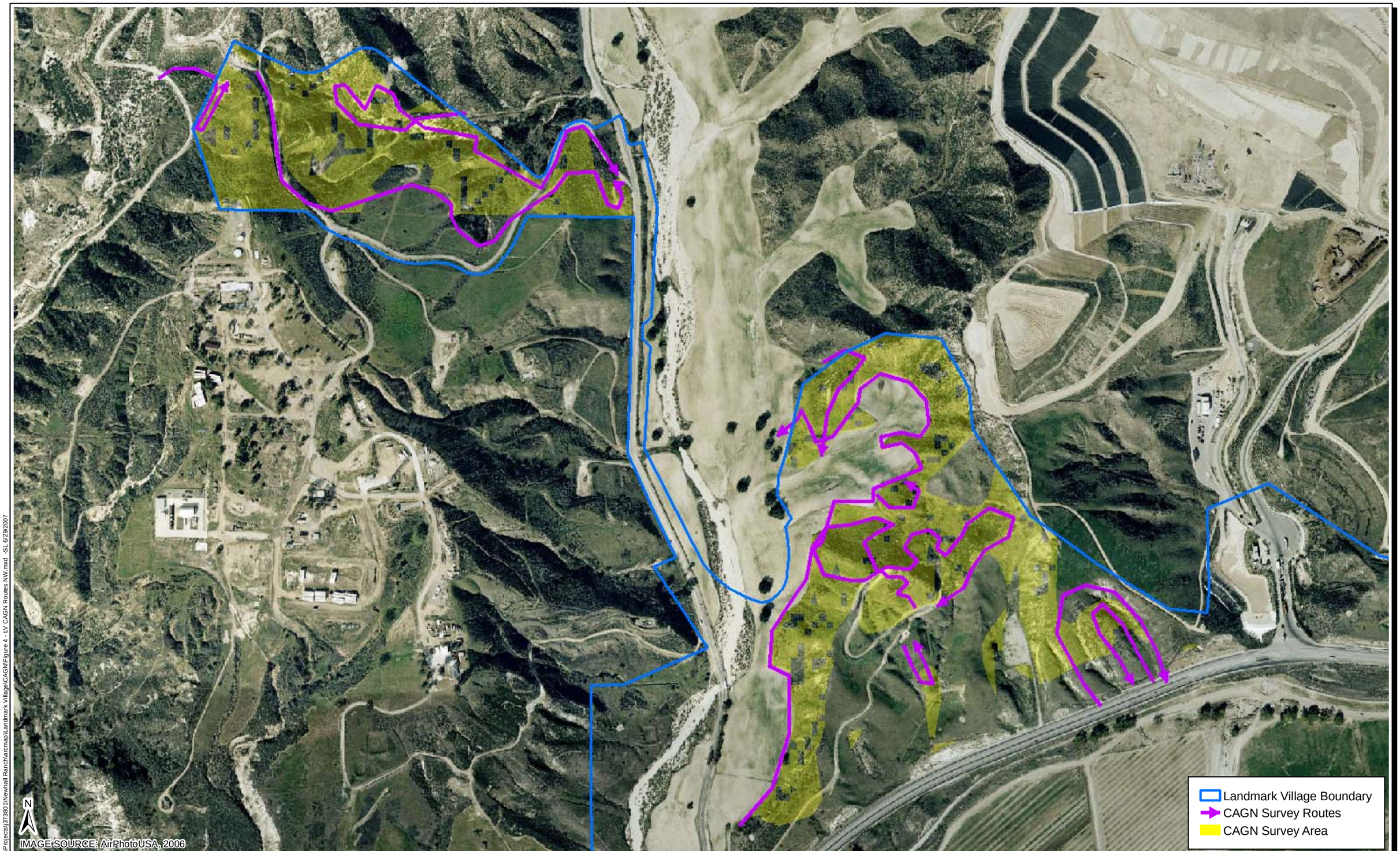
621 Chapala St
Santa Barbara, Ca 93101
(805)963-0651

Miles
0 0.25 0.5

Landmark Village California Gnatcatcher Survey

Landmark Village Index

FIGURE 3



Z:\Projects\373801\Newhall Ranch\arcmap\Landmark Village\CAGN\Figure 4 - LV CAGN Routes NW.mxd SL 6/29/2007

DUDEK

Santa Barbara GIS Division
621 Chapala St
Santa Barbara, Ca 93101
(805)963-0651

0 0.1 0.2 Miles

Landmark Village California Gnatcatcher Survey

Landmark Village NW

FIGURE 4

Z:\Projects\373801\Newhall Ranch\arcmap\Landmark Village\CAGN\Figure 5 - LV CAGN Routes NE.mxd - SL 6/29/2007

DUDEK
Santa Barbara GIS Division
621 Chapala St
Santa Barbara, Ca 93101
(805)963-0651

Miles
0 0.04 0.08

Landmark Village California Gnatcatcher Survey

Landmark Village NE

FIGURE
5

Z:\Projects\373801\Newhall Ranch\arcmap\Landmark Village\CAGN\Figure 6 - LV CAGN Routes S.mxd - SL 6/29/2007

DUDEK

Santa Barbara GIS Division
621 Chapala St
Santa Barbara, Ca 93101
(805)963-0651

Miles
0 0.07 0.14

Landmark Village California Gnatcatcher Survey

Landmark Village S

FIGURE
6

APPENDIX A

Wildlife Species Observed During California Gnatcatcher Surveys Landmark Village Project

APPENDIX A

WILDLIFE SPECIES -VERTEBRATES

REPTILES

IGUANIDAE - IGUANID LIZARDS

Sceloporus occidentalis - western fence lizard
Uta stansburiana - side-blotched lizard

BIRDS

CATHARTIDAE - NEW WORLD VULTURES

Cathartes aura - turkey vulture

ACCIPITRIDAE - HAWKS

Accipiter cooperii - Cooper's hawk
Buteo jamaicensis - red-tailed hawk

FALCONIDAE - FALCONS

Falco sparverius - American kestrel

PHASIANIDAE - PHEASANTS & QUAILS

Callipepla californica - California quail

CHARADRIIDAE - PLOVERS

Charadrius vociferus - killdeer

LARIDAE - GULLS & TERNS

Larus sp.- gull

COLUMBIDAE - PIGEONS & DOVES

* *Columba livia* - rock dove
Zenaida macroura - mourning dove

CUCULIDAE - CUCKOOS & ROADRUNNERS

Geococcyx californianus - greater roadrunner

TYTONIDAE - BARN OWLS

Tyto alba - barn owl

APPENDIX A

CAPRIMULGIDAE - GOATSUCKERS

Chordeiles acutipennis - lesser nighthawk

TROCHILIDAE - HUMMINGBIRDS

Calypte anna - Anna's hummingbird
Calypte costae - Costa's hummingbird

PICIDAE - WOODPECKERS

Colaptes auratus - northern flicker
Picoides nuttallii - Nuttall's woodpecker

TYRANNIDAE - TYRANT FLYCATCHERS

Myiarchus cinerascens - ash-throated flycatcher
Sayornis nigricans - black phoebe
Tyrannus vociferans - Cassin's kingbird

ALAUDIDAE - LARKS

Eremophila alpestris - horned lark

HIRUNDINIDAE - SWALLOWS

Petrochelidon pyrrhonota - cliff swallow
Stelgidopteryx serripennis - northern rough-winged swallow
Tachycineta sp. - swallow

CORVIDAE - JAYS & CROWS

Aphelocoma californica - western scrub-jay
Corvus brachyrhynchos - American crow
Corvus corax - common raven

PARIDAE - TITMICE

Baeolophus inornatus - oak titmouse

AEGITHALIDAE - BUSHTITS

Psaltriparus minimus - bushtit

TROGLODYTIDAE - WRENS

Thryomanes bewickii - Bewick's wren

TIMALIIDAE - LAUGHINGTHRUSH AND WRENTIT

Chamaea fasciata - wrentit

MIMIDAE - THRASHERS

Toxostoma redivivum - California thrasher

PTILOGONATIDAE - SILKY-FLYCATCHERS

Phainopepla nitens - phainopepla

VIREONIDAE - VIREOS

Vireo gilvus - warbling vireo

PARULIDAE - WOOD WARBLERS

Dendroica coronata - yellow-rumped warbler
Geothlypis trichas - common yellowthroat
Icteria virens - yellow-breasted chat
Wilsonia pusilla - Wilson's warbler

EMBERIZIDAE - BUNTINGS & SPARROWS

Melospiza melodia - song sparrow
Pipilo crissalis - California towhee
Pipilo maculatus - spotted towhee
Zonotrichia leucophrys - white-crowned sparrow

CARDINALIDAE - CARDINALS AND GROSBEAKS

Passerina caerulea - blue grosbeak

ICTERIDAE - BLACKBIRDS & ORIOLES

Agelaius phoeniceus - red-winged blackbird
Euphagus cyanocephalus - Brewer's blackbird
Icterus cucullatus - hooded oriole
Icterus bullockii - Bullock’s oriole
Molothrus ater - brown-headed cowbird

FRINGILLIDAE - FINCHES

Carpodacus mexicanus - house finch
Carduelis psaltria - lesser goldfinch

APPENDIX A

MAMMALS

LEPORIDAE - HARES & RABBITS

Sylvilagus bachmani - brush rabbit
Sylvilagus audubonii - desert cottontail

SCIURIDAE - SQUIRRELS

Spermophilus beecheyi - California ground squirrel

GEOMYIDAE - POCKET GOPHERS

Thomomys bottae - Botta's pocket gopher

MURIDAE - RATS & MICE

Neotoma sp. - woodrat

CANIDAE - WOLVES & FOXES

Canis latrans - coyote

MUSTELIDAE - WEASELS, SKUNKS, & OTTERS

Mephitis mephitis - striped skunk

FELIDAE - CATS

Felis concolor - mountain lion
Lynx rufus - bobcat

CERVIDAE - DEERS

Odocoileus hemionus - mule deer

WILDLIFE SPECIES - INVERTEBRATES

BUTTERFLIES AND MOTHS

PAPILIONIDAE - SWALLOWTAILS

Papilio rutulus - tiger swallowtail

RIODINIDAE - METALMARKS

Apodemia mormo virgulti - Behr's metalmark

* signifies introduced (non-native) species

Memorandum from Dr. Thomas R. Haglund,
San Marino Environmental Associates,
to Mr. Lee Stark, February 4, 2003

SMEA
San Marino Environmental Associates

560 South Greenwood Avenue
San Marino, California 91108
(626) 792-2382 fax 792-8233

Memo

To: Mr. Lee Stark, Los Angeles County Regional Planning

From: Dr. Thomas R. Haglund, Principal Senior Scientist

Date: Feb. 4, 2003

Re: Comments on Newhall Ranch Specific Plan, Project #94087

My principal concerns with the Newhall Ranch project, as proposed in the Draft Additional Analysis, relate to impacts on the fauna and flora of Santa Clara River. The potential to negatively impact, and perhaps eliminate the unarmored threespine stickleback, UTS, (*Gasterosteus aculeatus williamsoni*, a Federal Endangered Species) is particularly troubling.

The sensitive biota of the river, including the UTS, arroyo toad, least Bell's vireo etc, requires a habitat that is produced by a meandering stream. Meandering streams have a variety of shallow slow flow habitats, as well as, areas of faster flow, and during flooding overbank habitat is formed. A well-developed riparian corridor is essential to the birds, but is also important to the fish because it provides a refugium during high flows and its ecotonal nature increases productivity of the aquatic habitat. The sensitive aquatic species require good water quality; water free of sediments and chemical pollutants. The project documents do not provide adequate evidence that these conditions will be maintained if the project is implemented. 1

The installation of buried and other bank stabilization will destroy the riparian vegetation upon which some species (birds, insects and others) depend. Revegetation at best takes many years to produce the mature plant community that supports these organisms, and recent studies show that revegetation efforts, even if they succeed in restoring some of the ecosystem structure fail to restore ecosystem functions. One reason for this failure is that the root systems of willows, mule fat and other vegetation hold the soil in place, and these root systems take many years, perhaps hundreds of years, to develop. Even when the above ground vegetation is flattened or removed by floods, the roots resprout rapidly. The proposed bank stabilization will destroy this root system for many miles of riverbank area. Revegetation cannot replace it, and the soil will be much more vulnerable to erosion. This will in turn destroy the remaining vegetation and what ever has developed, and greatly increase sediment in the river. This sediment is particularly harmful to gravel spawning fishes such as the Santa Ana sucker, and the southern steelhead, which inhabits the river further downstream, and to the bottom nesting UTS. Sediment smothers the eggs and nests of the UTS. Additional downstream impacts of sediment and other water quality parameters are inadequately addressed. 2 3

Furthermore, revegetation even if successful will tend to become uniform if the dynamic nature of the river is impaired. The diversity of organisms associated with the riparian is maintained by the dynamic nature of the stream, which periodically disrupts patches of riparian habitat so that the corridor is a mosaic of habitats in various stages of ecological succession. Disruption of the disturbance regime will significantly reduce the biodiversity, including sensitive species such as the least Bell's vireo. 4

Also the narrowing of the river's flood plain, which restricts the meandering of the stream, will greatly increase the chances of the organisms being washed out in a flood, and will reduce the amount of habitat for riparian species. This will especially impact the UTS because this species utilizes the slow flowing edgewater, especially for nesting and rearing of young. Additionally, these "rough" edges of stream channels with streamside vegetation and other flow obstructions are particularly important areas because they provide places of refuge during high flows and floods. With the bank stabilization as proposed, this 5

refuge will be eliminated in large parts of the river, so a flood event will more significantly affect UTS populations and many other species in these areas. 5

Maintaining adequate water quality is another important issue that is not adequately addressed. For example, clearly project residents will fertilize their lawns. These nutrients, such as nitrates and phosphates will unavoidably enter the river water. Here they will promote eutrophication and alga growth that will permanently alter the ecological conditions of large parts of the river, making these areas less suitable for native species such as the UTS. 6

It is stated in the Draft Additional Analysis that the river flows will be increased. However, it must be noted that greater flows are not always good for the organisms. One reason is that any environmental variable, such as flow, which exceeds normal tolerances of a species, either highs or lows, can eliminate that species. Higher than normal flow at the wrong time of year, such as the breeding season of the UTS, can eliminate the UTS breeding habitat and the nests and young of that breeding season. If this happens often the species can be eliminated. Annual species such as the stickleback are particularly vulnerable. Another way that increased flows can harm the UTS is because the fish is a distinct subspecies that is separated from another stickleback subspecies downstream in Ventura County (Fillmore) by a dry reach of river. This forms a barrier that prevents the upstream migration of Fillmore sticklebacks, which could interbreed with the UTS and eliminate it as a distinct subspecies. 7

The impacts described above could have a very significant impact on the river biodiversity, yet the project proponents repeatedly make the bold and self-serving statement that project impacts will be "insignificant" without giving any criteria for significance. Clearly, each project impact will impact each species and each habitat differently, so the level of significance will have to be clearly stated for each case if any credibility is to be given to these conclusions. This is simply not done. 8 Also, on page 2.3-87 it is stated "The proposed Specific Plan would cause an increase in flows, water velocities, water depth; changes in sediment transport; changes in the flooded areas....the populations of species within and adjacent to the river corridor would not be significantly affected." Also, on the same page it is stated "....no significant impacts to the biological resources are anticipated due to the bank stabilization, bridges, or changes in the flood plain." The project proponents provide no credible support for these self-serving statements of insignificance. This project should be rejected until a full and credible analysis of impacts to biological resources is presented. Such broad, far-reaching ecological alteration cannot be considered insignificant without substantial high quality science to support this contention, and clearly delineated levels of significance explicitly stated. Appropriate studies and analyses need to be performed in order to demonstrate "insignificance", and if the project impacts are significant, then the project must be redesigned to reduce those impacts, and mitigate for any impacts that remain. 9

Kern County Superior Court Ruling
on Motion to Discharge Peremptory Writ, October 22, 2003

FILE COPY

SUPERIOR COURT OF CALIFORNIA
METROPOLITAN DIVISION
METROPOLITAN DIVISION
1415 TRUXTUN AVENUE, BAKERSFIELD, CA 93301

DATE: OCTOBER 22, 2003 **COURT MET AT:** 8:00 AM DEPARTMENT 9

PRESENT: HON: ROGER D RANDALL , JUDGE **CLERK:** SHELLEY COFFEY/ SC

REPORTER: NONE **BAILIFF:** NONE

TITLE:	COUNSEL:
COUNTY OF LOS ANGELES THE COUNTY OF LOS ANGELES THE BOARD OF SUPERV VS DISTRICT UNITED WATER CONSERVATION	MARK J DILLON
POLITICAL SUBDIVISION COUNTY OF LOS ANGELES A THE COUNTY OF LOS ANGELES THE BOARD OF SUPERV	
REAL PTY INTRST ATTORNEY REAL PTY INTRST ATTORNEY	LLOYD W PELLMAN

CASE NUMBER: S-1500-CV-239324, RDR

NATURE OF PROCEEDINGS: RULING.

RULING ON MOTION TO DISCHARGE PEREMPTORY WRIT.

THE COURT'S RULING WITH REGARDS TO THE MATTER SUBMITTED ON 10/14/2003 IS ATTACHED HERETO AND MADE A PART HEREOF.

MOTION GRANTED.

THE WRIT IS DISCHARGED.

COPY OF MINUTE ORDER MAILED TO COUNSEL THIS DATE.

RULING ON MOTION TO DISCHARGE PEREMPTORY WRIT

In this case the Court has reviewed and signed the stipulation between Ventura County, etc., et al., and the County of Los Angeles and Real Party in Interest, which resolved the concerns raised by those Petitioners. Consequently, the issues remaining to be decided involve those raised by the Environmental Group Petitioners in their opposition to the Return to Peremptory Writ of Mandate.

The Court has read the memoranda submitted by both sides, has considered the oral arguments advanced in court on October 14, and has reviewed the Administrative Record insofar as it is relevant to the issues before it. Being so informed, it is prepared to rule on the contentions advanced in the opposition memorandum.

I.

DID THE ADDITIONAL ANALYSIS ANSWER FULLY THE COURT'S CONCERNS REGARDING THE PROJECT'S FLOODPLAIN MODIFICATIONS?

In ordering the issuance of the writ of mandate herein, the Court ordered Respondents to "...address the issue of the Project's adverse impacts on the biological resources of the Santa Clara River Corridor associated with channelization and bank hardening." Petitioners concede that the Additional Analysis (hereafter AA) now before the court provides "considerably more detail," but contend the analysis fails in two significant regards: first because it concentrates on an engineering approach to biological impacts, and is thus too narrow; second, because it fails to address concerns expressed that increased downstream flow associated with the development could further endanger the unarmored threespined stickleback.

A DID THE AA INADEQUATELY EVALUATE THE ULTIMATE BIOLOGICAL EFFECTS OF FLOODPLAIN MODIFICATION?

Petitioners allege the AA is deficient because, while providing a finer analysis of changes in the hydrological condition of the Santa Clara River anticipated under various flood scenarios, with projections of stream velocity increases in the vicinity of bridges and water depth and degradation changes, it does not succeed in extending the engineering projections to conclusions regarding the biological effects of the floodplain modification. They perceive a similar failure with regard to conclusions that floodplain modifications will not "cause significant scouring, sediment deposition, or increased water depth to a degree that would result in a significant impact to biological resources." Finally, while not quarreling with the employment of thresholds of significance in the analysis, they argue the thresholds used are not "fine enough" to document potentially significant impacts to species such as the endangered stickleback.

Respondents argue that in compliance with this Court's previous order a complete floodplain modifications analysis was accomplished, using a two-step approach. It determined "predicted hydraulic conditions" anticipated as a result of the projected

modifications with regard to five criteria. It then considered those conditions as applied to biological resources to determine the extent of "impacts that would occur to such resources." They deny they have simply conducted an engineering study without adequately applying the modeling thus accomplished to anticipated biological impacts.

The Court has carefully reviewed the floodplain modification analysis contained in AR 80: 76819-905. It is satisfied the analysis adequately utilizes engineering and hydrologic modeling to determine the effect of project changes on endangered species and in the process reaches conclusions with documented biological, as well as engineering, input. (See, e.g., 80:76836; 76867)

Petitioners next argue the AA "ignores the variety of other means by which fish and wildlife can be harmed by floodplain modifications," pointing to the criticism by Dr. Thomas Haglund that the analysis should have detailed the project impacts as to each (endangered) species and each habitat, which was not accomplished here. They contend only the habitat preferences of the stickleback and least Bell's vireo are set out. In fact, that is not correct. The analysis also addresses the habitats of the arroyo chub and Santa Ana sucker, the Southwest pond turtle, and the two-striped garter snake, although not in as much detail as to the latter two species.

Petitioners quote Dr. Haglund's concerns that narrowing of the floodplain would restrict the meandering nature of the river and thus increase the chances of flood washout habitat for various species. They also cite to hydrologist George Naugles comments that the Project "does not allow for the natural fluvial processes of the 100-year flood zone silt deposition." They argue in their memorandum and at oral argument that the comments of these experts were largely ignore, or summarily dealt with by reference to the record, and detail those comments of Dr. Haglund which they contend received little or no response from Respondents. In this regard they cite to CEQA Guideline Sec. 15088(b), which requires, inter alia, that "there must be good faith, reasoned analysis in response (to comments). Conclusory statements, unsupported by factual analysis, will not suffice."

Respondents mount a two-pronged defense to this attack. First, they point out that Dr. Haglund provided no factual support for his views. At oral argument they emphasized that Dr. Haglund's remarks are found in a two-page memo, which is wholly conclusionary, and without documented factual support for its allegations. Second, they contend that their ten-page response to Dr. Haglund's comments did address each of the areas of concern he cited in his memo.

The Court has reviewed Dr. Haglund's memo (76:72691-92) and the response to those comments (76:73016-026), and has concluded that the response provided was adequate to meet CEQA Guideline Sec. 15088(b). Petitioner's reliance on *Berkeley Keep Jets over the Bay Comm. V. Board of Port Commr's* (2001) 91 C.A. 4th 1344, 1347, is inapposite. There, in response to public comments, the project proponent chose to misstate the actual position of a CARB official, thus misleading the public. No such error occurred in the present case.

B. DID THE AA FAIL TO CONSIDER THE ADVERSE EFFECTS OF INCREASED DOWNSTREAM FLOWS ON THE UNARMORED THREESPINE STICKLEBACK?

Petitioners contend that, while the AA amply demonstrates that Project changes will increase downstream flows in the river, it does not consider the potential damage to existing species in the area of such increased flows. They cite Dr. Haglund's concern that such increased flows at the wrong time of the year could eliminate stickleback breeding habitat, endangering their nests and their young. He also contended that such increased flows could promote interbreeding with "a related, but unprotected, subspecies that populates a downstream reach of the Santa Clara River near Fillmore."

Respondents argue that, while Dr. Haglund observes that higher than normal water flows, particularly at the wrong time of the year, can have adverse effects on fish, he does not contend that the actual increased flows projected for the Project will result in such occurrences. At oral argument Respondents stated that water flow rates would not be affected by the Project beyond a point three miles downstream, whereas Fillmore (where the other stickleback subspecies dwells) is considerably downstream from that point. [In fact, the AA concludes that it is at four miles downstream that the Project's effect on the flow stops. (See 80:76841 and Table 2.3-8)] In the event, Petitioners did not argue to the contrary that increased flows would continue to the Fillmore reach of the river. Consequently, there is no documentation to substantiate Petitioners' concerns about interbreeding of the various stickleback subspecies.

As to Dr. Haglund's comments regarding timing of increased flows and their potential to damage stickleback nesting sites and impair development of their young, substantial evidence exists in the AA to justify a finding that the actual anticipated increased flows brought about by implementation of the Project will not be sufficient to alter the stickleback habitat.

II.

DOES THE AA FAIL TO ADDRESS SUFFICIENTLY THE PROJECT'S FUNDAMENTAL INCONSISTENCY WITH THE COUNTY GENERAL PLAN POLICIES GOVERNING SIGNIFICANT ECOLOGICAL AREAS?

Petitioners contend that Respondents have not complied with this Court's ruling requiring them "to take action to ensure that the ...Specific Plan is consistent with the General Plan policies of Los Angeles County requiring protection of natural resources in SEA's as those standards apply to SEA 23...." Rather, they allege, the response of Respondents to the order was to add 27 acres to SEA 23, in the meantime removing 25% of the original acreage of the SEA. They argue that consequently the Project continues to violate the General Plan provisions relating to SEA's for three reasons.

A. WAS REDUCTION OF SEA 23'S ACREAGE BY 25% INCONSISTENT WITH GENERAL PLAN POLICIES SEEKING TO PRESERVE SEAS?

Petitioners point out that SEA 23 started with 1290 acres. Originally the Project was slated to reduce that acreage to 819 acres. Having decided to restore some acres, the proposed SEA after the Project was approved would be 975 acres, or a 25% reduction in area. While conceding that the County "might reasonably have...even reduced SEA boundaries to some extent based upon a better assessment of the quality of the habitat....", they contend it cannot do so on such a massive scale as contemplated the Project. This is particularly true where the process brings the SEA boundary adjacent to the river, when it was meant to provide a buffer for the river corridor.

Respondents counter with a two-pronged attack. First they argue that all three points advanced by Petitioners regarding SEA 23 were either not raised by them while they were legally entitled to challenge those matters, or, if so raised, were precluded by this Court's ruling in 2000:

> "Insofar as the Sierra Club petitioners have advanced other arguments concerning the treatment of SEA 23 the Court has reviewed the record and concluded that its arguments are without merit."

Second, addressing the merits of the attack on the reduction in acreage of the SEA they contend that of 355 acres to be removed from the SEA 335 are in agricultural/disturbed condition, 19 comprise non-sensitive habitat, and less than one acre is sensitive habitat. They point out that Petitioners' attack is largely based upon a 1976 SEA study, which the Los Angeles Board of Supervisors did not adopt. Further, the starting point for analysis, they contend, is not the original SEA boundaries, but the Specific Plan approved by the Board in March 1999. Finally, the quote the Board's finding:

> "As shown, the vast majority of land redesignated from SEA 23 to other Specific Plan land use designations consists of existing agricultural or other types of disturbed land. Development on land already disturbed poses no direct impact to the sensitive biological resources found within the existing SEA 23."

While the argument of Respondents regarding the legal preclusion of Petitioners to raise this issue may be well taken, because of the arguably imprecise designation of the location of the 103 acres in the original Administrative Record, the Court has considered the Petitioners' argument on its merits, has reviewed the AA, and has concluded that the Board's findings insofar as they concern removal of certain acreage from the SEA are supported by sufficient evidence and are not inconsistent with the General Plan Policies seeking to preserve SEA's.

B. DOES THE APPLICANT, NEWHALL LAND AND FARMING, SEEK TO TAKE ADVANTAGE OF ITS OWN PRIOR DESTRUCTION OF SEA 23'S RIPARIAN HABITAT?

Petitioners seek to apply the doctrine of unclean hands (Civil Code Sec. 3517) in this litigation by arguing that Real Party in Interest despoiled much of the acreage to be

deleted from SEA 23 after the land was so designated, and now seek to benefit from their own wrong actions.

Respondents again argue Petitioners are legally precluded from raising this argument because they well knew from 1999 on that the Project called for removal of the agricultural/disturbed acreage known as Indian Dunes and the Onion Fields from SEA 23, but did not raise this issue in the initial round of litigation. The Court concurs with Respondents. Further, as Respondents point out, the land in question was zoned A-2 for agricultural purposes, and use of that land for agriculture was not a wrong giving rise to application of the unclean hands doctrine. Indeed, in aid of another point in their memorandum, Petitioners observe that " '...compatible agricultural uses'are allowed in an SEA."

C. WILL A SIGNIFICANT PORTION OF THE BUFFER FOR THE SANTA CLARA RIVER IN SEA 23 BE DESTROYED?

Petitioners argue that the County is allowing Real Party in Interest to greatly reduce the buffer area near the watercourse. While conceding the greatest reductions in the buffer zone will be at Indian Dunes and the Onion Fields, the agricultural/disturbed acreage, they allege that nevertheless such land is important to the survival of endangered species.

Respondents again point out that plans for the Indian Dunes and Onion Fields development, with concomitant reduction of the corridor width, were contained in the original Project footprint, which was part of the record in 1999.

The Court has reviewed the pertinent portions of the original AR and the AA and finds that Petitioners are now precluded from raising this issue.

III

DOES THE ADDITIONAL ANALYSIS FAIL TO DEMONSTRATE THE FEASIBILITY OF USING NEWHALLS AGRICULTURAL WATER FOR THE PROJECT?

With regard to the provision of an adequate water supply for the Project, Petitioners raise two issues. First, they allege there is no demonstration in the record that the agricultural water wells to be used to fill 84% of the Project water needs will provide potable water. Second, they argue the AA fails to account for the additional chloride burden to the river, which may occur when the well water is disinfected with chlorine. They point out the river is already considered an impaired waterway because of existing high levels of chlorine.

Respondents cite to numerous places in the record where water quality analysis was set forth, including testing of the "C-well", the Updated Slade Report, and additional water well quality data from various tests run in 2000-2001. The court has reviewed the pertinent portions of the record and concludes there is substantial evidence contained

therein to justify a finding that the 5 agricultural wells represent a source of potable water for use in the project.

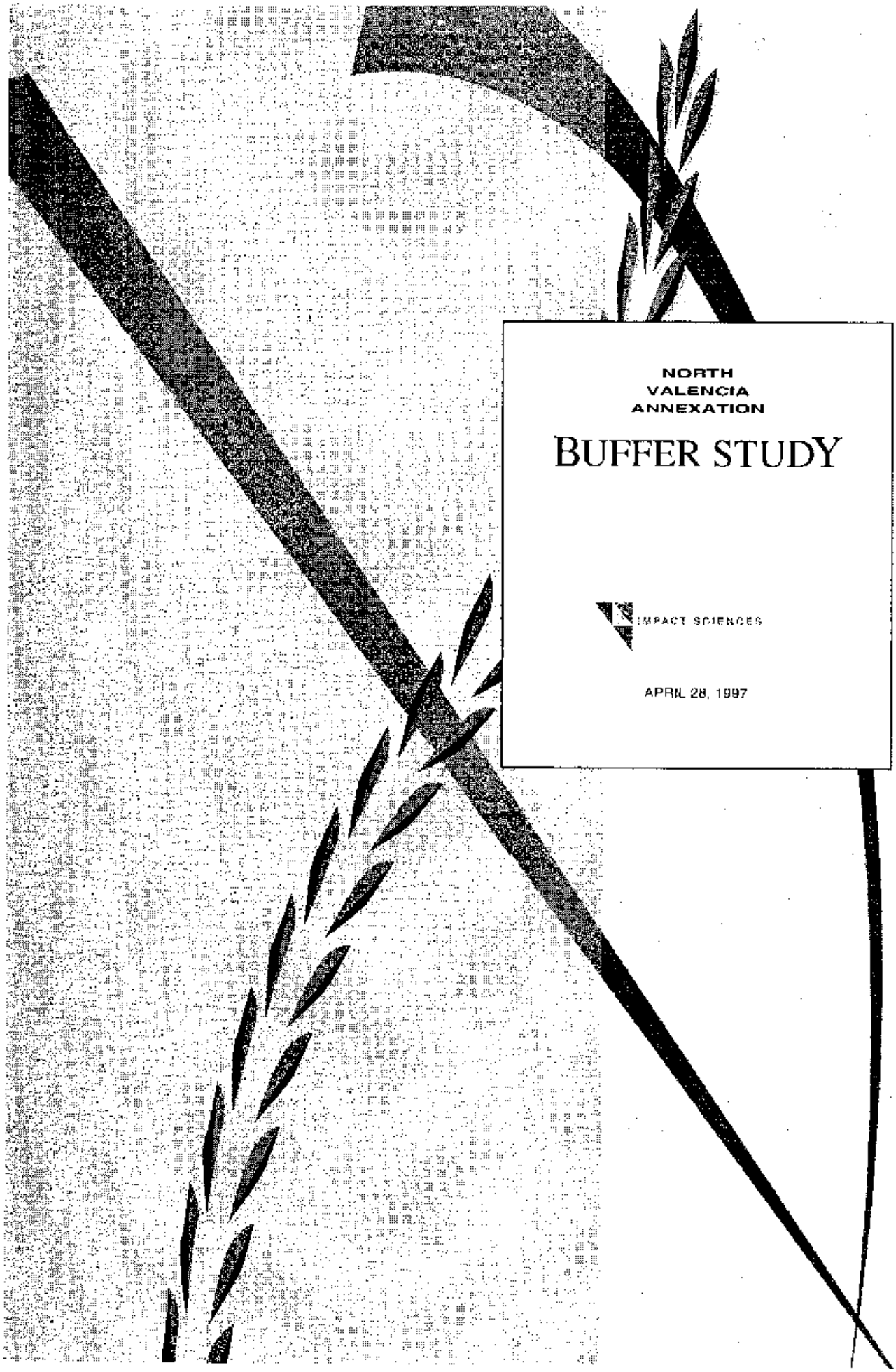
Concerning the issue of chloride loading, Respondents argue that Petitioners are time barred from raising the issue because during the public comment period Petitioners contended the information presented in the AA about chloride loading constituted significant new information requiring evaluation in a subsequent EIR, and then failed to timely file a new petition in that regard.

Substantively Respondents point to the record (80:77181-183) to demonstrate that the problem of chloride loading was addressed in a fashion sufficient to embrace the specific issue now posed by Petitioners. They also reiterate that the Newhall Ranch WRP is intended to operate as a near zero discharge facility, except in winter months. Finally, they argue performance-based mitigation measures applicable to the WRP require that it satisfy the RWQCB discharge limits for recycled water discharged to the river and, inter alia, require the WRP to obtain an NPDES permit to discharge water.

Without addressing the legal preclusion argument, the court, upon review of the AA, has concluded the record contains substantial evidence to support the Board's finding that chloride loading from the project will not adversely impact surface or ground water quality.

CONCLUSION

Based upon the foregoing analysis, the motion to discharge the Court's writ issued on August 1, 2000, is granted.



NORTH
VALENCIA
ANNEXATION

BUFFER STUDY

IMPACT SCIENCES

APRIL 28, 1997

NORTH VALENCIA ANNEXATION

DRAFT
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April 28, 1997

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North Valencia Annexation
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1. INTRODUCTION

Historically, planners and biologists have emphasized protection of riparian vegetation. It is acknowledged that the vast majority of California's riparian resources have been eliminated as a result of development projects or farming. This loss has resulted in a corresponding reduction in species diversity, richness, and abundance for those animals generally associated with this vegetation type. This fact is codified in that a large number of animals listed by the state as threatened or endangered are riparian or water dependent. In response to this direct loss and indirect impacts, many state and federal agencies have developed regulations intended to preserve and protect this vegetation type. Regulations include those associated with Section 404 1(b) of the Clean Water Act, State of California Department of Fish and Game (CDFG) Code Section 1603, and others as dictated by the U.S. Fish and Wildlife Service (USFWS), and State of California Regional Water Quality Control Board. These measures have focused on the protection of riparian vegetation.

More recently however, biologists have become concerned that protection of riparian vegetation in itself is not sufficient to protect the riparian ecosystem that in many cases extends beyond the bounds of the riparian canopy. This presumption is consistent with recent studies regarding this topic. Schaefer and Brown (1992) concluded that riparian and upland habitats are not closed autonomous systems, and that wildlife continuously move between aquatic, riparian, and upland habitats. Further, Swanson et al. (1982), in their study of riparian ecosystems, defined the riparian zone as the water's edge or ecotone between aquatic and upland ecosystems.

Wharten et al. (1982) made similar conclusions. His studies also indicated that wildlife species do not always occur in distinct zonal patterns within aquatic and adjacent upland areas. As such, many wildlife species are commonly associated with riparian vegetation due to their life history requirements, although few are entirely restricted to them. Also, wildlife use of riparian habitats differ by species, season, and flooding regime. For example, many terrestrial bird species nest in riparian habitats but forage over large areas of non-riparian vegetation. Other species concentrate their feeding activities in riparian habitats during the winter and spring but include drier sites during summer and fall (Guthrie, 1996). Other studies have indicated that even those species that are considered riparian-dependent require access to adjacent uplands in order to obtain essential food or nesting resources (Schaefer and Brown, 1992). These studies are at odds with the presumption

that wildlife associated with riparian vegetation are restricted to that zone and do not significantly utilize adjacent upland habitat. Rather, these studies conclude that most species associated with riparian systems are dependent on an array of vegetation types inclusive of more arid vegetation such as sage scrub and grassland communities.

Each of these studies implies that if critical habitat requirements are reduced in quality or quantity such that the ecosystem no longer satisfies a species' needs, a substantial life-history requirement is absent and that species will be unable to sustain its existence or will emigrate to areas with more suitable habitat (with varying success rates). Schaefer and Brown (1992) concluded that if enough of these life-history elements are removed for a number of animals, the natural functioning requirements of the riparian ecosystem will be adversely affected or lost altogether.

Although the literature base regarding riparian ecosystems is substantial, no direct research is known that serves to define an acceptable relationship between riparian habitat and urban land uses. To assist in defining this relationship, Impact Sciences performed extensive investigations that were intended to satisfy two goals: (1) to protect and enhance terrestrial species diversity within the Santa Clara River and San Francisquito Creek riparian corridors east of Interstate 5; and (2) to define an acceptable standard of separation (i.e., a buffer and/or protection zone) between the riparian corridor and development projects proposed proximal to the Santa Clara River and San Francisquito Creek east of Interstate 5. These investigations were conducted to assist the Newhall Land and Farming Company in the design of projects that accommodate their need for development but protect sensitive riparian resources.

2. PROJECT TEAM

To respond to the complexity of these issues, Impact Sciences involved five members of its own in-house biological resources team. Each of these biologists are well-versed with biological resources present in the Santa Clarita area. In addition, to fulfill the exacting and complex requirements of this study, other biologists with specific expertise regarding riparian/upland habitat and ecotone use, bird and mammal life history requirements, population viability analysis, and home range determination were consulted. While biologists from Impact Sciences conducted the majority of the study design, data collection and interpretation, other biologists assisted the Impact Sciences team as required in the field or during report preparation.

Impact Sciences biologist Scott Cameron specializes in small mammals and currently holds valid federal endangered and threatened species permits issued under Section 10(a) of the Endangered Species Act of 1973 as amended (Permit Number PRT-808242), as well as a joint federal and state Scientific Collecting Permit (Permit Number 2876). Mr. Keith Babcock is a bird specialist and has over 11 years of experience in both wildlife biology and project management. He serves on the State of California Swainson's Hawk Technical Advisory Committee and currently holds a federal Section 10(a) permit to survey for California gnatcatcher, as well as federal and state permits to trap a variety of raptor species. Mr. David Crawford is a fisheries specialist and currently holds a federal Section 10(a) permit for sensitive aquatic species and a state Scientific Collection Permit. Ms. Gwendolyn Kenney, Impact Sciences botanist, has extensive experience with southern California plants and vegetation communities and has conducted numerous studies in the Santa Clarita area. In addition to these Impact Sciences biologists, Dr. Daniel Guthrie, a wildlife biologist and ornithologist with extensive experience conducting bird surveys and studies in the Santa Clara River basin, provided assistance in the data collection efforts. Résumés for Impact Sciences biologists are included in this report as **Appendix A**.

In addition to the geographic and species-specific expertise of the project team, their knowledge of riparian ecosystems was expanded via an intensive review of the relevant literature. Prior to developing a study program, over 80 literature sources were reviewed to more completely understand the functioning characteristics of riparian species and ecosystems. Literature sources reviewed and cited in this text, and personal communications with other biologists pertaining to this study, are included in the bibliography in **Appendix B**. The combined experience of the project team served as a basis for conceptualizing a study plan, defining assumptions, and conducting the associated field investigations.

3. STUDY PLAN

a. Background

A mission of Newhall Land and Farming Company is to develop land in the Santa Clarita area. However, development is now proposed in areas proximal to riparian vegetation that are considered sensitive by state and federal agencies, local governments, and the public. As such, it is the intent of Newhall Land and Farming Company to develop land, but in a way that is responsive to the sensitive resources present and their ecology.

As previously indicated, studies of riparian ecosystems were substantial, but little direct research is known that provided specific standards for development proximal to sensitive riparian vegetation. Without such guidance, it is not possible for Newhall Land and Farming Company to confidently plan projects that balance their needs and protect sensitive riparian resources. Impact Sciences was retained by Newhall Land and Farming Company to study this issue and make specific recommendations that would protect the riparian resource and mitigate any residual impacts. Impact Sciences was hired based on their experience with the ecology of the Santa Clarita area, their understanding of the area's sensitive biological resources, their understanding of issues associated with land development, and their understanding of, and direct relationship to, the environmental impact report (EIR) and review process that would be the mechanism ensuring implementation of study recommendations.

Impact Sciences initiated this work with a thorough review of the relevant literature and historic aerial photographs of the Santa Clarita area. This review indicated that prior to farming, a mosaic of grassland, coastal sage, and Great Basin sage likely occured adjacent to a well-defined riparian zone associated with the Santa Clara River and San Francisquito Creek. However, this area of southern California was settled early in the state's history, and farming and grazing have occurred since the 1700s. More recently, intensive land development and farming has further altered the physiography and hydrology of the region. It is understood that these alterations have had a corresponding effect on the area's ecology by reducing species diversity and abundance, as only vestiges of undisturbed riparian and adjacent upland habitat remain east of Interstate 5.

In any functioning riparian ecosystem, three biological resource zones are present; riparian vegetation (inclusive of water, substrate, etc.), adjacent uplands, and the upland/riparian ecotone. In the Santa Clarita region, riparian resources are well-defined and at least portions of the riparian corridor are in relatively good condition. This is not the case for the adjacent uplands. As mentioned

above, farming activities have occurred for many years adjacent to the riparian zone and have substantially reduced or eliminated upland habitat and the ecotone in areas where development is currently proposed east of Interstate 5.

b. Study Purpose

To satisfy the two goals of this study (i.e., the protection and enhancement of terrestrial species diversity within riparian resources east of Interstate 5 and to define a standard of resource protection), on-site data must be used to form the foundation of any recommendation(s). However, disturbances have virtually eliminated any viable upland habitat proximal to the riparian corridor east of Interstate 5; consequently, data describing the resource prior to these disturbances, and species diversity indices where riparian and uplands co-exist east of Interstate 5, are absent. For purposes of this report, it is assumed that loss of uplands adjacent to riparian vegetation associated with the Santa Clara River and San Francisquito Creek east of Interstate 5 have reduced species diversity in the riparian corridor.

To account for the goal of protecting and enhancing terrestrial species diversity in these riparian corridors, it was determined that two gaps in the existing data base were present, and filling these gaps was necessary before any informed recommendations could be developed. First, given historic disturbances, no site specific data is known that defines the extent to which riparian birds use the adjacent uplands within the Santa Clarita region, and if habitat quality positively correlates to this use as well as to riparian bird diversity. Therefore, as a fundamental measure of resource protection and enhancement, an objective of the study was to obtain information regarding avian use in areas of both high and low quality riparian and upland habitat.

Second, while general home range size and movement patterns are known for most small mammal species, little or no site specific data exists, with respect to habitats in the Santa Clarita area, that define any variation in home range size based on quality of the habitat present. Therefore, this study emphasized defining home range size for small mammals in areas of high and low quality upland and riparian habitat. Given this information, specific recommendations can be made with respect to ecosystem protection and enhancement based on the concepts of sustainable small mammal populations and, consequently, the protection and enhancement of riparian predators that occur within the resource.

Methods and results are defined in the following sections of this report. A discussion follows that defines specific recommendations that focus on achieving the goals defined above.

4. METHODOLOGY

a. Study Site Selection

As previously stated, the focus of the study was on upland habitat use by riparian dependent birds and by small mammals within the Santa Clarita area (**Figure 1**). Therefore, preferred study sites would include areas of relatively undisturbed upland habitat common to the study region (i.e., coastal sage scrub and/or Great Basin sage scrub) adjacent to moderate or high quality riparian habitat. Because it is assumed that preserved upland habitat zones along the Santa Clara River and San Francisquito Creek associated with future projects will be revegetated and enhanced with higher quality upland vegetation, particular emphasis was on selecting study sites with upland habitat considered of relatively high quality (as determined by such factors as dominant plant species, shrub density, percent cover, etc.). Areas containing lower quality upland habitat would also be studied for comparison. Some riparian resources in the Santa Clara River and San Francisquito Creek located east of Interstate 5 are considered to be of moderate to high quality and could provide useful information regarding riparian obligates. However, east of Interstate 5, naturally occurring upland habitat adjacent to or in the vicinity of the Santa Clara River or San Francisquito Creek is disturbed, if not absent altogether. Upland areas that remain are generally of small size (less than five acres), and have been disturbed either directly or indirectly through land development or farming. Locations west of Interstate 5 contain the best examples of both undisturbed riparian and upland habitat and their associated ecotone. Further, these areas are proximal (less than five miles) to sites proposed for development east of Interstate 5.

Evaluations by Impact Sciences biologists of aerial photographs and recent vegetation maps, as well as field reconnaissance trips, confirmed these observations. Based upon this analysis, four site locations (one high quality upland site and one low quality site for each of the target group of animals) were selected. The high quality site for the bird study was located on the southern edge of the Santa Clara River west of Castaic Junction (**Figure 2**). The low quality site was located along the Santa Clara River east of Interstate 5 south of Bouquet Canyon (**Figure 3**). The two small mammal study sites were located along the Santa Clara River west of Castaic Junction and were in close proximity to each other (**Figure 4**).

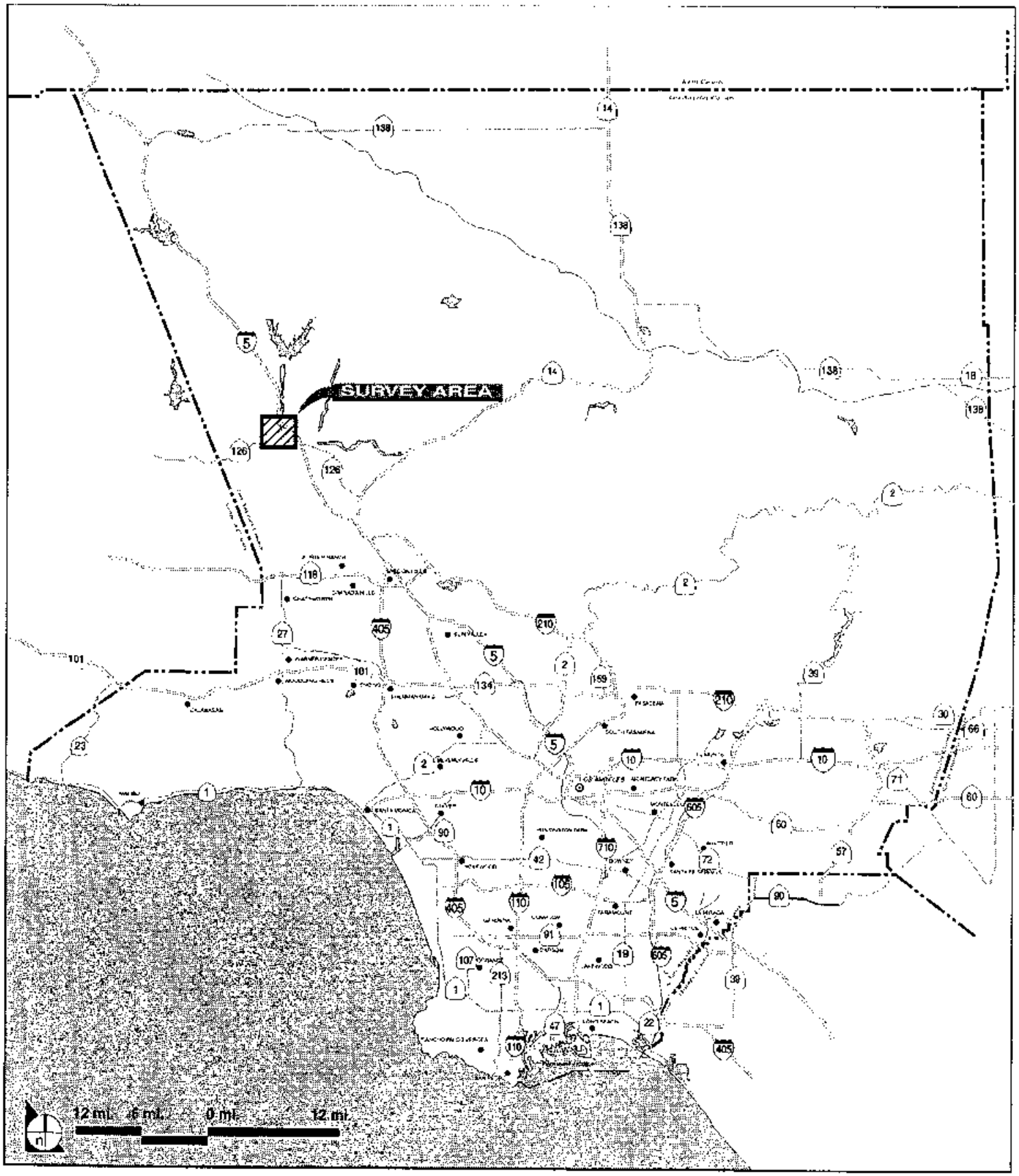

FIGURE 1

Regional Location Map

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b. Vegetation Analysis

Information regarding the floristics of the vegetation present on each study site was compiled and analyzed. This information included qualified data regarding plant species composition, canopy height, shrub/tree density, percent cover, and other species-specific criteria. Detailed vegetation analyses conducted for the bird and small mammal surveys are enumerated in their associated methodology sections. The purpose of this more micro-scale vegetation analysis was twofold. First, it provided a basis to define high quality versus low quality upland habitat in order to identify study plots to compare wildlife use and diversity within varying quality habitat. And second, this information would be required to define biological models that could be used as a guide in the development of revegetation plans for upland vegetation that may be identified as mitigation in EIRs prepared for future development projects in the region.

Floral taxonomy followed the Jepson Manual (Hickman, 1993). Common plant names not available in Hickman were derived from Munz (1974), Beauchamp (1986), Abrams (1923, 1944), and Abrams and Ferris (1951, 1960).

c. Wildlife Studies

Focused field investigations with respect to wildlife resources were conducted to fill the data gaps previously identified. These investigations were conducted under the direction of Mr. Babcock and involved all members of the Impact Sciences project team, as well as Dr. Guthrie. Phase I of the field effort, conducted in October and November of 1996, was intended to identify relative abundance and diversity of mammals and resident riparian birds in the Santa Clara River study region and to assist in the identification of target species for more intensive studies in the future. Phase II focused specifically on the use of upland habitat and the upland/riparian ecotone by riparian birds and small mammals and the comparison of this use in both high and low quality upland habitat areas. Specific field investigations involved time-area observations, belt-transect counts, an extensive small mammal live trapping program, and the use of scent stations and remote cameras. In total, the field investigations conducted by Impact Sciences totaled over 1,100 man-hours over a 62-calendar-day period. The specific methodologies for each of the animal groups are briefly described below.

(1) Birds

(a) Phase I

Phase I of the bird study consisted of literature review, contacting biologists familiar with riparian birds in southern California, and limited field reconnaissance to various riparian areas within the study region. Target bird species to be used as the basis of the Phase II study were also identified in the Phase I portion of this study.

Literature Review

Literature review included evaluation of the following: (1) studies and documentation of riparian/upland ecotone use by the riparian bird species in California; (2) surveys and studies conducted by Dr. Guthrie and other biologists along the Santa Clara River and San Francisquito Creek; (3) life history and habitat use information on the target species; and (4) environmental review documents for proposed projects within the study region. All studies, papers, reports, and other literature that were compiled and reviewed for this analysis are listed in the bibliography in **Appendix B.** A number of avian biologists familiar with riparian birds in the study region, particularly Dr. Guthrie, were contacted to obtain anecdotal and/or documented information on use of riparian and upland habitats by these birds. Individuals contacted are included in the bibliography.

Field Investigations

Three day-long surveys were conducted on November 2, 3, and 5, 1996, by Dr. Guthrie and Mr. Babcock to generally characterize the diversity and relative abundance of birds along the Santa Clara River in the study region. Surveys were conducted along San Francisquito Creek and along the northern side of the Santa Clara River from Interstate 5 upstream for about one mile. Potential target species for the future focused studies were also evaluated.

Target Species Selection

As a result of the Phase I literature review and field reconnaissance, target bird species were selected to serve as the basis for the Phase II studies. Bird species selected included two groups of riparian birds: those that are considered highly dependent on riparian habitat and those that are commonly associated with riparian habitat but that also are commonly found in upland habitats

adjacent to riparian and woodland areas. This latter group of birds was included because in this particular region there are relatively few species of birds that would be considered truly riparian dependent that also occasionally use upland habitats. In general, because of the relative lack of other woodland communities in the study region, it was assumed that most bird species known to occur in this area that are generally strongly associated with riparian and/or woodland habitats would be dependent upon, or associated with, the riparian habitat along the Santa Clara River.

The riparian dependent group of target species selected for this study included the following: song sparrow (*Melospiza melodia*), common yellowthroat (*Geothylpis trichas*), least Bell's vireo (*Vireo bellii pusillus*), yellow-breasted chat (*Icteria virens*), Wilson's warbler (*Wilsonia pusilla*), yellow warbler (*Dendroica petechia*), black phoebe (*Sayornis nigricans*) and blue grosbeak (*Guiraca caerulea*). Riparian associated birds that are more commonly found in upland habitat selected for the study included lazuli bunting (*Passerina amoena*), spotted towhee (*Pipilo maculatus*), black-headed grosbeak (*Pheucticus melanocephalus*), orange-crowned warbler (*Vermivora celata*), Bewick's wren (*Thryomanes bewickii*), house wren (*Troglodytes aedon*), and lessor goldfinch (*Carduelis psaltria*). These groups of bird species were also endorsed by Dr. Guthrie, who has over seven years of bird field research, encompassing over 1,500 field hours, along the Santa Clara River corridor (Guthrie, personal communication). It was concluded that information regarding least Bell's vireo was already well documented via previous investigations at appropriate locations throughout southern California, including the Santa Clara River corridor. Because substantial information had been previously compiled regarding the breeding status and behavior of this bird, it was felt by Impact Sciences that additional field research would not be necessary with respect to this species because it would not significantly add to or alter the existing data base.

(b) Phase II

Field Investigations

Phase II of the study involved focused time-area surveys at the selected study sites. At each of the two study sites, three parallel belt transects were established extending from the riparian habitat edge into the adjacent upland habitat (**Figures 2 and 3**). Each transect was 200 feet in length. Using a compass and a measuring tape, stakes with brightly colored surveyor's tape were placed at 50-foot intervals along the transect to aid in accurately mapping locations and foraging activities of individual target bird species. A width of 75 feet on either side of the transect was included in the survey area for a total belt transect that measured 150 feet by 200 feet. Each of the upland habitat belt transects were approximately 200 to 300 feet apart. Another transect was established along the

riparian/upland habitat ecotone edge to study ecotone use of target bird species. This transect extended a distance of approximately 1,500 feet. A fifth transect was established approximately 100 feet within the riparian habitat that paralleled the edge transect. This transect was established to determine the presence of riparian dependent birds in the event that none of these birds were observed in upland habitat areas. A width of 50 feet on either side of the edge and riparian transects was included in the survey area. The total area for each of the bird study plots measured approximately nine acres in size.

Field visits were made early in the morning (30 minutes after sunrise) and continued until approximately mid-day. Each upland habitat transect was walked slowly with 10-minute stops at each 50-foot interval. The edge and riparian transects were also walked slowly, with 10-minute stops at 100-foot intervals. The timing of the transect routes was designed to minimize the potential of duplicate counts of target bird individuals. All observations of target bird species were noted and recorded onto data sheets which included weather and observer information, target species, and location zone (0 to 50 feet, 50 to 100 feet, etc.) in which each target species was observed (**Appendix C**). Once a target bird was observed, all location zones visited by that bird during the 10-minute observation period were documented. Multiple visits to the same location zone by the same bird during the observation period were only recorded once for that zone. To avoid a bias toward edge and riparian bird counts, target bird species along these transects were only included in the analysis if the observation occurred within one of the upland belt transects (where these transects intersected the riparian habitat). Observations of non-target bird species were also noted. A total of seven consecutive visits, from April 9 to April 16, 1997, were made to each study site by an Impact Sciences biologist. To minimize observer bias on consecutive survey days, different transect start and end points from the previous visit were employed.

Vegetation Analysis

During the Phase II studies, a qualitative vegetation analysis was also conducted. Seven structural variables were measured along each of the five avian transects on each study site. Analysis of the habitats selected for the bird study included descriptions of the following: (1) shrub/tree cover variability; (2) percentage shrub/tree cover; (3) percentage of ground cover; (4) average shrub/tree height; (5) percentage of herbaceous cover; (6) herbaceous cover variability; and (7) shrub/tree height variability. Information relative to the structure of the habitat located along each transect was collected during the bird surveys. The vegetation variables were selected on the basis of their contribution to the plant structure along an approximately 75-foot-wide area on each side of the bird

transects. These variables were used to define habitat quality differences between the eastern (low quality) and western (high quality) study sites.

(2) Small Mammals

It is an assumption of this study that a fundamental requirement of a sustainable population of small mammals is the provision for an adequate home range size. On or near the study site, no useful data had been compiled that defined small mammal composition or home range size regardless of the quality of habitat. This information is fundamental if one is to accurately define the area of uplands necessary to sustain small mammal populations. Therefore, field work associated with this study focused on characterizing small mammal species diversity and defining site-specific home range sizes in the selected study areas. This information, combined with what is considered a complete literature base characterizing the life history and breeding behavior of small mammals, provided the inputs necessary to define home range size and contribute to the analysis of what is considered an adequate buffer. Specific methodologies for the Phase I and Phase II small mammal study are presented below.

(a) Phase I

Phase I of the small mammal study consisted of literature review and field studies to more accurately define small mammal species composition and relative distribution within riparian habitats and along the riparian/upland edge (which consisted primarily of agricultural lands and ruderal habitat) associated with San Francisquito Creek and the Santa Clara River. Field work included a small mammal trapping program and the use of scent stations and remote camera stations. Target small mammal species to be used as the basis of the Phase II study were also identified in the Phase I portion of this study.

Literature Review

Existing biological information relative to selected target species determined to be pertinent to this study was obtained from the following sources: (1) documents describing previously conducted surveys of wildlife occurring within, or in the vicinity of, the study areas; (2) known habitat use requirements and behavior of wildlife species expected to occur within the study areas; (3) literature pertaining to establishing riparian buffers for wildlife species; and (4) the California Natural Diversity Data Base (CNDDB, 1996). This information was used to aid in the

identification of target small mammal species for Phase II of the study as well as to better understand home range and movement patterns by selected small mammal species.

Live-Trapping Program

To determine an appropriate buffer width that effectively addresses the needs of native wildlife within a system, those species occupying the area must be identified. Field surveys provide a representative list of species occurring within a specified area. In order to directly identify small mammal species occurring in selected study areas, a small mammal live-trapping program was conducted by Impact Sciences in October and November 1996. Areas selected for this phase of the trapping program included sites located at the confluence of San Francisquito Creek and the Santa Clara River, along portions of San Francisquito Creek, and adjacent to selected areas of the Santa Clara River.

Both large (12-inch) and medium (9-inch) Sherman folding aluminum live-traps were used during the trapping study. A total of 12 transects were established within riparian habitats in selected study areas. Five 100-meter (approximately 325 feet) linear traplines, one 150-meter (approximately 500 feet) linear trapline, and six 125-meter (approximately 400 feet) linear traplines were established by placing trap stations every three meters (approximately 10 feet). Traps were set in the early evening and checked early the following morning. Captured mammals were identified to species, age, and sex, and released unharmed at the capture site. Small mammals recorded during the surveys were marked by non-permanent methods (e.g., hair-clipping) and released at the point of capture. To avoid mortality due to cold nighttime temperature, the traps were closed after being checked in the morning, and reset in the evening. A total of 1,210 cumulative trapnights were conducted during the Phase I live-trapping program by Impact Sciences biologists.

Remote Camera Stations

Remote camera stations were also used to document wildlife species moving through particular areas of the project site. Six nights of camera stations were conducted at selected locations on the project site. A total of three fixed positions were set in the confluence area of San Francisquito Creek and the Santa Clara River. All wildlife species observed were recorded onto data sheets. In addition to species identification, transect location, species behavior, and time of observation were also recorded. Cameras were set to gather photographs over a 24-hour period.

Scent Stations

Baited scent stations were set at various points along the Santa Clara River and San Francisquito Creek, particularly near the confluence of these two riverine systems. Scent stations were established by carefully clearing an area approximately four feet in diameter and layering the clearing with smoothed diatomaceous earth. An opened can of cat food was placed in the center of the station. The diatomaceous earth provides a suitable substrate to allow deposition and identification of tracks.

Target Species Selection

As a result of the Phase I analysis, the following small mammal species were selected as target species for the Phase II study: dusky-footed woodrat (*Neotoma fuscipes*), California mouse (*Peromyscus californicus*), brush mouse (*Peromyscus boylii*), deer mouse (*Peromyscus maniculatus*), and western harvest mouse (*Reithrodontomys megalotis*).

(b) Phase II

The Phase II small mammal study examined habitat relationships between sympatric small mammals species occurring in higher and lower quality vegetation communities located within the same physiographic area. It was also our intention to: (1) evaluate the average daily movement patterns (and ultimately calculate home range diameter) of the target small mammal species; and (2) provide an overall small mammal daily movement and home range comparison between relatively high quality and relatively low quality upland habitat types located at the riparian/upland ecotone. Phase II trapping was conducted in December 1996 and January 1997.

Live-Trapping Program

Two separate live-trapping grids (A and B) comprising 121 Sherman live-traps each were established in two habitat types of varying quality so that daily small mammal activity could be quantitatively measured (**Figure 4**). Both large (12-inch) and medium (9-inch) Sherman folding aluminum live-traps were used during the Phase II trapping study. Each Sherman trap was placed at 20-foot (6-meter) intervals in a 200- by 200-foot (61-meter) grid. Each grid contained 11 rows with 11 traps per row. Traps were set in the early evening and checked early the following morning. Captured mammals were identified to species, age, and sex on data sheets (**Appendix C**), and released unharmed at the capture site. Small mammals recorded during the Phase II (December 19

to January 11, 1997) surveys were marked by non-permanent methods (e.g., hair-clipping) and released at the point of capture. To avoid mortality due to cold nighttime temperature, the traps were closed after being checked in the morning, and reset in the evening. A total of 1,210 cumulative trapnights were conducted during the Phase II live-trapping program conducted by Impact Sciences.

A total of 2,420 cumulative trapnights were conducted during the Phase I and Phase II live-trapping program conducted by Impact Sciences. All data collected during the live-trapping program (1) conformed to established protocols or accepted methodologies; (2) was carried out under a rigid management and quality assurance program, and (3) was conducted by qualified and appropriately certified and/or permitted individual(s).

Home Range Analysis

Home ranges are assumed to be somewhat circular in shape (Fitch, 1958). Therefore, the average of the two largest single movement distances that resident small mammal species moved within each grid over a five-day period was used as the specific home range radius. Intrinsically, circular home ranges were developed for each species by doubling the radius (i.e., diameter). The diameter of the home range circle was determined to represent the approximate width of each home range. While it is understood that home ranges are not exact circles (Sanderson, 1966), Anderson and Hudson (1980) suggest that it is more valuable to use existing models despite their imperfections, rather than to take no action until refined methods are developed. Furthermore, it is also understood that some situations require a more thorough home range analysis, and therefore, should consider the amount of circular overlap within each species (Schaefer and Brown, 1992).

Vegetation Analysis

Eight structural variables were measured around each grid trap station. Discriminant analysis of the habitats selected for this study were primarily based on three correlated parameters including: (1) canopy height; (2) shrub density; and (3) percentage of ground cover. Additional analysis included: (4) plant species composition; (5) dominant plant species; (6) soil characteristics; (7) slope; and (8) aspect. Information relative to the structure of the habitat at each trap station was collected during the live-trapping effort. The vegetation variables were selected on the basis of their contribution to the plant structure in an approximately three-foot (one-meter) square area at each trap station. The vegetation data was used to test the hypothesis that habitat quality influences small mammal diversity and daily movement patterns.

5. RESULTS

Because the goals of the study focused on target species use of upland habitat and the upland/riparian ecotone in areas adjacent to riparian habitat, the discussion of study results focuses on the Phase II analysis. A brief discussion of Phase I results, where these results contribute to the overall study analysis, is also included.

a. Birds

(1) Phase I

Anecdotal observations from other biologists (DeSante, 1996; Guthrie, 1996) regarding the use of adjacent upland areas by riparian bird species indicated that the distance traveled from the riparian edge varied considerably depending on the particular bird species and the nature of the adjacent habitat. Some species almost never travel into adjacent upland areas, while others, particularly raptors (birds of prey), may travel large distances from their riparian nests in search of food. Most raptor species that are known to nest within riparian areas are fairly opportunistic and will utilize both adjacent upland habitats as well as other suitable habitats in the vicinity of the riparian area. In general, the consensus of the biologists contacted for this study was that most smaller (non-raptor) bird species that depend on riparian vegetation for breeding would not travel much more than 200 feet from the riparian zone, and would generally stay closer.

(2) Phase II

(a) Western Site

Upland habitats on the western study site consist primarily of dense Great Basin sage and coastal sage scrub. The percentage of observations (n=102) of riparian dependent (List A) birds in the seven location zones are as follows (**Table 1**): 62.7 percent of observations were in riparian habitat; 13.7 percent were in edge habitat; 17.6 percent were in upland habitat within 50 feet of resource edge; 4.9 percent were between 50 and 100 feet of resource edge; and 1.0 percent (1 bird observation) were between 100 and 150 feet. No List A birds were observed beyond 150 feet. The percentage of observations of List A birds dropped dramatically beyond the riparian habitat, and again beyond 50 feet within upland habitat. All total, 94.2 percent of the observations of List A birds were within 50 feet of the riparian resource edge (including the riparian habitat); 99.0 percent of the observations of List A birds were within 100 feet of the riparian resource edge.

Table 1
Percentage of Observations of Riparian Dependent and Riparian Associated Birds at the Western Study Site

	% RIPARIAN	% EDGE	% 0-50	% 50-100	% 100-150	% 150-200	% >200
TARGET LIST A	62.74	13.73	17.64	4.91	0.98	0	0
TARGET LIST B	17.86	30.95	19.64	16.08	4.76	7.14	3.57
BEWR	21.68	33.33	28.33	13.33	3.33	0	0
BHGR	50.00	0	0	50.00	0	0	0
COYE	53.33	20	20	0	6.67	0	0
HOWR	10.53	47.37	31.57	10.53	0	0	0
LABU	7.69	30.78	0	7.69	0	46.15	7.69
LEGO	33.33	16.67	0	33.33	0	16.67	0
OCWA	35.29	29.42	23.53	11.76	0	0	0
SOSP	69.09	7.27	21.82	1.82	0	0	0
SPTO	9.37	12.5	0	28.12	18.75	15.63	15.63
WIWA	56.25	21.88	9.37	12.5	0	0	0

List A: Riparian dependent target bird species
List B: Riparian associated target bird species

BEWR = Bewick's Wren
BHGR = Black-Headed Grosbeak
COYE = Common Yellowthroat
HOWR = House Wren
LABU = Lazuli Bunting
LEGO = Lessor Goldfinch
OCWA = Orange-Crowned Warbler
SOSP = Song Sparrow
SPTO = Spotted Towhee
WIWA = Wilson's Warbler

The percentage of observations (n=168) of riparian associated (List B) birds in the seven location zones are as follows: 17.9 percent of observations were in riparian habitat; 30.9 percent were in edge habitat; 19.6 percent were in upland habitat within 50 feet of the resource edge; 16.1 percent were between 50 and 100 feet of the resource edge; 4.8 percent were between 100 and 150 feet; 7.1 percent were between 150 and 200 feet; and 3.6 percent were observed beyond 200 feet. All total, 84.5 percent of the observations of List B birds were within 100 feet and 89.3 percent were within 150 feet. Three of the List B bird species (spotted towhee, lazuli bunting, lessor goldfinch) account for all observations of List B birds beyond 150 feet.

When we consider the percentage of the observations of List A birds in *upland* habitat only, the following results were found (**Table 2**): 74.0 percent were within 50 feet of the resource edge,

21.7 percent were between 50 and 100 feet, and 4.3 percent (1 bird observation) were between 100 and 150 feet. All total, 95.7 percent of all observations of List A birds using upland habitat were within 100 feet of the resource edge.

Table 2
Percentage of Observations of Riparian Dependent and Riparian Associated Birds in Upland Habitat at the Western Study Site

	% 0-50	% 50-100	% 100-150	% 150-200	% >200
TARGET LIST A	74.00	21.70	4.30	0	0
TARGET LIST B	37.60	31.80	9.40	14.10	7.10
BEWR	62.96	29.63	7.41	0	0
BHGR	0	100.00	0	0	0
COYE	75.00	0	25.00	0	0
HOWR	75.00	25.00	0	0	0
LABU	0	12.50	0	75.00	12.50
LEGO	0	66.67	0	33.33	0
OCWA	66.67	33.33	0	0	0
SOSP	92.31	7.69	0	0	0
SPTO	0	36.00	24.00	20.00	20.00
WIWA	42.86	57.14	0	0	0

List A: Riparian dependent target bird species
List B: Riparian associated target bird species

BEWR = Bewick's Wren
BHGR = Black-Headed Grosbeak
COYE = Common Yellowthroat
HOWR = House Wren
LABU = Lazuli Bunting
LEGO = Lessor Goldfinch
OCWA = Orange-Crowned Warbler
SOSP = Song Sparrow
SPTO = Spotted Towhee
WIWA = Wilson's Warbler

Of the observations of List B birds in *upland* habitat, 37.6 percent were within 50 feet of the resource edge, 31.8 percent were between 50 and 100 feet, 9.4 percent were between 100 and 150 feet, 14.1 percent were between 150 and 200 feet, and 7.1 percent were beyond 200 feet. All total, 69.4 percent of all observations of List B birds in upland habitat were within 100 feet of the resource edge; 78.8 percent of the observations were within 150 feet.

(b) Eastern Site

The percentage of observations (n=10) of riparian dependent (List A) birds in the seven location zones at the Eastern site are as follows (**Table 3**): 30.0 percent of observations were in riparian habitat; 40.0 percent were in edge habitat; 10.0 percent were in upland habitat (primarily degraded Great Basin sage, coastal sage scrub, and ruderal grassland) within 50 feet of resource edge; 10.0 percent were between 50 and 100 feet of resource edge; and 10.0 percent were between 100 and 150 feet. No List A birds were observed beyond 150 feet. The percentage of observations of List A birds dropped dramatically outside the riparian resource edge. All total, 90.0 percent of the observations of List A birds were within 100 feet of the riparian resource edge.

Table 3
Percentage of Observations of Riparian Dependent and Riparian Associated Birds at the Eastern Study Site

	% RIPARIAN	% EDGE	% 0-50	%50-100	%100-150	%150-200	%>200
TARGET LIST A	30.00	40.00	10.00	10.00	10.00	0	0
TARGET LIST B	20.00	23.33	33.33	16.67	2.22	3.33	1.11
BEWR	21.05	21.05	44.74	13.16	0	0	0
BHGR	50.00	0	0	50.00	0	0	0
HOWR	25.00	12.50	37.50	25.00	0	0	0
LEGO	0	33.33	55.56	11.11	0	0	0
SOSP	50.00	25.00	0	0	25.00	0	0
SPTO	21.21	27.27	15.15	18.18	6.06	9.09	3.03
WIWA	16.67	50.00	16.67	16.67	0	0	0

List A: Riparian dependent target bird species
List B: Riparian associated target bird species

BEWR = Bewick's Wren
BHGR = Black-Headed Grosbeak
HOWR = House Wren
LEGO = Lessor Goldfinch
SOSP = Song Sparrow
SPTO = Spotted Towhee
WIWA = Wilson's Warbler

The percentage of observations (n=90) of riparian associated (List B) birds in the seven location zones at the Eastern site are as follows (**Table 3**): 20.0 percent of observations were in riparian habitat; 23.4 percent were in edge habitat; 33.3 percent were in upland habitat within 50 feet of the resource edge; 16.7 percent were between 50 and 100 feet of the resource edge; 2.2 percent were between

100 and 150 feet; 3.3 percent were between 150 and 200 feet; and 1.1 percent were observed beyond 200 feet. Of the observations of List B birds, 93.4 percent were within 100 feet; 95.6 percent were within 150 feet. Percentage of observations of List B birds dropped dramatically beyond 50 feet, and again beyond 100 feet. The spotted towhee accounted for all observations of List B birds beyond 150 feet.

When we consider the percentage of the observations of List A birds in *upland* habitat only, the following results were found (**Table 4**): 33.3 percent were within 50 feet of the resource edge, 33.3 percent were between 50 and 100 feet, and 33.3 percent were between 100 and 150 feet. Of the observations of List B birds in *upland* habitat, 59.6 percent were within 50 feet of the resource edge, 28.9 percent were between 50 and 100 feet, 3.8 percent were between 100 and 150 feet, 5.8 percent were between 150 and 200 feet, and 1.9 percent were beyond 200 feet. All total, 88.5 percent of all observations of List B birds in upland habitat were within 100 feet of the resource edge; 91.5 percent of the observations were within 150 feet.

Table 4
Percentage of Observations of Riparian Dependent and Riparian Associated Birds in Upland Habitat at the Eastern Study Site

	% 0-50	% 50-100	% 100-150	% 150-200	% >200
TARGET LIST A	33.33	33.33	33.33	0	0
TARGET LIST B	60.00	29.00	4.00	6.00	1.00
BEWR	77.27	22.73	0	0	0
BHGR	0	100.00	0	0	0
HOWR	60.00	40.00	0	0	0
LEGO	83.33	16.67	0	0	0
SOSP	0	0	100.00	0	0
SPTO	29.41	35.29	11.76	17.65	5.88
WIWA	50.00	50.00	0	0	0

List A: Riparian dependent target bird species
List B: Riparian associated target bird species

BEWR = Bewick's Wren
BHGR = Black-Headed Grosbeak
HOWR = House Wren
LEGO = Lessor Goldfinch
SOSP = Song Sparrow
SPTO = Spotted Towhee
WIWA = Wilson's Warbler

b. Small Mammals

(1) Phase I

(a) *Live-Trapping*

The results of the small mammal trapping effort indicate that many of the same species occurring within riparian areas also occur along the riparian/upland ecotone (very narrow bands of degraded coastal sage scrub, grassland, and Great Basin scrub). However, two species trapped within the ecotone habitats, but that were not recorded within the riparian zone (California pocket mouse, San Diego desert woodrat), were not included as target species. Movement of target small mammal species recorded during this trapping study that are known to occupy and utilize both riparian and upland habitat types (i.e., moved between riparian and upland habitats), exhibited average daily movement patterns consistent with previously documented small mammal home range diameters (e.g., WHRS).

(2) Phase II

(a) *Live-Trapping*

Results of Phase II trapping performed by Impact Sciences revealed that Grid B (n=6) supports a higher diversity of small mammal fauna than Grid A (n=4). Grid A was located in low quality upland habitat (primarily degraded coastal sage scrub), while Grid B was located in high quality upland habitat (dense coastal sage scrub). Grid A (lower quality habitat) supported deer mouse, western harvest mouse, dusky-footed woodrat, and California pocket mouse. Grid B (higher quality habitat) supported western harvest mouse, dusky-footed woodrat, desert woodrat, California mouse, California pocket mouse, and brush mouse. Only three species co-occurred on both grids: western harvest mouse, dusky-footed woodrat, and California pocket mouse. Total number of captures was 63 on Grid A and 58 on Grid B. Capture success was 10.4 percent on Grid A and 9.6 percent on Grid B. **Tables 5 and 6** present results of the number and species of small mammals trapped.

Table 5
Small Mammals Recorded on Grid A

Species	Number of Individuals	Percent of total sample size	Number of Captures	Percent of Total Captures
REME	12	48 %	26	42 %
NEFU	2	8 %	4	6 %
PEMA	10	40 %	29	46 %
CHCA	1	4 %	4	6 %
Totals	**25**	**100 %**	**63**	**100 %**

REME = *Reithrodontomys megalotis*
NEFU = *Neotoma fuscipes*
PEMA = *Peromyscus maniculatus*
CHCA = *Chaetodipus californicus*

Table 6
Small Mammals Recorded on Grid B

Species	Number of Individuals	Percent of total sample size	Number of Captures	Percent of Total Captures
REME	5	20 %	9	16 %
NEFU	7	30 %	19	33 %
PECA	3	12.5 %	6	10 %
PEBO	3	12.5 %	6	10 %
CHCA	4	17 %	14	24 %
NELE	2	8 %	4	7 %
Totals	**24**	**100 %**	**58**	**100 %**

REME = *Reithrodontomys megalotis*
NEFU = *Neotoma fuscipes*
PECA = *Peromyscus californicus*
PEBO = *Peromyscus boylii*
CHCA = *Chaetodipus californicus*
NELE = *Neotoma lepida*

In addition, more than two times the percentage of small mammals were recorded within 100 feet of riparian resource on Grid B (high quality) than on Grid A (low quality). Beyond 100 feet from the riparian resource edge, percentages of animals captured were more consistent between the two grids. This may suggest that for those small mammals occurring in high quality upland habitats located adjacent to riparian habitats, they tend to utilize the habitats located closer to the riparian habitat.

On Grid B (high quality), all brush mouse were recorded within 60 feet of the riparian resource line; all California mouse were recorded within 80 feet of the resource line; all dusky-footed woodrat were recorded within 40 feet of the resource line (including riparian habitats). These three species are associated with riparian or mesic habitats, and are reported to actively search-out free water sources. Of particular note, the dusky-footed woodrat (considered a riparian associate when habitat available) moved on average 60 percent more on Grid A than Grid B. Average movement for this species was 56.4 feet further on Grid A than Grid B (92.4 feet average movement on Grid A and 36.0 feet average movement on Grid B). Western harvest mouse moved an average of 8.0 percent further on Grid A than Grid B.

Home range sizes were calculated for the six species trapped on Grid B and the four species trapped on Grid A. Grid A (low quality) average home range for all species present was calculated as 150.3 feet in diameter, or a 75.15 feet radius; Grid B (high quality) average home range for all species present was calculated as 103.0 feet in diameter or a 51.5 feet radius (**Table 7**).

Table 7
Small Mammal Home Range Size Comparison

Species	Low Quality Habitat (Grid A)	High Quality Habitat (Grid B)
REME	224.2	127.2
NEFU	184.9	120.0
PECA	—	84.7
PEBO	—	92.1
CHCA	40.0	84.7
NELE	—	109.4
PEMA	152.1	—
Average	**150.3**	**103.0**

REME = *Reithrodontomys megalotis*
NEFU = *Neotoma fuscipes*
PECA = *Peromyscus californicus*
PEBO = *Peromyscus boylii*
CHCA = *Chaetodipus californicus*
NELE = *Neotoma lepida*
PEMA = *Peromyscus maniculatus*

(b) Vegetation Analysis

Habitat analysis is a very important parameter when studying the interactions of sympatric species because habitat quality is highly correlated with species-specific niches such as food supply and nesting sites. Interpretation of the trapping and vegetation analysis results suggests that small

mammal diversity is positively correlated with shrub density, canopy height, and plant species composition. Grid B provided enhanced opportunities (e.g., additional niches) for arboreal activity for foraging, movement, and predator escape, as well as a larger volume of shrub debris for nest building woodrats. In total, the three co-occurring species moved an average of 25 percent further on Grid A (low quality) than Grid B (high quality). **Tables 8 and 9** illustrate selected positively correlated habitat variables present on the Phase II trapping grids.

Table 8
Grid A Selected Habitat Variables for Each Small Mammal Species

Habitat Variable	*N. fuscipes*	*R. megalotis*	*C. californicus*	*P. maniculatus*
Canopy Height (feet)	5.75	2.42	3.00	2.10
Shrub Density Index*	2.25	1.24	1.25	1.37

*SDI average calculated as follows: Open = 0, Low = 1, Moderate = 2, High = 3

Table 9
Grid B Selected Habitat Variables for Each Small Mammal Species

Habitat Variable	*N. fuscipes*	*R. megalotis*	*C. californicus*	*P. californicus*	*P. boylii*	*N. lepida*
Canopy Height (feet)	7.80	3.39	3.17	8.00	9.17	4.63
Shrub Density Index*	2.50	2.56	2.21	2.08	2.17	2.25

*SDI average calculated as follows: Open = 0, Low = 1, Moderate = 2, High = 3

6. DISCUSSION AND CONCLUSIONS

a. Introduction

Prior to any discussion of study results, it is important to note that during the conduct of these investigations two issues were of continuous concern. First, this study was restricted to specific goals and cannot, or should not, be treated as a study that addressed a broad range of river corridor issues. Second, data compiled during our field investigations could be questioned with respect to their timing or duration. Each of these issues is discussed below.

With respect to issue one, this study was oriented towards responding to two goals. Goal one emphasized the protection and enhancement of terrestrial species diversity and abundance within the riparian corridor east of Interstate 5, while goal two aimed to define an acceptable standard for a separation zone (i.e., a buffer) between riparian resources and proposed development projects. East of Interstate 5, engineering studies prepared by Newhall Land and Farming Company indicated that with the exception of bridges proposed at road crossings, only limited disturbances are proposed within the streamcourse or to riparian vegetation within the banks of the Santa Clara River or San Francisquito Creek. Rather, most impacts occur in areas inland of the bank edge. Therefore, impacts to river resources associated with projects proposed east of Interstate 5 generally occur on the terraces where development is proposed proximal to the existing riparian edge and not within the streamcourse. Also, Newhall Land and Farming Company is in the process of completing an Environmental Impact Statement (EIS) for a United States Army Corps of Engineers general permit that would govern all activities (e.g., bridges and bank stabilization) proposed within the streamcourse. As part of this EIS, measures are proposed that focus on improvements to aquatic resources within that area administered by the Corps (i.e., the mean high water mark). In response to these facts, this study did not focus on the hydrodynamics of the river, issues associated with substrate, impacts to the banks of the river, or the associated fishery. Rather, the focus of the study is limited to the specific goals defined above.

The second issue of concern focused on the adequacy of the data. As stated, Impact Sciences and Newhall Land and Farming Company were concerned that the recommendations of this study might be questioned due to the timing of the field investigations as well as the extent of field work conducted. It is acknowledged that additional data can always be used to more precisely define conclusions or identify recommendations with greater authority. In response, it was our obligation to consider these issues and to affirmatively seek information that would remove data gaps to the extent feasible. Action was taken to conduct additional surveys during the spring season and to

expand the scope of selected field investigations. However, it must be understood that the analysis undertaken can never be perfect and the information available could always be augmented or challenged.

The adequacy of data, particularly as it relates to environmental documents, has been regularly tested in court. In response to analytical data within an Environmental Impact Statement, the District of Columbia Circuit Court held in Alaska v. Andrus, that agencies and their associated projects may not be precluded from proceeding merely because study results remain to some extent speculative. The California Environmental Quality Act (CEQA) generally defines adequacy as a "good faith effort at full disclosure." For the purpose of this study, it is assumed that some degree of speculation is implicit in our work. However, we are confident that the work conducted is verifiable, replicative, and is based on accepted protocols where and when they were required or appropriate.

b. Discussion

The two goals of this study are not separate or distinct. Rather, they are at least, in part, interrelated. However, to accomplish the objectives of this study it was necessary to first account for the protection and enhancement of terrestrial species diversity within the riparian resource. That information is prerequisite to defining the physical characteristics of a separation zone that could serve to buffer two incompatible land use types (i.e., the riparian resource and urban development).

As a first step in meeting the study goals, it was necessary to define the condition of the resource present. It was assumed that due to the type and extent of historic disturbances, species diversity in the riparian zone east of Interstate 5 has substantially declined from historic levels. These disturbances have generally occurred in the form of farming and urban development. Although these disturbances have had a moderate effect on the riparian corridor and its associated vegetation or substrate, substantial impacts have occurred in uplands adjacent to the Santa Clara River and San Francisquito Creek. These disturbances have resulted in the elimination of any viable upland habitat as well as the riparian/upland ecotone that is fundamental to the life history of several terrestrial vertebrates.

The available literature, Impact Sciences field observations, and the observations of other experts have confirmed this assumption. Many studies indicate that species diversity is significantly greater in riparian areas where adjacent uplands are present versus areas that lacked upland vegetation adjacent to the riparian resource. In addition, field observations conducted by Impact

Sciences during our Phase I field investigations also support this conclusion. Anecdotal information collected by Impact Sciences biologists and Dr. Guthrie observed that species diversity within riparian habitats associated with the Santa Clara River was substantially greater in areas where adjacent uplands were present, versus riparian areas where uplands and the associated ecotone was absent.

Results of Phase I work conducted by Impact Sciences are also consistent with the conclusions of Schaefer and Brown and other authors who suggest that riparian habitat is not a closed or autonomous system. Rather, most riparian dependent wildlife species utilize adjacent uplands to obtain essential food or nesting resources and continuously move between riparian and upland zones. Previous studies and our Phase I field observations indicate that in areas of low quality habitat, some riparian dependent species were not observed. These observations, and the similar observations of others, confirmed recent studies that concluded if critical habitat requirements (e.g., the adjacent uplands) are reduced in quality or quantity, the ecosystem will no longer satisfy the needs of selected species. For these animals, a substantial life-history requirement is absent; these species will be unable to sustain their existence, and these animals likely will emigrate with varying success rates to areas with more suitable habitat. Based on the sum of this information, it can be concluded that adjacent upland habitat zones are critical in accounting for species diversity. Therefore, re-establishment of upland habitat, inclusive of the riparian/upland ecotone adjacent to the Santa Clarita River and San Francisquito Creek, is a critical prerequisite in achieving the goal of protecting and enhancing terrestrial species diversity within the riparian corridor east of Interstate 5.

Given this conclusion the remainder of the study focused on the nature and extent of the uplands and how uplands could further protect and enhance riparian species diversity. An assumption of this study was that adjacent uplands and the ecotone are important elements of the predator–prey relationship. However, it has been documented that only a portion of the overall prey base for riparian predators is derived from small mammals that occur within the ecotone. Further, the ecotone often does not provide the array of vegetation necessary to satisfy the diverse dietary needs of these predators. As such, it was assumed that the ecotone alone does not provide a sufficient prey base (in the form of small mammals) or vegetation for the riparian predators as a group. Given these facts, riparian predators were considered in all study recommendations but were not the subject of extensive field investigations. However, to maintain the diversity of riparian predators in the corridor, a sustainable small mammal population in the ecotone and adjacent uplands is essential.

As defined early in this report, Schaefer (personal communication, 1997) and Reed (1986) indicated that in open systems two requirements are necessary to sustain small mammal populations. First, in areas that cannot account for the minimum number of home ranges necessary for sustainability (defined as 50 animals with enough habitat to accommodate for the home range needs of each individual to account for short-term survival, 500 animals for long-term survival, and 200 animals/home ranges being considered the working median), open space areas must be connected such that opportunities exist for small animals to move between areas of suitable habitat. Second, Schaefer (1997) and Reed (1986) concluded that if a corridor or buffer is at least wide enough to support the home range requirement of the small mammals present, and is continuous or connects to other large open spaces, it is assumed that the entire corridor or buffer will accommodate the home range needs of enough animals to sustain those populations for the long-term.

In response to these habitat requirements, Phase II studies conducted by Impact Sciences focused on defining the home range size of small mammals present in areas of high and low quality habitat. Trapping data determined that a higher diversity of small mammal fauna occurred in areas of high quality habitat (six species recorded in high quality habitat versus four species recorded in areas of low quality habitat). Interpretation of the trapping data suggested that small mammal diversity positively correlated to enhanced opportunities for arboreal activity inclusive of foraging, movement, predator escape, and a larger volume of shrub debris for nest building. Trapping data also indicated that for the three co-occurring species trapped in both high and low quality habitat, animal movement was on average 25 percent greater in areas of low quality habitat.

As stated, another focus of the small mammal trapping program was a determination of home range size as it related to criteria set forth by Schaefer and Reed. Home range data was calculated (in diameter versus area) for all species trapped on each grid during the study. This data is presented again below and generally indicates that home range size is smaller in areas of high quality habitat due to reduced movement requirements and increased niche opportunities.

Small Mammal Home Range Size

	Low Quality Habitat	High Quality Habitat
Deer Mouse	152.1 feet	—
Dusky-footed Woodrat	184.9 feet	120.0 feet
Western Harvest Mouse	224.2 feet	127.2 feet
California Pocket Mouse	40.0 feet	84.7 feet
California Mouse	—	84.7 feet
Brush Mouse	—	92.1 feet
Desert Woodrat	—	109.4 feet

In areas of low quality habitat, the average home range size (again calculated in diameter versus area) for all of the species was calculated at 150.3 feet, while in areas of high quality habitat the average home range size was calculated at 103.0 feet.

Data compiled by Schaefer (personal communication, 1997) and Reed (1986) also indicated that connectivity is an important consideration in the sustainability of small mammal populations in linear open space areas. As such, information regarding the movement of small mammals was an important study consideration. Studies of the genus *Peromyscus* provide varied information. Some data indicates that animals generally remain within or close to their respective home ranges once established (King, 1968). However, other studies note that individuals of this genus move from 1,200 to 1,500 feet (Blair, 1948). Blair indicated that reasons for large movements vary but include dispersal of young from birth sites, invasion of depauperate areas, destruction of existing habitat, or exploratory trips. Most recently, Genoways and Brown (1993) cited that most species of small mammals (*Dipodomys* being the target) moved less than 100 meters during their life history. This later standard should be used as a maximum measure of habitat separation in the planning of all urban projects.

Maintenance of a sustainable small mammal population is a fundamental requirement in protecting and enhancing species diversity within the riparian corridor. However, other subgroups of animals typical of riparian habitat are also known to significantly utilize the riparian/upland ecotone and contribute to species diversity in the riparian corridor as well as the adjacent uplands. Important among these are the birds.

As described in the methodology and results sections, birds were assigned to two groups. The first group of birds (List A birds) consisted of species that are considered riparian dependent, while List B species are defined here as riparian associates but are commonly observed in upland habitats as well. Because the List A birds are more dependent on true riparian habitat for their life history requirements than List B birds, the analysis and conclusions of the bird study focused on the List A birds. Data from each of these groups of birds provided additional information regarding use of the ecotone and upland habitat and could serve as an additional measure in defining an upland buffer requirement and measures to protect and maintain avian diversity.

As described above, studies of bird use in upland habitat and the riparian/upland edge or ecotone was conducted in areas where riparian and upland resources were of both high and low quality based on a qualitative vegetative analysis (i.e., percent cover, dominant plant species, species diversity and structure, etc.). The results of this work indicated that in areas of high quality habitat List A

birds were common in the ecotone, but rarely used uplands beyond 100 feet. Indeed, 99.0 percent of all observations of List A birds in high quality habitat occurred within 100 feet of the riparian canopy. In areas of low quality habitat, use of the ecotone by List A birds was also high. However, observations were more evenly distributed between the riparian edge and in uplands up to 100 feet. Ninety percent (90.0) of all observations of List A birds in areas of low quality habitat occurred within 100 feet of the riparian canopy. Further, no List A birds occurred in uplands beyond 150 feet of the riparian edge regardless of the quality of the vegetation.

These data also suggest several observations. First, given the paucity of vegetation in the low quality riparian and upland zones, List A birds forage over a greater area when compared with similar foraging behavior in areas of high quality habitat. Second, List A birds regardless of habitat quality, do not move great distances away from the riparian edge. Observations indicate that List A birds generally do not extend more than 100 feet beyond the riparian canopy. Third, as expected, the ecotone was most often utilized by List A birds (74 percent of all occurrences in areas of high quality habitat and 33 percent of all occurrences in areas of low quality habitat). Finally, these data confirm and augment work conducted on habitat use by least Bell's vireo in San Diego and Santa Barbara Counties (Gray and Greaves, 1984; San Diego Association of Governments, 1988). These studies found that where the riparian resource is greater than 300 feet in width (such as the condition that occurs in the Santa Clara River and San Francisquito Creek east of Interstate 5), least Bell's vireo are infrequently observed in upland habitat greater than 150 feet from the resource edge. However, where the riparian resource is less than 100 feet in width, this bird occurs in the adjacent uplands up to 300 feet from the resource edge. These studies concluded that this behavior generally occurs in response to the presence or absence of food within the riparian zone. Where the extent of the resource is greater, food resources are increased and there is a corresponding reduction in foraging requirements outside the riparian zone.

As expected, in some cases List B birds occurred in the uplands farther from the riparian canopy edge when compared with data for the List A birds. In areas of high quality habitat, 84.5 percent of all occurrences for List B birds were within 100 feet of the riparian canopy as compared with 99.0 percent of the List A birds. This observation was expected in areas of high quality habitat. List B birds are often associated with upland vegetation communities and the uplands present in areas of high quality were of sufficient density and height as to provide the cover preferred by the List B birds. However, in areas of low quality habitat, 93.4 percent of the List B birds occurred within 100 feet of the riparian canopy as compared with 90.0 percent of the List A birds. The fact that List B birds remained closer to the riparian canopy may have been due to the dense vegetation present in the riparian zone versus a relatively sparse upland ecotone. However, in low quality

habitat List B birds did move to upland habitat beyond 150 feet where the uplands were better developed and provided additional cover. These data suggest that for List B birds the ecotone was also an important element, but as expected, observations of List B birds were more evenly distributed in areas beyond the ecotone and observed greater distances from the ecotone given appropriate vegetation.

Early in this report it was concluded that terrestrial species diversity in the riparian corridor was reduced due to the elimination of upland vegetation and the riparian/upland ecotone. To achieve the goal of protection and enhancement of terrestrial species diversity within the riparian corridor east of Interstate 5, a required first step was to re-establish the presence of viable upland habitat and the riparian/upland ecotone via implementation of an upland preserve zone. To ensure the biological integrity and sustainability of this created habitat and ecotone, it was important to define some minimum parameters. Parameters suggested in this report are based on our review of the literature and the results of our field investigations. Indirectly, these parameters would also satisfy the second goal of this study, which was intended to define standards for a separation zone that would buffer riparian resources and urban uses. In recommending an upland preserve zone, it is understood that the created uplands and the associated ecotone should be afforded a similar sensitivity status as the riparian vegetation, as the uplands are a critical component of the riparian ecosystem and the adjacent uplands are a fundamental requirement in protecting and enhancing species diversity.

Data compiled as part of this study indicates that two standards are recommended based on the quality of upland vegetation present. If the upland preserve zone is left to revegetate naturally, it is expected that the quality of the vegetation would be low to moderate, and re-establishment would occur over a relatively long period of time. Should this approach be taken, a minimum upland preserve zone of 150 feet is recommended. This standard is based on the small mammals present and their known home range requirements as well as the behavior of List A and B birds in uplands of low quality. Should the upland preserve zone be revegetated rapidly based on natural models derived from the local area and maintained as high quality upland habitat, based on the information obtained from field investigations regarding small mammal home ranges and the movement patterns of List A and List B birds in high quality uplands, the width of the upland preserve zone could be reduced to 100 feet. These recommendations are consistent with recently documented CDFG recommendations for upland preserve areas adjacent to riparian and wetland habitats in the San Joaquin Valley. For riparian habitats and river systems similar to those in the Santa Clarita region, CDFG also recommended a minimum "conservation area" of 100 feet and a planning buffer of at least 50 feet to separate riparian and upland areas from incompatible land uses.

Consistent with this recently prepared CDFG study, it is further recommended that a "planning buffer" shall occur between the upland preserve zone and any urban development. This buffer should be a minimum of 50 feet in width and, similar to studies conducted for the San Diego Association of Governments, it is recommended that only passive uses occur within this buffer (e.g., trails, roads, passive recreational uses, etc.). The intent of the planning buffer is to separate two incompatible land uses (in this case the upland preserve zone and urban uses). Given the importance of the planning buffer, special consideration shall be afforded to this area during the decisionmaking process to ensure that light and glare, noise, and use of the upland preserve zone and more distant riparian resources by domestic animals and human uses are minimized or eliminated. It is further recommended that in lieu of the 50-foot planning buffer, an impenetrable wall or fence could be substituted. A physical barrier such as a wall or fence would also reduce or eliminate the effects of light and glare, noise and indiscriminant use of the upland preserve zone by humans or domestic animals.

APPENDIX A

Résumés of Impact Sciences Biologists

SCOTT D. CAMERON

Senior Biologist

Mr. Cameron is a Senior Biologist with experience in sensitive biological resources inventories, endangered species surveys, general wildlife biology, environmental mitigation monitoring, and wildlife and botanical habitat evaluations in the counties of Los Angeles, San Diego, Orange, Kern, Fresno, Kings, Santa Barbara, Alameda, Ventura, Santa Barbara, Monterey, Riverside, San Bernardino, Imperial, Del Norte, Sacramento, and San Joaquin. Documentation experience includes preparation of numerous environmental and biological assessments, Environmental Impact Reports (EIRs), and mitigation/monitoring plans. Mr. Cameron has handled thousands of small mammals (50,000+ cumulative trapnights and over 5,000 captures) in California and Wyoming, and has been included in multiple Memoranda of Understanding (MOUs). He has designed numerous study plans to evaluate the presence/absence of special-status small mammals and reptiles. He has also handled and/or surveyed for sensitive, threatened, and endangered birds and reptiles under federal and state permits. Other projects include wildlife corridor evaluations, extensive linear pipeline and transmission facility experience, and interpretation of aerial photography and topographic-based data for incorporation into Geographical Information System (GIS) format. Additionally, Mr. Cameron is responsible for personnel supervision and project management. Mr. Cameron currently holds federal permits to conduct focused surveys for California gnatcatcher, arroyo toad, and Pacific pocket mouse (1996-2000).

Selected Professional Experience

Principal Investigator for evaluating habitats potentially suitable to support Pacific pocket mouse at the Playa Vista project site. Conducted mammal inventory on the project site located in the Playa del Rey area, Los Angeles County, California (a type locality for the Pacific pocket mouse). Tasks included designing and submitting a formal study plan to USFWS and conducting a focused field survey effort for the Pacific pocket mouse and other sensitive small mammal species. Principal investigator for the 3,000+ trapnight effort utilizing both Sherman live-traps and pitfall trapping arrays. Performed these surveys under the authority of federal permit (PRT-808242).

Principal Investigator for live-trapping program to evaluate the presence/absence of the federal-listed endangered Pacific pocket mouse (*Perognathus longimembris pacificus*) in the Del Mar area, San Diego County, California. Performed these surveys under the authority of federal permit (PRT-808242).

Principal Investigator for live-trapping program to evaluate the presence/absence of the federal-listed endangered Pacific pocket mouse in the Silver Strand area, San Diego County, California. Performed these surveys under the authority of federal permit (PRT-808242).

Principal Investigator for live-trapping program to evaluate the presence/absence of the federal-listed endangered Pacific pocket mouse in Crystal Cove State Park, Orange County, California. Performed these surveys under the authority of federal permit (PRT-808242).

Senior Biologist/Trap Manager for evaluating habitats potentially suitable to support Pacific pocket mouse on USMC Camp Pendleton (Base). Directed trap assistants, established trapping transects, and handled endangered Pacific pocket mice during the course of a large trapping study conducted throughout the Base located in San Diego County, California.

Principle Investigator/Project Biologist for a small mammal inventory and distribution study program conducted in the northeastern portion of Wyoming. Permitted as Principal Investigator (under MOU) to conduct the trapping program by Wyoming Department of Game and Fish (WDGF).

The trapping program was a component of a Gap Analysis project that was a cooperative effort between WDGF, Bureau of Land Management (BLM), The Nature Conservancy (TNC), and the University of Wyoming (UW). Specific job-related duties included conducting over 8,500 trapnights, ground-truthing GIS vegetation polygons for accuracy, evaluating habitat quality, and identifying dominant and subdominant plant communities occurring in a tri-county area. All small mammals captured were measured and identified to species. Additional work involved hantavirus research, collection of museum specimens, and raptor rehabilitation. Responsible for supervising trapping assistants and producing final report for publication.

Principal Investigator/Senior Biologist for conducting focused small mammal trapping surveys for sensitive biological resources including the Los Angeles pocket mouse (*Perognathus longimembris brevinasus*) near the City of Chatsworth, Los Angeles County. Project was located in a Significant Ecological Area (SEA), and as such involved preparation of a Biota Report and subsequent planning meetings with the SEA Technical Advisory Committee (SEATAC).

Project Ecologist/Trap Manager for 50,000+ trapnight program to evaluate the presence/absence of the federal-listed endangered Pacific pocket mouse. Trap manager for 10,000+ trapnights, and supervised numerous trap assistants involved in the project.

Project Ecologist for barn owl (*Tyto alba*) pellet analysis to provide information on the presence and relative distribution of the Pacific little pocket mouse. Individually examined and identified over 500 small mammal skulls and bone fragments of various small mammal species occurring in Orange and San Diego counties.

Project Biologist for vegetation mapping based on field truthing surveys and aerial photographic interpretation for the entire Orange County element to develop a sensitive wildlife species database and map the vegetation (especially coastal sage scrub), using a GIS in support of several subregional Natural Community Conservation Planning (NCCP) efforts. Data gathered were coded to specific and subspecific vegetation types for incorporation into a GIS data set to be used for resource evaluation, planning, and conservation purposes by the County of Orange and resources agencies.

Project Ecologist for several projects that involved interim habitat loss mitigation plans pursuant to the 4(d) special rule for impacts to coastal sage scrub resulting from grading operations associated with various development projects located in Orange County, California. The projects involved the application of an Interim Habitat Loss Permit for impacts to coastal sage scrub and evaluating if the proposed habitat loss conformed with the Southern California Coastal Sage Scrub Natural Community Conservation Planning Process Guidelines (Conservation Guidelines). The objective of the biological surveys was to evaluate the presence and abundance of California gnatcatchers potentially occurring at each project site. The USFWS listed the California gnatcatcher as threatened on March 25, 1993, under a proposed special ruling that recognizes regional conservation efforts already underway in Southern California, including the Natural Communities Conservation Planning (NCCP) program.

Senior Biologist/Principal Investigator for numerous biological studies in the Newhall area of Los Angeles County, California. Tasks included conducting surveys for sensitive wildlife species, designing and implementing a small mammal live-trapping programs, evaluating small mammal habitat usage of selected study areas, and evaluating biological resources present on potential mitigation properties.

Senior Biologist for performing a biological assessment of a 333-acre site located in Ventura County, near Camarillo, California. Tasks included directing and managing the field survey effort, conducting a small mammal live-trapping program, conducting focused avian surveys, conducting focused sensitive plant surveys, mapping the site's existing vegetation communities, conducting general aquatic herpetological surveys, and establishing scent and infrared camera stations.

Senior Biologist for conducting biological assessment on over 700 acres located in Ventura County, California. Conducted general wildlife surveys, special-status species surveys, vegetation mapping, and conducting and directing a focused small mammal sampling program effort.

Senior Biologist for performing a biological assessment of an approximately 100-acre site located in the Mountaingate area of Los Angeles County. Conducted a small mammal live-trapping program, performed general avian and reptile surveys of the project site, developed a plant compendium of the site, mapped the site's vegetation communities, and established scent stations. Results of these surveys will be used to evaluate the site's existing flora and fauna, as well as potentially occurring sensitive biological resources.

Project Ecologist/Project Manager for over 70 field days of California gnatcatcher surveys conducted in San Diego, Orange, San Bernardino, Riverside, Ventura, and Los Angeles counties for various clients throughout southern California. Observed hundreds of gnatcatchers during the course of these surveys. Developed and submitted numerous California gnatcatcher submittal letters to USFWS. Also evaluated and mapped gnatcatcher territories during the course of many of these surveys. Worked under the authority of federal permit (#PRT-782274 and 808242) to conduct California gnatcatcher surveys.

Senior Biologist for multiple field survey efforts and habitat-based evaluations to determine the presence/absence of the endangered Delhi Sands flower-loving fly (*Raphiomidas terminatus abdominalis*) in San Bernardino County, California. Assisted in conducting surveys following USFWS protocol, during which multiple fly individuals were observed. In addition, measured and recorded characteristics of occupied Delhi Sands flower-loving fly habitat at two sites known to support this species.

Project Manager/Ecologist for preparation of numerous Biological Assessments for Los Angeles Department of Water and Power (LADWP) reservoir sites and expansion facilities EIR. Duties included preparing proposal, scope of work, and budget. Responsible for directing other biologists in completing various field tasks and data collection. Conducted extensive literature searches and numerous field evaluations including California gnatcatcher surveys to identify sensitive biological resources.

Project Ecologist for conducting numerous focused and/or habitat evaluations surveys over a two-year period along the proposed Foothill Transportation Corridor located in Orange and San Diego counties, California. Focused surveys included, but were not limited to: California gnatcatcher, grasshopper sparrow, tricolored blackbird, Bell's sage sparrow, California horned lark, coastal cactus wren, loggerhead shrike, northern harrier, western burrowing owl, southern California rufous-crowned sparrow, San Diego horned lizard, Southwestern pond turtle, Arroyo southwestern toad, western spadefoot toad, silvery legless lizard, coastal rosy boa, orange-throated whiptail, San Bernardino ring-necked snake, coast patch-nosed snake, red diamond rattlesnake, Pacific pocket mouse, San Diego desert woodrat, and San Diego black-tailed jackrabbit. Food plant searches were also conducted to evaluate the potential presence/absence of Quino checkerspot butterflies. In addition, numerous surveys for sensitive plant species were conducted for species such as many-stemmed dudleya, Blochman's dudleya, and Palmer's grapplinghook.

Project Manager/Ecologist for preparation of numerous Biological Assessments and Biological Constraints Analysis in Orange, San Diego, Los Angeles, Ventura, and Imperial counties. Duties included preparing proposals, scope of work, and budgets. Responsible for directing other biologists in completing various field tasks and data collection.

Project Biologist for conducting baseline inventory of flora and fauna for multiple Caltrans highway projects in the Fresno and Coalinga areas. Surveys included small mammal trapping (included in MOU for short-nosed kangaroo rats), scent station monitoring, spotlighting, and focused reptile and

avian surveys. Evaluated habitat along highway ROWs for potential occurrence of sensitive species.

Project Biologist for over 30 proposed small energy development projects, including linear facilities, such as pipelines and transmission lines, for the Westside Development Program and Kern River Oilfield Development Program, Kern and Monterey Counties. As staff biologist, was responsible for inventory of rare, threatened, and endangered plant and animal species using various field and literature search techniques, including transect surveys, small mammal trapping surveys under MOU with CDFG, scent station and burrow monitoring, and evaluations based on animal sign. Evaluated presence/ absence of sensitive habitats. Also responsible for training field biologists and coordination of field activities.

Project Ecologist for Fiesta Island Replacement Project/Northern Sludge Processing Facility (FIRP/NSPF) EIS/EIR in the Miramar area for the City of San Diego Metropolitan Wastewater Department. Conducted vernal pool surveys that included evaluating the presence of sensitive plant and amphibious wildlife species. Additionally, prepared a vernal pool appendices report for inclusion in the EIS/EIR.

Project Ecologist for a California Department of Corrections electrified fence EIR project. Duties included evaluating correctional facilities throughout California and involved evaluating wildlife mortality (mainly migrating avifauna) along perimeter fences. Developed various methods to prevent or reduce "take" of special-status wildlife species.

Project Biologist for conducting field surveys for threatened and endangered species along various drainages as part of ACOE Section 404 and CDFG Section 1603 wetlands jurisdiction evaluation for proposed aquifer recharge and development program in Kern County, California.

Project Ecologist for surveys for arroyo toad (*Bufo microscaphus californicus*) in Orange and San Diego counties. Surveys were conducted at night and involved identifying toads by vocalization and direct observation (including juveniles and tadpoles). Additionally, all arroyo toad locations were mapped for future population estimates and documentation. Federal permit number PRT-808242 to conduct surveys for this species.

Project Biologist for a sensitive biological resources study on 6,250 acres of land between the Algodones Dunes and the Chocolate Mountains. Directed six biologists conducting surveys for desert tortoise (*Gopherus agassizii*), flat-tailed horned lizard (*Phrynosoma mccallii*), and Colorado Desert fringe-toed lizard (*Uma notata*). Acquired certification from the Arizona Department of Game and Fish to survey for the flat-tailed horned lizard.

Biological Technician for black-footed ferret (*Mustela nigripes*) trapping project in Medicine Bow, Wyoming. Conducted spot-light surveys for captive-bred introduced ferrets, and assisted biologists set live-traps, bar-code scan, and release captured ferrets.

Biologist for preconstruction surveys to evaluate areas that support desert tortoise in Nevada and California along the 900 mile-long Kern River natural gas pipeline ROW. Evaluations based upon presence/ abundance of burrows, scat, tracks, drinking depressions, and carapace remains, as well as the use of fiber-optic scopes to visually inspect deep burrows for tortoise occupation. Monitored all phases of construction throughout known tortoise habitat. Documented all tortoise encounters, removed tortoises from the construction site, and performed handling procedures following USFWS protocol, which included marking scutes, painting and numbering, photographing, and monitoring overnight before release. Included on the MOU for the Kern River Pipeline project and was certified to handle and inventory desert tortoises by USFWS. Also worked as lead environmental monitor along a 70-mile section of ROW and was responsible for endangered species education of construction personnel and supervision.

Project Ecologist for California Department of Corrections involving mitigation monitoring of a Pacific Gas and Electric (PG&E) along a pipeline corridor. Included on MOU to trap and translocate short-nosed kangaroo rat (*Dipodomys nitratoides brevinasus*) in Kern and Fresno counties.

Project Biologist for field mapping and aerial photographic interpretation of sensitive riparian vegetation types occurring along portions of the Mojave River corridor. Responsible for transferring data onto multiple topographic cross sections for use in flood control engineering models.

Project Biologist for botanical and wildlife reconnaissance surveys at two water reservoir sites on and near McGinty Mountain (San Diego County) to evaluate the potential occurrence of several sensitive animal species, including coastal California gnatcatcher, San Diego horned lizard, and orange-throated whiptail, as well as several rare plants, including dehesa nolina (*Nolina interrata*) and San Diego thornmint (*Acanthomintha ilicifolia*).

Staff Biologist for development of the Kern County Habitat Conservation Plan (HCP). Assisted in the field inventory of threatened and endangered species on approximately 150 sites in the San Joaquin Valley floor portion of Kern County, as well as data reduction, accessing pertinent data bases, and figure production.

Project Biologist for desert tortoise clearance surveys. Performed burrow closing procedures and documented and relocated tortoise and tortoise eggs from a flood control project construction site in Nevada. Worked under an MOU with USFWS.

Staff Biologist for baseline biological inventories for wildlife and botanical resources, including sensitive wildlife species surveys for the proposed Elsmere Solid Waste Facility landfill site in Los Angeles County. Field work involved small mammal trapping and sensitive bat surveys using mist nets, night-vision scopes, and hand-held bat echolocation detectors. Plant communities were mapped based on aerial photographic interpretation and field-truthing. Plotted sensitive species, habitats, and vegetation types and assisted in wildlife corridor identification for incorporation into a GIS. Also assisted in wetland delineations.

Research Assistant for the capture, electronic passive infrared transmitter tagging, bar-code scanning, and release of giant kangaroo rats (*Dipodomys ingens*) and blunt-nosed leopard lizard (*Gambelia silus*) on the Elkhorn and Carrizo Plains. Worked with San Joaquin Endangered Species Recovery Program Team, and the CSU Stanislaus Foundation. The dispersal and reproductive data gathered was used to develop future species recovery plans.

Professional History

Impact Sciences, Inc. - Senior Biologist
Michael Brandman Associates - Project Ecologist/Manager
The Nature Conservancy - Project Biologist/Principle Investigator
Wyoming Department of Game and Fish - Biological Technician
Dames and Moore - Staff Biologist
San Joaquin Endangered Species Recovery Program/CSU Stanislaus Foundation - Research Assistant
University of California, Santa Barbara - Undergraduate Assistant
County of Santa Barbara, Department of Environmental Review - Intern
California Department of Parks and Recreation - Assistant
College of the Redwoods - Undergraduate Assistant

Education/Permits/Certifications

- B.A., Environmental Studies (Biological Sciences and Natural Resource Management Emphasis; graduate-level courses in Ecology), University of California, Santa Barbara
- Certification, Flat-tailed Horned Lizard Survey Techniques, Arizona Department of Game and Fish
- Certification, Desert Tortoise Handling, burrow construction, and egg handling Techniques, U.S. Fish and Wildlife Service
- Certification, Marine Sciences Program, Santa Barbara City College
- Certification, Rescue Diver, PADI
- Joint Federal and State Scientific Collecting Permit, California Department of Fish and Game, 1992-1997
- CDFG Agreement to trap and release small mammal California Species of Special Concern, 1996-1997
- Federal Section 10(a) Permit to capture and release an endangered small mammal species, Pacific pocket mouse, 1996-2000 (PRT-808242).
  Federal Section 10(a) Permit to capture and release threatened and endangered amphibian species, arroyo toad, 1996-2000 (PRT-808242)
- Federal Section 10(a) Permit for performance of California Gnatcatcher surveys, 1996-2000 (PRT-808242)

Professional Affiliations

The Wildlife Society
Desert Tortoise Council
Society for the Study of Reptiles and Amphibians

Publications

Cameron, S. D. and R. W. Hanson. 1994. *Range Extension of the Western Patchnose Snake (Salvadora hexalepis mojavensis).* Herpetological Review, 25 (1): 34-35.

Cameron, S. D. and C. S. Garber, (in prep.). *Inventory and Monitoring of Small Mammal Distribution in the Bureau of Land Management's Casper District, Buffalo Resource Area.* The Nature Conservancy, Wyoming Natural Diversity Database. Cooperative Agreement Number K910-A4-0011, Task Order TO-002.

KEITH W. BABCOCK

Director of Biological Services/Wildlife Biologist

Mr. Babcock is Director of Biological Services at Impact Sciences, Inc., and is a wildlife biologist with over 10 years of experience in both wildlife biology and project management. He has directed, managed, or conducted a broad range of terrestrial wildlife research and studies, biological resource inventories, sensitive species surveys, environmental impact assessments, biological constraints analysis, habitat conservation/management plans, and mitigation monitoring plans for a variety of private and public sector clients in virtually every major habitat type in California. Mr. Babcock has a thorough understanding of the California Environmental Quality Act, both state and federal Endangered Species Acts, and state and federal regulations and permits involving biological resources. He has worked on over 150 environmental compliance projects, including EIRs, EISs, Section 10(a) permits, Habitat Conservation Plans, Section 7 consultations, Section 404 permits, and Streambed Alteration Agreements. His biological expertise includes knowledge of a wide range of terrestrial organisms and ecological relationships, with particular emphasis on general ornithology, raptors, threatened and endangered species, and wildlife movement corridors.

Representative Professional Experience

Environmental Compliance

- Managed and participated in field investigations, data collection, and preparation of the biological resources assessment portion of EIRs for the California Department of Corrections for proposed prison facilities throughout northern and central California. Significant issues included potential impacts on numerous state- and federally-listed threatened or endangered animal species including desert tortoise, San Joaquin kit fox, Swainson's hawk, blunt-nosed leopard lizard, Tipton kangaroo rat, and California red-legged frog. Potential impacts on wildlife movement corridors were also addressed. In some cases, consultations were conducted with the USFWS and CDFG in preparation of the need for a potential federal Section 10(a) permit and a state Section 2090 permit.

- Managed field surveys, data collection, and documentation of sensitive biological resources for a 5,000-acre study area, and participated in preserve area design for a 45,000-acre study area, on the Rancho Mission Viejo ranch in southern Orange County, California, for inclusion in the Natural Communities Conservation Planning (NCCP) multispecies habitat management program. Directed and participated in focused surveys for more than 15 sensitive species including the California gnatcatcher, coastal cactus wren, least Bell's vireo, yellow-breasted chat, San Diego horned lizard, orange-throated whiptail, many-stemmed dudleya, Palmer's grappling-hook, southwestern pond turtle, arroyo toad, and several raptor species.

- Managed all field studies and documentation efforts for the biological resources assessment and impact analysis component of the 4,200-acre Specific Plan Area 8 EIR for the City of Moorpark, Ventura County. Field evaluations included focused surveys for a number of sensitive plant and animal species, a wildlife movement corridor analysis, tree surveys, and wetland delineations. Meetings were conducted with individuals of the USFWS, CDFG, and other environmental interest groups to gain consensus on field survey methodology and results. All biological information was incorporated into a Geographic Information System (GIS) for impact analysis and land use planning.

- Directed and participated in field investigations and documentation of the biological resources inventory and impact assessment component of a statewide EIR for proposed electrified fences at 29 state prisons throughout California. Tasks involved determining species at risk of

electrocution, managing baseline assessments of habitats and species at each prison site, developing creative measures to mitigate impacts, and consulting with state and federal resource agencies. Also assisted in the management of, and participated in, a similar investigation for two prisons in the state of Washington.

- Directed and participated in field surveys and documentation for the biological resources component of a Mitigated Negative Declaration for a seismic upgrade project of a 15-mile portion of the Mokelumne Aqueduct in San Joaquin and Contra Costa Counties. Directed subconsultants to perform wetland delineations, coordinated field verifications and meetings with ACOE, CDFG, and USFWS, and managed all aspects of a Section 404 ACOE wetland fill permit, a Section 7 Consultation with USFWS, and a Section 1600 Streambed Alteration Agreement with CDFG. Potential impacts of the project on the biological resources associated with three major rivers and two sloughs were addressed.

- Managed and participated in the field survey design and methods of focused surveys for the federally-listed endangered desert tortoise on a site proposed for a new state prison in eastern Los Angeles County. The survey effort included characterizing and mapping suitable habitat for the tortoise as well as for other special-status species, including Mohave ground squirrel and San Joaquin antelope squirrel. Consultations were conducted with the USFWS and CDFG in preparation of the need for a potential federal Section 10(a) permit and a state Section 2090 permit.

- Managed and participated in field surveys, data collection, and preparation of a biological assessment for potential impacts on the federally-listed threatened California gnatcatcher as a result of a proposed project in San Diego County. The biological assessment was used as a basis for a Section 7 consultation with the USFWS which resulted in a no jeopardy determination. Informal and formal consultations and meetings with USFWS were conducted throughout the process.

- Managed biological surveys and analysis of potential impacts on the federally-listed threatened California gnatcatcher on a proposed OHV Park on the Otay Mesa in southern San Diego County for the California Department of Parks and Recreation. Surveys were also conducted to determine the presence or absence of several other special-status plant and wildlife species. An extensive mitigation plan was developed to minimize potential impacts on the gnatcatcher and other special-status species.

- Directed and participated in field surveys and documentation for the biological resources component of an EIR for a proposed gravel mining operation in Yolo County. Analysis focused on the potential impacts of out-of-channel mining along Cache Creek, especially with respect to riparian vegetation and stream associated wildlife. Special-status species issues included Valley elderberry longhorn beetle and Swainson's hawk.

- Prepared the biological documentation necessary for the proposed central coast NCCP in Orange County. The NCCP documentation established plans for The Irvine Company (TIC), the Transportation Corridor Agencies (TCA), the County of Orange, and other affected parties to comply with the NCCP Act of 1992, providing a comprehensive approach to resolving inherent conflicts between the need to protect sensitive and critical coastal sage scrub habitat and wildlife, and the need to proceed with TIC, TCA, and other development projects.

- Managed and participated in field surveys, impact analysis, and documentation of an Environmental Assessment of a proposed 15-mile water and gas pipeline corridor in the Mojave Desert of southern California. Focused surveys and habitat analysis for the federally-listed endangered desert tortoise and Mojave ground squirrel were also conducted within the corridor

alignment. Consultations were conducted with the USFWS and CDFG in preparation of the need for a potential federal Section 10(a) permit and a state Section 2090 permit.

- Directed and participated in the environmental documentation of biological resources for an EIR on the Water Forum Agreement, an agreement between over 20 water purveyors and water districts on the future use and management of water along the lower American River. The project involved the documentation of existing biological resources along the river and an analysis of potential impacts on these resources as a result of projected changes in water flow levels.

- Directed field investigations and managed documentation of the biological resources inventory and impact assessment component of the Big Bear Dam Bridge Route 18 EIR/EIS in San Bernardino County, California. Directed and participated in focused surveys for several sensitive species, including the federally-listed bald eagle, the state-listed southern rubber boa, and the southern spotted owl.

- Managed and participated in the field surveys and documentation efforts for the biological components of several environmental compliance documents in northern California including the Rancho Dorado EIR in El Dorado County, two gravel and rock mining projects in Yolo County, the Roseville General Plan in Placer County, the Palos Colorados EIR in Contra Costa County, the North Rocklin Circulation Element EIR in Sacramento County, and the Paradise Treatment Plant Biological Assessment in Butte County. Issues included potential impacts on vernal pools, wildlife movement corridors, wetlands, sensitive plants, and numerous sensitive animal species including bald eagle, red-legged frog, Valley elderberry longhorn beetle, Swainson's hawk, western spadefoot toad, and California tiger salamander.

- Managed field studies and documentation of the biological resources component of the 1,500-acre East Orange Specific Plan area in eastern Orange County, California. Coordinated surveys, evaluated impacts, and developed mitigations for a variety of biological resources, including sensitive species such as California gnatcatcher, western spadefoot toad, many-stemmed dudleya, San Diego cactus wren, and several raptor species.

- Managed field investigations, impact analysis, mitigation planning, and overall biological assessment documentation for several proposed projects within Significant Ecological Areas (SEAs) in Los Angeles County, California. Significant issues included several sensitive plant and wildlife species, sensitive habitat areas, and potential impacts on wildlife movement corridors.

- Managed field surveys, impact analysis, documentation, and project coordination efforts for the biological component of the Stetson Ranch EIR and the Bear Mountain Ski Resort expansion project EIR/EIS in the San Bernardino National Forest. Significant issues included potential impacts on the bald eagle, California spotted owl, mule deer, mountain lion, black bear, and San Bernardino flying squirrel.

- Assisted in the management and preparation of the biological resources assessment for the East Coyote Hills EIR in Orange County, California. Coordinated field surveys and analyses of the onsite population of California gnatcatchers. The assessment resulted in the development of a pre-listing Habitat Conservation Plan (HCP) for the California gnatcatcher that resulted in the issuance of a Section 10(a) permit pursuant to the federal Endangered Species Act.

- Managed and participated in field surveys, impact analysis, and documentation of an Environmental Assessment of a proposed 20-mile transmission line for SDG&E in Orange County. The project entailed focused surveys for a number of sensitive plant and animal species, an analysis of several alignment alternatives, and an extensive mitigation development, implementation, and monitoring program.

- Participated in developing a Habitat Conservation Plan (HCP) for the federally-endangered Stephens' kangaroo rat for the Metropolitan Water District of Southern California in Riverside County, in accordance with Section 10 of the Endangered Species Act.

- Managed and conducted numerous biological resources inventories and baseline assessments in a variety of habitat types in the counties of Sacramento, Contra Costa, Solano, Yolo, Merced, San Joaquin, Tulare, Fresno, Ventura, Los Angeles, San Bernardino, Riverside, and Orange, California. Issues included potential impacts on vernal pools, riparian habitats, wildlife movement corridors, wetlands, special-status plants, and numerous special-status animal species including bald eagle, California red-legged frog, Valley elderberry longhorn beetle, Swainson's hawk, desert tortoise, California gnatcatcher, San Joaquin kit fox, vernal pool and fairy shrimp, and California spotted owl. Most of these assessments were used in subsequent environmental impact reports and other regulatory documents.

- Managed field investigations and document preparation for biological resources inventory within the 5,700-acre Villages of Laguna San Luis proposed project in Merced County, California. Sensitive species surveys included San Joaquin kit fox and burrowing owl.

- Managed a comprehensive biological baseline inventory of habitat types and both common and sensitive plant and wildlife species for a 3,000-acre undeveloped site in western Riverside County owned by the Lockheed Corporation. Focused surveys for sensitive species included the California gnatcatcher, coastal cactus wren, several plant species, and a trapping program for the Stephens' kangaroo rat.

<u>Focused Studies</u>

- Designed and managed a Swainson's hawk radio-telemetry study over an 8,000-acre study area in West Sacramento, California, to determine home range and habitat use of eight pairs of nesting Swainson's hawks. Responsible for overall study design, capture and attachment of radio transmitters on five Swainson's hawks, radio tracking methodology, staffing, and overall data analysis and interpretation. All data was incorporated into a Geographic Information System (GIS) for analysis and presentation. The information obtained was used to evaluate potential impacts on nesting Swainson's hawks and to develop suitable mitigation measures. The project involved coordination between CDFG, the City of West Sacramento, and the applicants during all phases of the study. The information was eventually used as part of a Section 2081 consultation pursuant to CESA.

- Designed and managed wildlife movement corridor studies for four proposed projects in Ventura County and three proposed projects in Orange County, including a 16-mile transportation corridor project. The studies, which involved the use of remote motion-triggered camera, track plates, and other wildlife movement data collection techniques, were designed to identify and quantify target wildlife species using the project sites, identify areas that are used by these species as travel routes, and to evaluate the relative importance of these areas as potential movement corridors. Recommendations on corridor design were also developed to mitigate potential adverse impacts on movement corridors.

- Managed a comprehensive wildlife movement corridor study on the 45,000-acre Rancho Mission Viejo ranch in southern Orange County, California. Directed and participated in field investigations and assimilation of data from previous studies. Produced a wildlife movement corridor map and documentation of all field work and analysis.

- Designed, managed, and implemented a mitigation and construction monitoring program for a large-scale project potentially impacting breeding burrowing owls in Fresno County, California. Designed and presented educational materials at a pre-construction meeting attended by

40 individuals. Trapped and banded burrowing owls. Coordinated and consulted with CDFG on all aspects of the program.

- Conducted numerous focused surveys for the federally-listed threatened California gnatcatcher in San Diego, Orange, Los Angeles, and Ventura Counties. Surveys were conducted under a federal USFWS survey permit.

- Directed the surveys for three federally-listed threatened and endangered fairy shrimp species in a large vernal pool complex (over 100 pools) in eastern Sacramento County. Managed subcontractor contracts and directed the compiling of data and information into a document that met USFWS documentation protocols for surveys of fairy shrimp species.

- Managed an analysis of potential impacts of wind turbines on biological resources on a proposed wind energy site in Solano County. The study focused on the potential effects of wind anemometer towers and wind turbine towers on avian species, particularly raptors and migratory birds.

- Directed and prepared a comprehensive raptor management plan for the 1,500-acre East Orange Specific Plan area and a 3,000-acre dedication area in Orange County. The plan included an analysis of foraging and perch habitat enhancement strategies, nest box and nest platform design criteria and placement, and plan monitoring and evaluation.

- Directed and participated in a focused survey for Swainson's hawks and burrowing owls for the Department of Public Works, City of Davis. An analysis of potential impacts on habitat for these species, consultation with CDFG, and development of measures to mitigate potential impacts were also conducted.

- Directed and managed a comprehensive survey for mule deer on the 1,500-acre East Orange Specific Plan area for The Irvine Company in Orange County. Analyses included descriptions of population density, habitat use, and distribution.

- Served as field investigator and principal author of a biological resources assessment for a U.S. Navy development project in Mono County, California. Conducted a survey for mule deer and specifically addressed potential impacts on mule deer migration areas.

- Served as field investigator for a comprehensive great blue heron breeding and foraging study in East Orange County, California. Responsibilities included retrieving great blue heron chicks from nests, attaching radio transmitters and leg bands, and radio-tracking fledged herons throughout southern California.

- Conducted field surveys and completed associated descriptive analyses for the presence of habitat and populations of the federally-listed endangered Stephens' kangaroo rat for several development projects in Riverside County, California.

- Participated in development and maintenance of a captive breeding program for the federally-listed endangered bald eagle at the USFWS Patuxent Wildlife Research Center. Assisted in the methodology and analysis of studies on bald eagle eggshell thinning, lead shot poisoning, and breeding behavior.

- Participated in captive breeding programs of the federally-listed endangered black-footed ferret, peregrine falcon, and California condor.

Professional History

Impact Sciences, Inc. - Director of Biological Services, Wildlife Biologist
Michael Brandman Associates - Senior Project Manager, Wildlife Biologist
U.S. Fish and Wildlife Service (USFWS), Patuxent Wildlife Research Center - Biological Technician

Education

M.S., Business Management, Colorado State University
B.S., Wildlife Biology, Colorado State University

Professional Affiliations

Association of Environmental Professionals (AEP)
Raptor Research Foundation
Society for Conservation Biology
California Swainson's Hawk Technical Advisory Committee

Permits/Certifications

Scientific Collecting Permit, State of California, CDFG
Federal Bird Banding Permit, USFWS
Section 10(a) Permit to Survey for California Gnatcatcher, USFWS
Habitat Evaluation Procedures, USFWS
Certified Scuba

Publications

Babcock, K.W. 1995. Home range and habitat use of breeding Swainson's hawks in the Sacramento Valley of California. *J. Raptor Research* 29(3):193-197.

DAVID G. CRAWFORD

Staff Fisheries and Wildlife Biologist

Mr. Crawford serves as a Fisheries and Wildlife Biologist for Impact Sciences, Inc. He has managed or conducted a variety of aquatic and terrestrial studies, endangered species surveys, mitigation monitoring plans, wetlands delineations, and environmental document preparation. Mr. Crawford has over three years field experience and has conducted over 1,000 field hours sampling fish in rivers, streams, estuaries, and ponds and has conducted over 16,000 cumulative trapnights surveying small mammals in a variety of habitats in California. He has a thorough understanding of both State and Federal Endangered Species Acts, and has been included in Memoranda of Understanding (MOUs), as well as conducted special status fish, small mammal, reptile and amphibian surveys under state permits. Additionally, Mr. Crawford has conducted aquatic habitat evaluations and developed sport fishery management plans.

Representative Professional Experience

Environmental Compliance

Project Biologist for multiple terrestrial and aquatic surveys associated with Newhall Land and Farming Co. EIRs in the Santa Clara River and San Francisquito Creek areas. Conducted over 1,000 small mammal trap-nights, spotlight surveys, habitat evaluation, and focused sensitive aquatic species surveys.

Lead Project Biologist - The Los Angeles District Army Corps of Engineers developed a five-year monitoring program to study the effects of dredging on the California grunion in Santa Barbara. Mr. Crawford headed the hatch survey and monitoring portion of the program for the fifth year of the project. Mr. Crawford directed efforts involving egg excavation, incubation, hatching, and hatch data collection over a period of four months. Collected data was tabulated and summarized in a report presented to the Army Corps of Engineers.

Project Biologist for Playa Vista EIS/EIR and Ballona wetlands restoration plan. Duties included coordination of and participation in marine, estuarine, and freshwater fisheries surveys, over 3,000 trapnights of focused endangered small mammal surveys, as well as focused sensitive reptile surveys.

Project Ecologist on surveys associated with the Johnson Drive extension EIR in the Santa Clara River. Mr. Crawford conducted aquatic resource surveys that resulted in the capture and release of numerous arroyo chubs, Santa Ana suckers (and hybrid suckers), tidewater gobies, and southwestern pond turtles.

Project Biologist for Camarillo Regional Park EIR. Field activities included 600 small mammal trap-nights, focused sensitive aquatic species surveys, and assistance with focused sensitive plant and avian species surveys.

Project Ecologist for Section 7, preconstruction endangered species surveys for Mobil Exploration & Producing U.S. Inc., North and South Midway Operations Areas in California's Central Valley. Duties included focused surveys for San Joaquin kit fox, San Joaquin antelope squirrel, blunt-nosed leopard lizard, and western burrowing owl. Survey activities included walk-over transects to identify endangered species through direct observation and location of dens, tracks, and scat, as well as monitoring of scent and track stations.

Project Biologist - Designed mitigation relocation plan for southwestern pond turtles (*Clemmys marmorata pallida*) and two-striped garter snakes (*Thamnophis hammondi*) for development project in Newbury Park, California. Implementation will begin in spring 1998.

Wildlife Technician on 7,500 trapnight small mammal survey effort for the U.S. Army Corps of Engineers Land Condition Trend Analysis study at Camp San Luis Obispo and Camp Roberts in San Luis Obispo and Monterey counties. Duties involved live trapping, handling and identifying several small rodent species including the sensitive Salinas pocket mouse and Monterey dusky-footed woodrat. Listed as Authorized Person on CDFG MOU. During trapping efforts, Mr. Crawford documented the presence of California red-legged frog and western yellow-bellied racer.

Research Assistant at California Polytechnic State University for California Department of Fish and Game's Environmental Impact Report on the implications of the trout stocking program in California over the last 80 years. Duties included literature search and data evaluation. Presented data to interdisciplinary team for document preparation.

Focused Studies

Project Biologist for Endangered tidewater goby (*Eucyclogobius newberryi*) surveys in Pismo Lagoon, Pismo Beach, San Luis Obispo County. Employed various sampling methods that determined the presence of tidewater gobies and water quality.

Project Biologist for endangered tidewater goby surveys in Ormond Beach Lagoon for Ventura County Flood Control. Water quality and goby distribution is currently being evaluated for pre- and post-breach conditions. Several thousand gobies were identified and released.

Project Ecologist - Conducted focused California red-legged frog (*Rana aurora draytonii*) habitat evaluation in the Conejo Creek and Calleguas Creek watersheds for CamRosa Water District. Duties included evaluation and mapping of potential red-legged frog habitat, water quality evaluations, and potential prey base evaluations.

Project Biologist - Participated in 1,150 trapnight focused survey for Pacific pocket mouse (*Perognathus longimembris pacificus*) at Crystal Cove State Park in Orange County for the California State Parks Department.

Wildlife Technician for the Camp Roberts Kit Fox Recovery Program conducted by California Polytechnic State University at San Luis Obispo for the Department of the Army. Duties included spotlight surveys, scent station surveys, habitat evaluation, and data entry.

Project Ecologist/Principle Investigator for a year-long aquatic survey of Chorro Creek in San Luis Obispo County. Data was collected to quantify seasonal changes in fish diversity in a 15-mile portion of this coastal stream.

Field Assistant at California Polytechnic State University for multiple wildlife and fisheries projects conducted by University faculty. During the course of these projects, Mr. Crawford captured, identified, and released numerous sensitive fish, mammal, reptile and amphibian species.

Mitigation Monitoring

Project Ecologist for Santa Clara River oil spill monitoring program. Duties included fish sampling, herpetofaunal surveys, water and soil sample collections, general riparian habitat analysis, and mapping of survey results along a 14 -mile portion of the Santa Clara River. Efforts included several hundred hours of surveying fishes including unarmored threespine sticklebacks and arroyo chubs.

Surveys were also conducted for arroyo toads, two-striped garter snakes, and southwestern pond turtles.

Project Biologist - Mr. Crawford was responsible for supervision the California Conservation Corps (CCC) during mitigation efforts for the Fiore Gardens Family Housing/Arroyo Conejo Bank Stabilization projects. Mr. Crawford monitored the CCC during non-native vegetation removal and is currently conducting quarterly evaluations of the riparian restoration for this joint project between the County of Ventura Area Housing Authority and the City of Thousand Oaks.

Project Biologist - for the performance of mitigation monitoring on streambed alteration for a Kaufman & Broad-Coastal Valleys, Inc. project on a USGS blue-line stream in the City of Thousand Oaks, Ventura County. Supervised the California Conservation Corps in the removal of non-native trees and shrubs and performs quarterly monitoring on the survivorship of native vegetation planted in the project area.

Project Biologist - Mr. Crawford has been conducting quarterly mitigation monitoring procedures for a riparian restoration project on the Arroyo Simi for Cal-West Ready Mix, Inc. in Simi Valley, California. He calculates survivorship and total cover of native riparian vegetation planted as mitigation and summarizes the data in annual reports to the California Department of Fish and Game.

Professional History

Impact Sciences, Inc. - Fisheries and Wildlife Biologist
Crawford Ecological Surveys - Principal/Ecologist
Cal Poly San Luis Obispo - Wildlife Technician; I.CTA Program
Cal Poly San Luis Obispo - Wildlife Technician; Kit Fox Recovery Program
Cal Poly San Luis Obispo - Project Biologist, Pismo Lagoon;
Research Assistant, Trout Research;
Laboratory Assistant/ Collection Curator, Ichthyology

Education and Certifications

Bachelor of Science, Ecology and Systematic Biology (Fisheries and Wildlife Science Concentration); California Polytechnic State University at San Luis Obispo
Joint State and Federal Scientific Collecting Permit, valid through April 1999
Federal Section 10A Permit for Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*). Permit #PRT-821229 (Expires 3/5/01)
Pending State Agreement to conduct surveys for aquatic species of special concern
Certification, Desert Tortoise: handling, burrow construction, and egg handling techniques; U.S. Fish and Wildlife Service approved workshop and training session
Certification, Advanced Open Water Diver, PADI

Professional Affiliations

American Fisheries Society
American Society of Mammalogists

GWENDOLYN I. KENNEY

Botanist and Wildlife Biologist

Ms. Kenney is a botanist and wildlife biologist with over six years of experience in conducting biological resources inventories, endangered species surveys, environmental mitigation monitoring, and habitat evaluations. Ms. Kenney is experienced in field survey protocols and holds federal permits to conduct surveys for sensitive wildlife species. She has also handled and/or surveyed for sensitive, threatened, and endangered reptiles, birds, and mammals under federal and state permits. Her expertise is in the identification and characterization of plant communities, common plant species, and special status plant species. She is particularly familiar with the special status plants of southern and central California, from the coastal regions to the inland valleys and deserts.

Selected Professional Experience

City of San Diego Metropolitan Wastewater and Waste Management Departments. Project Ecologist and contributing author for the biological resources inventory and impact assessment for the Fiesta Island Replacement Project/Northern Sludge Processing Facility/West Miramar Landfill Overburden EIR/EIS located on Naval Air Station Miramar, San Diego County, California. Served as field investigator for California gnatcatcher, oak tree, and vernal pool surveys. Conducted a vernal pool survey of a potential vernal pool mitigation site and prepared associated letter report.

Keller/Swinerton & Walberg and Southwest Division of the U.S. Department of the Navy. Project Ecologist for conducting biological monitoring during demolition of the Chollas Heights Naval Radio Transmitting Facility and the 415-unit Navy housing development project located in San Diego County, California. Biological monitoring activities involved educating and directing construction personnel regarding adherence to established mitigation protocol. Additional responsibilities included seedbank collection from impacted vernal pools, and San Diego barrel cactus relocation from impacted coastal sage scrub habitat. Also supervised and monitored soil decompaction, topographic recontouring, hydroseeding, and vernal pool restoration procedures. Prepared associated post-monitoring report.

City of Chula Vista and City of San Diego. Project Ecologist for mitigation monitoring for several riparian and salt marsh revegetation sites located in San Diego County, California. The cover, height, and health of hydroseed and container stock plants were recorded along fixed transects. Identified invasive weeds occurring on the sites. Instructed field personnel for the removal of exotic species.

City of San Diego. Conducted revegetation mitigation monitoring for the City of San Diego's North Mission Valley Interceptor Sewer Phase I within riparian vegetation along the San Diego River, San Diego County, California. During the surveys, recorded the cover, height, and health of hydroseed plants using a quadrate at fixed locations. The diameter at breast height and health of the container stock was also recorded at the fixed locations.

San Diego Port District. Conducted mitigation monitoring for the San Diego Port District within a salt marsh restoration site at the Chula Vista Wildlife Reserve located in Chula Vista, San Diego County, California. During the surveys, recorded the frequency cover, height, and health of salt marsh plant species using a quadrate along fixed transects.

Kaufman & Broad. Conducted mitigation monitoring within a riparian restoration site located in Thousand Oaks, Ventura County, California. Responsible for collecting qualitative and quantitative data on the health of the restoration species, presence of weeds, pest and erosion problems, and evaluation of the site meeting performance standards.

Ventura County Area Housing Authority/City of Thousand Oaks. Conducted mitigation monitoring within a riparian restoration site located in Thousand Oaks, Ventura County, California. Responsible for collecting qualitative and quantitative data, and directing the weed eradication program.

Woodridge Associates. Botanist for performing a biological assessment of the Wood Ranch Property located in Thousand Oaks, Ventura County, California. Assessed and documented the botanical resources on a proposed residential development site. Surveyed site for special status plant species. Counted and mapped populations of Catalina and Plummer's mariposa lilies, and California black walnut. Delineated Army Corps of Engineers and California Department of Fish and Game jurisdictions.

Orange County Training and Shooting Club. Performed biological field surveys for a biological assessment of a proposed development site located in Santiago Canyon, Orange County, California. Characterized and mapped plant communities based on aerial photographic interpretation and field-truthing. Conducted focused surveys for California gnatcatcher and coastal cactus wren.

County of Ventura. Botanist for performing a biological assessment of Toland Park located in Santa Paula/Fillmore, Ventura County, California. Assessed and documented botanical resources for a proposed golf course development. Characterized and mapped plant communities based on aerial photographic interpretation and field-truthing. Prepared floral inventory and surveyed site for special status plant species.

County of Ventura. Botanist and Regulatory Specialist for performing a biological assessment of a 333-acre proposed golf course site located in Ventura County, near Camarillo, California. Tasks included counting and mapping populations of Blochman's dudleya, Verity's dudleya, and California black walnut. Delineated Army Corps of Engineers and California Department of Fish and Game jurisdictions. Prepared the jurisdictional analysis for the project site.

City of Oxnard. Botanist for performing a biological assessment of the North Shore property located in Oxnard, Ventura County, California. Assessed and documented the botanical resources for a proposed development project. Characterized and mapped plant communities based on aerial photographic interpretation and field-truthing. Prepared floral inventory and surveyed site for special status plant species

U.S. Forest Service. Staff Biologist for conducting baseline inventory of terrestrial flora and fauna for a municipal landfill development EIR/EIS on and adjacent to the Angeles National Forest, Los Angeles County, California. Conducted a literature search for special status plant and wildlife species, and biologically sensitive habitats. Identified and mapped plant communities. Conducted spot-light surveys, scent station monitoring, and small mammal trapping. Also assisted with bat surveys, using bat frequency detectors, mist nets, and night-vision.

Trust for Public Lands. Staff Biologist for conducting baseline inventory of terrestrial flora and fauna for eight proposed land exchange sites located within the Angeles National Forest, Los Angeles County, California. Characterized and mapped plant communities and evaluated their potential to support endangered or sensitive species.

Newhall Land & Farming Company. Biologist for performing a biological assessment of the Westridge property located in Newhall, Los Angeles County, California. Characterized and mapped the habitats present on site and evaluated their potential to support special status plant and wildlife species. Prepared associated letter report.

Diamond Bar Partners East. Biological monitor for geological investigations at a proposed residential development site located in Los Angeles County, California. Specific issues included

impacts to oak trees, migratory bird nests, and jurisdictional wetlands. Prepared associated letter report.

Transportation Corridor Agency. Project Ecologist for performing biological studies along the southern segment of the Foothill Transportation Corridor located in Orange and northwestern San Diego Counties, California. Conducted focused surveys for special status plant species, and searched for the food plants preferred by the Quino checkerspot butterfly. Also conducted focused surveys for Pacific pocket mouse, California gnatcatcher, coastal cactus wren, southern California rufous-crowned sparrow, grasshopper sparrow, southwestern arroyo toad, orange-throated whiptail, and San Diego horned lizard.

MCI Telecommunications Corporation. Project Ecologist for the assessment and documentation of plant and wildlife resources for a coastal zones constraints analysis along the MCI fiber optic route from Dana Point to the Torrey Pines State Reserve, Orange and San Diego Counties, California. The analysis included a literature search for special status plant and wildlife species, and biologically sensitive habitats. Conducted reconnaissance surveys to identify and map environmentally sensitive areas. Represented MCI at all agency meetings and public hearings.

U.S. Marine Corps. Biologist for performing focused California gnatcatcher surveys for the El Toro Base Closure EIR located in Orange County, California. Surveyed site for the presence of California gnatcatchers and prepared an inventory of wildlife species present on site.

San Diego Gas & Electric. Project Ecologist for literature search for the occurrence of special status plant and wildlife species, and biologically sensitive habitats along San Diego Gas & Electric's proposed Pipeline 2000 and Project Vecinos natural gas pipelines. Identified and mapped plant communities and conducted focused surveys for the California gnatcatcher, coastal cactus wren, Bell's sage sparrow, willowy monardella, and other special status species.

U.S. Army Corps of Engineers. Staff Biologist and contributing author for an Environmental Assessment for ordnance clearance at Mission Trails Regional Park located in San Diego County, California. Identified and mapped plant communities, including vernal pool habitat. Conducted focused California gnatcatcher and special status plant surveys. Counted and mapped populations of slender-pod jewelflower, Orcutt's brodiaea, summer-holly, variegated dudleya, San Diego barrel cactus, San Diego goldenstar, Palmer's grapplinghook, San Diego sunflower, western dichondra, spiny rush, California adder's-tongue fern, and ashy spike-moss.

General Dynamics. Project Ecologist for performing a biological assessment of the Sycamore Canyon and Kearny Mesa properties located in San Diego County, California. Assessed and documented the botanical resources. Characterized and mapped plant communities, including vernal pool habitat, based on aerial photographic interpretation and field-truthing. Conducted focused surveys for the following wildlife species: California gnatcatcher, orange-throated whiptail, and San Diego horned lizard. Counted and mapped populations of willowy monardella, San Diego mesa mint, San Diego button-celery, Orcutt's brodiaea, spreading navarretia, and long-spined spineflower.

Pardee Company. Biologist for performing a Biological Assessment of Pardee Company's Neighborhood 10 located in Del Mar, San Diego County, California. Prepared a biological assessment for a proposed residential development. The habitats present on site were characterized and mapped, and evaluated for their potential to support special status plant and wildlife species. Surveyed site for the presence of California gnatcatchers and special status plant species. Counted and mapped populations of San Diego barrel cactus, Del Mar Mesa sand aster, prostrate spineflower, white coast ceanothus, and ashy spike-moss.

AT & SF. Project Ecologist and Regulatory Specialist for a biological resources assessment for a railroad relocation project located in San Juan Capistrano, Orange County, California. Served as

main author for this biological resources assessment. The habitats present on the site were characterized and mapped, and evaluated for their potential to support special status plant and wildlife species. Assisted with wetland delineations to determine the nature and extent of Army Corps of Engineers Section 404 jurisdiction.

Butler Roach Group, Inc. Project Ecologist for preparing a biological resources evaluation for the Aspen Road and Gregory Canyon proposed landfill sites located in Pala and Fallbrook, San Diego County, California. The habitats present on site were characterized and mapped, and evaluated for their potential to support special status plant and wildlife species. Coordinated field staff for biological field investigations, including focused surveys for sensitive amphibian, reptile, and bird species.

Robert Jackson, esq. Project Ecologist for preparing a biological constraints analysis for a proposed property subdivision located in Fallbrook, San Diego County, California. Served as field investigator, primary author, and project manager for this analysis. The habitats present on the site were characterized, mapped, and evaluated for their potential to support special status plant and wildlife species.

Mobil Exploration & Producing U.S. Inc. Biologist for pre-construction biological resources studies and construction monitoring for the construction of Mobil's 17Z gas transmission pipeline project located in Kern County, California. Conducted focused surveys for blunt-nosed leopard lizard, San Joaquin kit fox, San Joaquin antelope squirrel, Giant kangaroo rat, and Hoover's Eriastrum, recurved larkspur, and Kern mallow over a two-year period. Surveys included spotlighting and scent station monitoring. Responsible for endangered species education and training programs, construction personnel supervision, and production of regular activity reports to document the implementation of mitigation measures detailed in the Biological Opinion. Monitored all phases of construction throughout known sensitive species habitat. Documented all sensitive biological resources encounters, removed common and sensitive biological resources from the construction right-of-way.

Shell Western E&P Inc. Biologist for Shell's 17Z portion of a gas transmission pipeline project located in Kern County, California. Responsible for endangered species education and training programs, construction personnel supervision, and production of regular activity reports to document the implementation of mitigation measures.

The Nature Conservancy. Biological Technician for a small mammal trapping inventory program located in northeastern Wyoming. The trapping program was part of a gap analysis project that was a cooperative effort between The Nature Conservancy, Wyoming Game and Fish Department, and Bureau of Land Management. Duties included assisting project biologist conduct 8,500 trapnights, ground-truthing GIS vegetation polygons, and identifying dominant and subdominant plant communities. All collected animals were utilized for museum specimens, raptor rehabilitation, and hantavirus research.

Wyoming Game and Fish Department. Biological Technician for the Black-footed Ferret Reintroduction Program located in Shirley Basin, Wyoming. The reintroduction program involved cooperation between the Wyoming Game and Fish Department, USFWS, and various agencies, institutions, conservation groups, and private individuals. Duties included conducting spot-light surveys for the black-footed ferret, trapping and identifying black-footed ferrets, and assisting with the release of captive bred black-footed ferrets into the wild.

Professional History

Impact Sciences, Inc. - Biologist
Kenney Biological Consulting - Owner
Wyoming Department of Game and Fish - Biological Technician
The Nature Conservancy - Biological Technician
Michael Brandman Associates - Project Ecologist
Dames & Moore - Staff Biologist

Education

B.S., Environmental and Systematic Biology, California Polytechnic State University at San Luis Obispo

Professional Affiliations

California Botanical Society
California Native Plant Society

Permits and Certifications

Federal Section 10(a) Permit to conduct California gnatcatcher surveys, 1995-1999
Federal Section 10(a) Permit to capture and release an endangered small mammal species, Pacific pocket mouse (List of Authorized Individuals), 1996-2000
California Department of Fish and Game agreement to trap and release small mammal California Species of Special Concern (Subpermittee), 1996-1997
California Department of Fish and Game Scientific Collecting Permit, 1996-1997
Certification, Desert Tortoise Handling, burrow construction, and egg handling Techniques, U.S. Fish and Wildlife Service
Basic Wetland Delineation Certification, Wetland Training Institute, 1993

APPENDIX B

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APPENDIX C

Data Forms

Riparian Buffer Bird Survey

Date: Study Location: Transect No. Survey No:
Observer(s):
Survey Start Time: End Time:
Temp-S: /E: Cloud Cover-S: /E: Wind/Direction-S: /E:

Target Species	Initial Observation			Movement Distance					Final Observation		
	Rip	Up	Edge	<50	50-100	100-150	150-200	>200	Rip	Up	Edge
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											

Other Bird Species Observed:

Comments:

Riparian Buffer Bird Survey
Vegetation Analysis

Transect No. **Page** **of**
Study Location:

Upland Plant Dominants (code):

Percent Bare Ground: Percent Shrub Cover:
Shrub Cover Variability (circle): uniform moderate high
Average Shrub Height (circle): 0-3.0 ft 3.0-5.0 ft 5.0-8.0 ft >8.0 ft
Shrub Height Variability (circle): uniform moderate high
Percent Herbaceous Cover:
Herb Cover Variability (circle): uniform moderate high

Riparian Plant Dominants (code):

Percent Bare Ground: Percent Tree Cover:
Tree Cover Variability (circle): uniform moderate high
Average Tree Height (circle): <10 ft. 10-15 ft 15-20 ft 20-25 ft >25 ft
Tree Height Variability (circle): uniform moderate high

Transect No.
Study Location:

Upland Plant Dominants (code):

Percent Bare Ground: Percent Shrub Cover:
Shrub Cover Variability (circle): uniform moderate high
Average Shrub Height (circle): 0-3.0 ft 3.0-5.0 ft 5.0-8.0 ft >8.0 ft
Shrub Height Variability (circle): uniform moderate high
Percent Herbaceous Cover:
Herb Cover Variability (circle): uniform moderate high

Riparian Plant Dominants (code):

Percent Bare Ground: Percent Tree Cover:
Tree Cover Variability (circle): uniform moderate high
Average Tree Height (circle): <10 ft. 10-15 ft 15-20 ft 20-25 ft >25 ft
Tree Height Variability (circle): uniform moderate high

Grid Number _____

Date _____

Small Mammal Trapping Data

Species	Trap #	Sex	Age	Repro Cond	Capture	Clip	Remarks:

Grid Number _____

Date _____

Small Mammal Trapping Data
Vegetation Analysis

Vegetation Community Description

_____

_____

_____

_____

_____

_____

Trap #

Species Present: _____

_____

Dominants: _____

Canopy Height_____Density_____% Cover_____Soil Type_____

Slope_____Aspect_____

Trap #

Species Present: _____

_____

Dominants: _____

Canopy Height_____Density_____% Cover_____Soil Type_____

Slope_____Aspect_____

Trap #

Species Present: _____

_____

Dominants: _____

Canopy Height_____Density_____% Cover_____Soil Type_____

Slope_____Aspect_____

APPENDIX B

Water Resources

ITEM NO. 5.1

Castaic Lake Water Agency
Memorandum

June 1, 2007

To: CLWA Board of Directors

From: Brian Folsom BJF
Engineering and Operations Manager

Subject: Engineering and Operations Department Report

TREATMENT PLANT AND MAINTENANCE OPERATIONS

Completed Work:

Deliveries to the purveyors in May totaled 4,602 acre-feet (AF), for an average daily flow rate of 48.4 million gallons per day (MGD). May 2007 deliveries were 14% above May 2006 deliveries. The fiscal-year-to-date (FYTD) deliveries for FY 2006/07 are 39,243 AF, which is 10% above FYTD 2005/06. Monthly flows for 2004, 2005, 2006 and 2007 are presented in the attached table. *(FY 2006/07 Goal 2.3.6: Meet all purveyor water demands and Goal 2.3.7: Meet all applicable water quality regulations.)*

At the Rio Vista Water Treatment Plant (RVWTP), Ozonia North America completed ozone generator efficiency tests, sump pumps at the clearwell effluent tower were replaced, the plant water feed line was repaired, plant water feed pumps were returned to service and the treated water chlorine analyzer was replaced.

At the Earl Schmidt Filtration Plant (ESFP), ozone generators were cleaned and fuses were replaced. Additionally, programming for the chemical feed pumps for the washwater return prepackaged units were completed.

Distribution system maintenance activities included installation of a new flow meter at V-1 and preventative maintenance on air vacs and valve exercising.

Work in Progress:

At ESFP, two new chlorine feed pumps were installed which replaced two chlorine feed valves for improved efficiency and precise chlorine dosage and control system programming was completed. Based on one month of operating the new pumps, two more chlorine feed pumps will be installed. Additionally, the clarifiers at ESFP are being restored and the restoration of media level to original specifications is in progress. Staff is working with design engineers to minimize media loss and increase clarifier performance. Eighty-five tons of media has been ordered and ten screens for the clarifier troughs are being fabricated to prevent future media loss.

Planned Actions:

At the ESFP chlorine analyzers will be upgraded, sludge will be removed from the drying beds and an additional 2,500 gallon tank to provide additional cationic polymer storage and to replace sodium hypochlorite tanks (which are under factory warranty) will be ordered. Pumps at the intake pump station will be removed and corrective maintenance will be performed under warranty. Additionally, there will be installation of chemical feed meters for the ferric chloride, caustic soda and cationic polymer feed systems; installation of a sludge collection system in the washwater recovery basins, and installation of replacement polymer chemical feed pumps with automated flow pacing chemical feed pumps for packaged washwater recovery units at ESFP.

At the RVWTP ferric chloride pumps will be replaced; sludge will be removed from the drying beds; chlorine analyzers will be upgraded; liquid oxygen valves will be replaced with valves that allow more precise control, allowing the ozone generators to operate in automatic mode; chemical feed meters on the caustic soda and cationic polymer feed systems will be installed and new chlorinators for the chlorine gas feed system will be installed.

PERCHLORATE CONTAMINATION PROGRAM MANAGEMENT

(FY 2006/07 Goal 2.1.5: Treat 2,400 gallons per minute of water from the Saugus Formation that is contaminated with perchlorate and restore to potable water service and Goal 2.1.6: Develop replacement wells for capacity lost due to perchlorate contamination.)

Completed Work:

The Agency and purveyors are proceeding to restore the production capacity of the groundwater supply wells contaminated by perchlorate while working on the objectives of containing the downgradient migration of perchlorate and recovering costs incurred in responding to the perchlorate contamination.

Work in Progress/Planned Actions:

Work continues on multiple tasks to address the perchlorate contamination of portions of the local aquifers stemming from past manufacturing activities on the Whittaker-Bermite site.

The Agency has authorized Black & Veatch (B&V), Carollo Engineers (CE) and Kennedy/Jenks Consultants (K/J) to assist in providing services to respond to the various tasks associated with the Perchlorate Remediation Program. The following table provides a status report on the activities and tasks:

Task Group	Tasks	Consultant	Status
Settlement Activities	Project Description	K/J	Complete.
	Final Settlement	K/J, Nossaman	Plaintiffs and Defendants have reached a Settlement Agreement. Settlement will take effect upon approval of U.S. Bankruptcy Court.
DTSC Approval Activities	Remedial Investigation (RI)	K/J	DTSC approved 8/16/05.
	Feasibility Study (FS)	K/J	DTSC approved 8/16/05.
	Draft Remedial Action Plan (RAP)	K/J	DTSC approved 8/16/05.

Task Group	Tasks	Consultant	Status
DTSC Approval Activities	Final RAP	K/J	Public Hearing held 9/7/05. DTSC approved 1/20/06.
U.S. Army Corps of Engineers Feasibility Phase Study	Conceptual Hydrogeology Technical Memorandum	CH2MHill	Final distributed 1/19/05. Progress report with model construction calibration distributed 10/11/05.
U.S. Army Corps of Engineers Feasibility Phase Study	Monitoring	CH2MHill	Federal FY 2005 funding provides for limited monitoring of existing test wells and testing of NCWD NC13 Southern Saugus well. Completed 6/14/06.
DHS Approval Activities (97-005)	Source Water Assessment	B&V, CE	Received comments on revised document from DHS 4/27/06.
	Water Quality Investigation	B&V, CE	Received comments on revised document from DHS 4/27/06.
	Source Protection Plan	B&V	Received comments on revised document from DHS 4/27/06.
	Effective Monitoring and Treatment	B&V, CE, CH2MHill	Received comments on revised document from DHS 4/27/06.
	Human Health Risk	B&V	Received comments on revised document from DHS 4/27/06.
	Alternatives Evaluation	B&V, CE	Received comments on revised document from DHS 5/10/06. Revised document will be returned to DHS with Engineer's Report.
	Engineers Report	B&V	Responded 12/19/06 to DHS comments received 12/1/06 on Final Draft submitted to DHS 10/27/06. DHS gave verbal indication that written response to 12/19/06 comments will be forthcoming shortly. Nothing in comments will impede moving forward with completing design and commencing construction.
	CEQA	B&V	Mitigated Negative Declaration certified 9/14/05.
	Permit Application	B&V	Pending design completion.
	Public Hearing	B&V	Pending design completion.
	DHS Evaluation & Permit	B&V	Pending design completion.
Implementation Activities	Easements and Right of Way	K/J	Alignment studies complete 8/08/05. Document preparation in progress.
	Treatment Design	K/J	Scheduled design completion 5/07.

Task Group	Tasks	Consultant	Status
Implementation Activities	Pipeline Design	K/J	Scheduled design completion 5/07.
	Construction	K/J	Plan to start 9/07.
	Startup and Monitoring	K/J	Scheduled 12/08.

The City of Santa Clarita's Multi-Jurisdictional Task Force and Citizens Advisory Group meeting was held on May 16, 2007. The next Multi-Jurisdictional Task Force and Citizens Advisory Group meeting will be held on September 5, 2007. The bi-monthly DTSC meeting was held on May 15, 2007.

FINANCIAL STATUS

Purveyors, Whittaker-Bermite and insurance carriers have reached agreed to terms of a Settlement Agreement. First payments will be made within 30 days after U.S. Bankruptcy Court approval.

CAPITAL IMPROVEMENT PROJECTS

Sand Canyon Pipeline and Reservoir

(FY 2006/07 Goal 2.2: Construction – CLWA will build facilities which reflect the best available technology and materials, in a cost effective and timely manner and Goal 2.2.3: Complete the Sand Canyon Reservoir.)

Completed Work:

At the reservoir, patching and repairs in the north and east walls are complete. The reservoir has been hydrostatically tested. Contractor has completed backfilling and restoring grade on all sides of the reservoir.

At the pump station, an initial performance test has been performed on all pumps, including vibration testing and testing of the surge system.

Work In Progress:

Electrical contractor continues to install conduit for Southern California Edison service and site electrical equipment. Contractor continues to present material submittals and Requests for Information (RFIs).

Planned Actions:

At reservoir, continue electrical work.

At the pump station, perform corrections and repairs resulting from pump test.

Monterey Settlement Agreement

SETTLEMENT AGREEMENT

by and among

Planning and Conservation League, Plumas County Flood Control and Water Conservation District, Citizens Planning Association of Santa Barbara County, Inc.

and

The State of California Department of Water Resources, Central Coast Water Authority, Kern Water Bank Authority and those State Water Project Contractors identified herein.

MAY 0 5 2003
_____, 2003

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SETTLEMENT AGREEMENT

This **SETTLEMENT AGREEMENT** is entered into as of MAY 0 5 2003, 2003, by and among Planning and Conservation League, Plumas County Flood Control and Water Conservation District, Citizens Planning Association of Santa Barbara County, Inc., The State of California Department of Water Resources, Central Coast Water Authority, Kern Water Bank Authority and those SWP Contractors who have executed this Settlement Agreement. Certain terms used herein are defined in Section I.

RECITALS

WHEREAS, in 1951, the State of California Legislature authorized the construction of the State Water Project ("**SWP**");

WHEREAS, eight years later, the Legislature authorized the submission for voter approval of a general obligation bond issue to build the SWP, which voters subsequently approved (California Water Code, Section 12930 et seq.);

WHEREAS, commencing in the early 1960's, DWR, as operator of the SWP, entered into certain SWP Contracts with various water districts throughout California;

WHEREAS, in 1994, as a result of disputes arising from water shortages experienced during an extended drought period, DWR and certain of the SWP Contractors entered into an agreement known as the Monterey Agreement and thereafter implemented the terms of the Monterey Agreement by execution of the so-called Monterey Amendments;

WHEREAS, pursuant to CEQA, the environmental impact report for the Monterey Amendments was prepared in 1995 by CCWA as "lead agency," and adopted by DWR as "responsible agency" (as those terms are defined in CEQA) (the "**1995 EIR**");

WHEREAS, on December 27, 1995, PCL filed the PCL Complaint against DWR and CCWA challenging the sufficiency of the 1995 EIR;

WHEREAS, on February 12, 1996, Plaintiffs filed a First Amended Complaint adding the Validation Cause of Action;

WHEREAS, the trial court ultimately determined that although CCWA was not the appropriate lead agency for the 1995 EIR, such designation of CCWA was not fatal to the EIR, and ruled against Plaintiffs with respect to their challenge to the sufficiency of the 1995 EIR. The trial court also granted summary adjudication in favor of DWR and CCWA on the Validation Cause of Action. Plaintiffs appealed the trial court's rulings;

WHEREAS, in Planning and Conservation League v. Department of Water Resources, 83 Cal. App. 4th 892 (2000), the Court of Appeal held that (i) DWR, not CCWA, had the statutory duty to serve as lead agency, (ii) the trial court erred by finding CCWA's EIR sufficient despite its failure to discuss implementation of Article 18, subdivision (b) of the SWP Contracts, as a no-project alternative, (iii) said errors mandate preparation of a new EIR under the direction of DWR, and (iv) the trial court erroneously dismissed the challenge to DWR's transfer of title to the KWB Lands (the Validation Cause of Action) and execution of amended SWP Contracts for failure to name and serve indispensable parties. The Court of Appeal remanded the case to the trial court, ordering it to take the following five actions: (1) vacate the trial court's grant of the motion for summary adjudication of the Validation Cause

of Action; (2) issue a writ of mandate vacating the certification of the 1995 EIR; (3) determine the amount of attorney fees to be awarded Plaintiffs; (4) consider such orders it deems appropriate under Public Resources Code Section 21168.9(a) consistent with the views expressed in the Appellate Court's opinion; and (5) retain jurisdiction over the action until DWR, as lead agency, certifies an environmental impact report in accordance with CEQA standards and procedures, and the Superior Court determines that such environmental impact report meets the substantive requirements of CEQA;

WHEREAS, since the Court of Appeal ruling, representatives of the Parties to this Settlement Agreement have engaged in extensive settlement negotiations, mediated by retired Judge Daniel Weinstein, with the intent of avoiding further litigation and associated fees and providing for an effective way to cooperate in the preparation of a new environmental impact report and make such other improvements in the operation and responsiveness of the SWP as set forth in this Settlement Agreement;

WHEREAS, on July 22, 2002, an agreement was reached regarding the principles for a settlement; and

WHEREAS, the Parties now desire to formally enter into this Settlement Agreement.

AGREEMENT

NOW, THEREFORE, in exchange for the following covenants and agreements and other valuable and sufficient consideration, the receipt of which is acknowledged, the Parties agree as follows:

I. **Definitions**. Certain terms, as used in this Settlement Agreement, are defined as follows.

A. **"Attachment A Amendments"** means those amendments in the substantive form of Attachment A hereto (conformed to the format of each individual SWP Contract and the parties thereto), to be executed by DWR and the SWP Contractors who are signatories to this Settlement Agreement pursuant to and in accordance with the terms and conditions of this Settlement Agreement.

B. **"Attachment B Principles"** means those principles set forth in Attachment B hereto regarding SWP reliability.

C. **"Attachment C Guidelines"** means the guidelines set forth in Attachment C hereto regarding review of proposed permanent transfers of Annual Table A Amounts (as such latter term is used in the SWP Contracts).

D. **"Attachment D Principles"** means those principles set forth in Attachment D hereto regarding public participation in SWP Contract negotiations.

E. **"Attachment E Transfers"** means those water transfers identified on Attachment E hereto.

F. **"CEQA"** means the California Environmental Quality Act, California Public Resources Code Section 21000 et seq.

G. **"Citizens Planning Association"** means Citizens Planning Association of Santa Barbara County, Inc.

H. **"CCWA"** means Central Coast Water Authority.

I. **"Consent to Entry of Order Discharging Writ"** has the meaning given in Section VII(H)(1).

J. **"DWR"** means The State of California Department of Water Resources.

K. **"EIR Committee"** means a committee of no more than four (4) SWP Contractor representatives, and no more than four (4) Plaintiff representatives, chaired by a DWR representative, which has been formed for the purposes set forth in Section III(B).

L. **"HCP"** means the Habitat Conservation Plan/Natural Community Conservation Plan prepared for the Kern Water Bank Authority and approved through an Implementation Agreement dated October 2, 1997, with the United States Fish and Wildlife Service and California Department of Fish and Game.

M. **"Interim Implementation Order"** has the meaning given in Section VII(C).

N. **"JAMS Trust Account"** means the account established by DWR with, and maintained by, the Mediator for the purpose set forth in Section VI.

O. **"Kern-Castaic Transfer"** means the transfer of 41,000 acre-feet of water from Kern County Water Agency to the Castaic Lake Water Agency approved by DWR on March 31, 1999.

P. **"Kern Environmental Permits"** means the HCP and certain other permits, approvals and agreements relating to the Kern Water Bank, as set forth in and contemplated by the Addendum to the 1995 EIR, including those specified in Exhibit 2 hereto and similar, related permits, approvals and agreements.

Q. **"Kern Fan Element Transaction"** means DWR's transfer of the KWB Lands to Kern County Water Agency, as described in Article 52 of the Monterey

Amendments. Kern County Water Agency subsequently conveyed the KWB Lands to KWBA. Each of the stated conveyances occurred on August 9, 1996, based upon separate agreements dated December 13, 1995.

R. **"KWB Lands"** means the property known as the Kern Fan Element, as more specifically described in that certain Deed, executed by the Kern County Water Agency in favor of KWBA, dated August 9, 1996, and recorded in the Official Records of Kern County as Instrument No. 0196101606.

S. **"KWBA"** means Kern Water Bank Authority.

T. **"Mediator"** means retired Judge Daniel Weinstein, unless Judge Weinstein is unavailable, in which case the Mediator shall be another retired jurist mutually agreed to by DWR and the other members of the EIR Committee with respect to matters referred to the Mediator under Section III(H), and for all other matters another retired jurist approved by agreement of the Parties.

U. **"Mediation Issue"** means any issue relating exclusively to the compliance of the New EIR with any of the following requirements: (a) the requirements of CEQA; (b) the direction of the courts in the underlying litigation; or (c) the terms and conditions of this Settlement Agreement.

V. **"Monterey Agreement"** means the formal agreement, dated as of December 1, 1994, by and among DWR and certain SWP Contractors that memorializes fourteen principles to address the distribution of water during shortages and various other issues under the SWP Contracts.

W. **"Monterey Amendment"** means the amendment to the SWP Contracts entered into by DWR and certain SWP Contractors for purposes of implementing the Monterey Agreement.

X. **"New EIR"** has the meaning given in Section III.

Y. **"Party"** and "**Parties**" mean the signatories, individually and collectively, to this Settlement Agreement.

Z. **"PCL"** means Planning and Conservation League.

AA. **"PCL Complaint"** means the Complaint for Declaratory and Injunctive Relief and Petition for Writ of Mandate filed December 27, 1995, by PCL in the Superior Court, as amended and supplemented by the First Amended Complaint filed February 12, 1996.

BB. **"Plaintiffs"** means PCL, Citizens Planning Association and Plumas.

CC. **"Plaintiffs' Expenses Trust Account"** means the account maintained by JAMS for the purposes set forth in Section III(G).

DD. **"Plumas"** means Plumas County Flood Control and Water Conservation District.

EE. **"Plumas Amendment"** means an amendment to the Plumas SWP Contract to be entered into by DWR and Plumas pursuant to Section IV(C).

FF. **"Plumas Arrearages"** means any amount owed by Plumas to DWR under its SWP Contract that accrued prior to the resumption of payments by Plumas under Section IV(F).

GG. **"Return to Writ"** has the meaning given in Section VII(G).

HH. **"Rossmann"** means the Law Offices of Antonio Rossmann.

II. "**Section VI Trust Account Agreement**" means a trust account agreement regarding the disbursement by JAMS to Plaintiffs of those funds delivered by DWR pursuant to Section VI of this Settlement Agreement, the form of which agreement is attached hereto as Exhibit 4.

JJ. **"Superior Court"** means the Superior Court of the State of California, County of Sacramento.

KK. **"SWP"** means the State Water Project, officially called the State Water Resources Development System, as defined in Water Code Section 12931.

LL. **"SWP Contracts"** means those long-term contracts entered into by and between DWR, as the operator of the SWP, and individual SWP Contractors for the delivery of water from the SWP.

MM. **"SWP Contractors"** for purposes of this Settlement Agreement, means those contracting agencies identified in Table 1-6 of the DWR Bulletin 132-00, dated December 2001. All references to "SWP Contractors who are parties to this Settlement Agreement" are meant to exclude Plumas. Specific issues relating to Plumas are addressed in Section IV.

NN. **"Validation Cause of Action"** means the fifth cause of action of the PCL Complaint.

OO. **"Watershed Forum"** means a newly formed stakeholder group consisting of one or more representatives from each of Plumas, local community-based groups, DWR and the SWP Contractors who are parties to this Settlement Agreement, established for the purposes set forth in Section IV(B).

PP. **"Watershed Programs"** means programs, studies or projects approved by the Watershed Forum and implemented in pursuit of the goals set forth in Section IV, and other such activities approved by the Watershed Forum that are consistent with such purposes and goals.

QQ. **"1995 EIR"** means the Final Programmatic Environmental Impact Report for the Implementation of the Monterey Agreement Statement of Principles by State Water Project Contractors and the State of California Department of Water Resources for Potential Amendments to State Water Supply Contracts, prepared in October, 1995 by CCWA, as lead agency, and reviewed and considered in December 1995, by DWR, as a responsible agency, as each of those terms is defined in CEQA.

II. Administration of the State Water Project Pending New Environmental Impact Report and Discharge of Writ of Mandate.

Pending the Superior Court's issuance of an order discharging the writ of mandate in the underlying litigation, the Parties will jointly request that the Superior Court enter an order approving this Settlement Agreement, and an order, pursuant to California Public Resources Code Section 21168.9, authorizing on an interim basis the administration and operation of the SWP and the Kern Water Bank in accordance with the Monterey Amendments, the terms of this Settlement Agreement and the Attachment A Amendments, as more specifically set forth in Section VII of this Settlement Agreement.

III. New Environmental Impact Report

A. Preparation. As lead agency (as defined in CEQA), DWR shall cause a new environmental impact report to be prepared with respect to the proposed "project" (as that term is defined in Public Resources Code Section 21065 and Section

15378 of the CEQA Guidelines), in accordance with and as further described in Section III(C) below (the "**New EIR**").

B. EIR Committee. To effectuate the desire of the Parties that the New EIR be the product of a cooperative effort and comply with the requirements of CEQA and the direction of the courts in the underlying litigation, the EIR Committee has been formed to provide advice and recommendations to DWR in connection with the preparation of the draft and final versions of the New EIR.

C. New EIR Content. The proposed project to be analyzed in the New EIR will be specifically defined during the scoping process. Under all circumstances, in order to provide DWR, the responsible agencies, and the public with adequate disclosure to consider the potential environmental impacts of the Monterey Amendments, and the additional actions set forth in this Settlement Agreement, the environmental analysis in the New EIR shall evaluate, as components of the proposed project, the Monterey Amendments (including the provisions relating to the transfer of the KWB Lands) and the Attachment A Amendments. DWR shall ensure that the New EIR evaluates all proposed actions that are necessary to implement this Settlement Agreement. The New EIR shall include the following:

1. Information on water deliveries of the SWP over the relevant historical period (at least 1991 -2002), as well as data regarding the deliveries in the last extended drought (1987-1992), to be included in the description of the setting and the background for the proposed project;

2. As part of the CEQA-mandated "no-project" alternative analysis, and in light of the Court of Appeal's opinion, an analysis of the effect of pre-

Monterey Amendment SWP Contracts, including implementation of Article 18 therein. This analysis shall address, at a minimum, (a) the impacts that might result from application of the provisions of Article 18(b) of the SWP Contracts, as such provision existed prior to the Monterey Amendments, and (b) the related water delivery effects that might follow from any other provisions of the SWP Contracts;

3. Analysis of the potential environmental impacts of changes in SWP operations and deliveries resulting from implementation of the proposed project. If the proposed project results in modifications to the water sources relied upon for the SWP, those sources will be identified and the resulting environmental effects will be assessed;

4. Analysis of the potential environmental effects relating to (a) the Attachment E Transfers and (b) the Kern-Castaic Transfer, in each case as actions that relate to the potential environmental impacts of approving the Monterey Amendments; and

5. Analysis of the potential environmental effects relating to the implementation of this Settlement Agreement, including:

    a. Evaluation of the potential environmental impacts arising from the payments to Plumas as described in Section IV; and

    b. Analysis of the potential environmental effects relating to implementation of the provisions of this Settlement Agreement relating to the Kern Water Bank as discussed in Section V.

D. Acknowledgement and Agreement Regarding Attachment E Transfers. With respect to Section III(C)(4)(a), notwithstanding the analysis of the potential impacts of the Attachment E Transfers in the New EIR and without specifically endorsing or opposing those transfers or any prior environmental assessments of them, the Parties recognize that such water transfers are final. Each of the Parties agrees not to, and it shall be a condition to the initial and continuing effectiveness of this Settlement Agreement that Plaintiffs do not, hereafter challenge the effectiveness or validity of such water transfers.

E. Acknowledgement and Agreement Regarding Kern-Castaic Transfer. With respect to Section III(C)(4)(b) regarding the Kern-Castaic Transfer, the Parties recognize that such water transfer is subject to pending litigation in the Los Angeles County Superior Court following remand from the Second District Court of Appeal (*See* Friends of the Santa Clara River v. Castaic Lake Water Agency, 95 Cal. App. 4th 1373, 116 Cal. Rptr. 2d 54 (2002); *review denied* April 17, 2002). The Parties agree that jurisdiction with respect to that litigation should remain in that court and that nothing in this Settlement Agreement is intended to predispose the remedies or other actions that may occur in that pending litigation.

F. Acknowledgement and Agreement Regarding Kern Water Bank. With respect to Section III(C)(5)(b) relating to the Kern Water Bank, the Parties acknowledge that the Kern Water Bank is currently operating under the Kern Environmental Permits, which were entered into based on an Addendum to the 1995 EIR. The Parties recognize that the Addendum has been completed and agree not to challenge it in any manner. KWBA agrees that it will not rely on the Addendum

to the 1995 EIR for any new KWBA project to the extent that such reliance is based on data or analysis incorporated into the Addendum from the 1995 EIR. In addition, the New EIR shall include an independent study by DWR, as the lead agency, and the exercise of its judgment regarding the impacts related to the transfer, development, and operation of the Kern Water Bank in light of the Kern Environmental Permits. Such study shall identify SWP and any non-SWP sources of water deliveries to the Kern Water Bank. The views of the trustee agencies, as evidenced by the requirements of the HCP, will be used to provide guidance to DWR. Finally, the Parties agree that this Settlement Agreement is not intended to and shall not affect the continuing effectiveness of the Kern Environmental Permits.

G. Reimbursement of Plaintiffs' Expenses for Participation in the Preparation of New EIR .

1. *DWR Obligation to Reimburse Plaintiffs*. Subject to and in accordance with clauses (2) and (3), DWR will provide up to $300,000 to Plaintiffs for expenses actually incurred as needed to support Plaintiffs' participation in DWR's preparation of the New EIR, including service on the EIR Committee.

2. *Deposit into Trust Account*. The Parties acknowledge that in accordance with the principles of settlement, DWR caused to be deposited $300,000 into the Plaintiffs' Expenses Trust Account at JAMS on August 22, 2002.

3. *Disbursement of Funds to Plaintiffs*. Funds provided by DWR under this Section III(G) are available for disbursement and will be disbursed to

Plaintiffs by JAMS from the Plaintiffs' Expenses Trust Account in accordance with that certain Plaintiff's Expenses Trust Account Agreement dated August 15, 2002, attached hereto as Exhibit 1 and incorporated herein by this reference.

H. Disputes Regarding Mediation Issues.

1. *Referral to Director of DWR.* If the Plaintiffs' or SWP Contractors' representatives on the EIR Committee, or both, disagree with DWR's proposed approach with respect to a Mediation Issue, such representatives may refer the issue in writing to the Director of DWR.

2. *Referral to Mediator*. If (a) two-thirds of Plaintiffs' representatives or (b) three-fourths of the SWP Contractors' representatives, or both, disagree with the DWR Director's written decision with respect to a Mediation Issue (which issue shall have first been referred to the Director pursuant to Section III(H)(1)), such representative(s) may refer the issue in writing for consideration to the Mediator.

3. *Notices to Other Parties*. DWR shall inform the Parties to this Settlement Agreement of any referrals made pursuant to this Section III(H).

4. *Advisory Opinion by Mediator*. In the event of a referral as described above, the Mediator will consider the views of the representatives of the EIR Committee and the DWR Director, and will provide a written advisory opinion on the issue to the EIR Committee and DWR Director.

5. *Final Decision by DWR.* After receipt of an advisory opinion from the Mediator, the DWR Director shall make a final decision on the issue.

6. *Mediator's Costs and Expenses*.

a. *Referrals by Plaintiffs' Representatives*. On any matter referred to the Mediator by Plaintiffs' representatives on the EIR Committee, the costs of the Mediator's services will be borne one-third (1/3) by the Plaintiffs and two-thirds (2/3) by DWR.

b. *Referrals by SWP Contractors' Representatives*. For any referral by the SWP Contractors who are representatives on the EIR Committee, the SWP Contractors who are signatory to this Settlement Agreement will compensate the Mediator for his services.

c. *Frivolous or Harassing Referrals*. In the event of frivolous or harassing matters referred to him/her, the Mediator shall have the authority to award costs to the prevailing party, as well as reasonable attorney fees in accordance with Section IX of this Settlement Agreement.

I. Filing of New EIR upon Completion. Upon completion of the New EIR, in accordance with the procedure set forth in CEQA, and after final consideration by and good faith consultation with the EIR Committee, DWR shall cause the New EIR to be filed with the Superior Court as a return to the writ of mandate issued by such court in connection with this case.

IV. **Plumas Matters.**

A. Monetary Settlement.

1. *Agreement to Pay*. In accordance with the procedures and subject to the conditions described herein, DWR shall pay to Plumas the sum of $8,000,000.

2. *Schedule of Payments*.

a. *Annual Payments*. A total sum of Four Million Dollars ($4,000,000) shall be paid in accordance with this Section IV(A)(2)(a). DWR shall pay to Plumas One Million Dollars ($1,000,000) within 30 days after approval of this Settlement Agreement by the Superior Court (or the first business day after said 30th day if the 30th day is not a business day).

On each anniversary date of the first $1,000,000 payment until (and inclusive of) the third (3rd) anniversary, DWR shall pay to Plumas One Million Dollars ($1,000,000).

b. *Post Notice-of-Determination Payments*. Subject to Section IV(A)(2)(c), the remaining Four Million Dollars ($4,000,000) shall be paid in four annual installments of $1,000,000 each, beginning on the later to occur of: (1) the date that is seventy days after the Notice of Determination (as defined in CEQA) has been filed for the New EIR (or the first business day after said 70th day if the 70th day is not a business day); or (2) the date that is one year after the last payment made under Section IV(A)(2)(a).

c. *Effects of Litigation on Payment Obligation*.

(1) Suspension of Payment Obligation. If litigation is commenced by anyone challenging CEQA compliance for, or the validity of, any Monterey Amendment (or any portion thereof), including matters pertaining to the Kern Fan Element Transaction, the monetary obligations of DWR under Section IV(A)(2)(b) shall be suspended until the date that is forty-five (45) days after final conclusion of that litigation (without further right of appeal) in a manner that does not invalidate any Monterey Amendment (or any portion thereof) or the Kern Fan Element Transaction. Within thirty (30) days after final conclusion of any such litigation in said manner, DWR shall pay to Plumas any amounts then owed by DWR under this Section IV.

(2) Termination of Payment Obligation. If any such litigation results in a final judgment (without further right of appeal) that invalidates any Monterey Amendment (or any portion thereof) or the Kern Fan Element Transaction, the obligation for payments under Section IV(A)(2)(b) shall automatically terminate.

3. *Use of Funds*.

a. *Funding of Watershed Programs*. Plumas shall apply a majority of all funds received each year pursuant to Section IV(A) to Watershed Programs.

b. *Balance of Funds to General Purposes*. Plumas may apply the balance of funds received each year to other district-related purposes, as determined by Plumas with due consideration for the needs of the Watershed Forum.

c. *Annual Carry-Over*. Funds received but not spent in any given year may be carried over to the succeeding year(s), provided, however, that any such funds shall continue to be subject to the restrictions under Sections IV(A)(3)(a) and (b).

B. Watershed Forum and Programs.

1. *Formation of Watershed Forum*. Prior to the date hereof, the Watershed Forum was formed. The Watershed Forum is locally driven but includes the active and committed participation of the SWP Contractor and DWR members of the Forum.

2. *Purpose and Goals*

a. *Generally*. The Watershed Forum's purpose is to implement watershed management and restoration activities for the mutual benefit of Plumas and the SWP. Forum activities include design of, participation in, implementation of, and review of studies and demonstration projects related to watershed restoration.

b. *Specific Goals*. The specific focus of the Watershed Forum's activities is to implement programs designed to achieve the following benefits:

(1) Improved retention (storage) of water for augmented base-flow in streams;

(2) Improved water quality (specifically, reduced sedimentation), and stream bank protection;

(3) Improved upland vegetative management; and

(4) Improved groundwater retention/storage in major aquifers.

c. *Emphasis on Feather River Watershed*. The Watershed Forum specifically promotes and encourages restoration of the Feather River watershed, with particular focus on the drainages of the three SWP Upper Feather River reservoirs. The Watershed Forum seeks to obtain funding and investments in the Feather River watershed in order to facilitate programs that will generate significant local environmental and water supply benefits.

d. *Technical Advisors*. The Watershed Forum will retain a committee of technical advisors to assist the Watershed Forum in identifying activities that can provide timely and practical benefits based on the best scientific and technical information.

3. *General Watershed Forum Issues*

a. *Cooperation*. The Watershed Forum shall seek to foster mutual cooperation and support among Plumas, DWR and other SWP Contractors in achieving local and state-wide goals.

b. *Dispute Resolution*. Any disputes between members of the Watershed Forum, or between Plumas and the Watershed Forum, with respect to Watershed Forum activities and funding will be resolved by retention of a third party neutral expert reasonably acceptable to all members of the Watershed Forum.

c. *Interruption in Funding*. If payments by DWR are interrupted due to litigation challenging any Monterey Amendment (or any portion thereof) or the Kern Fan Element Transaction, as set forth in Section IV(A)(2)(c), the Parties shall, depending on the success of the watershed work and the litigation situation, give due consideration to the importance of funding watershed work in consecutive years without interruption.

d. *No Limitation on DWR Obligations*. DWR's participation in the Watershed Forum shall not compromise DWR's obligation to be impartial in the distribution of matching funds from public funding sources under its jurisdiction.

C. Plumas Amendment. Upon completion of any necessary environmental review(s), DWR shall offer to Plumas the Plumas Amendment which shall include (1) DWR’s agreement that water supplied to Plumas shall be determined

based on availability of water supply from Lake Davis, and (2) DWR's agreement that water deliveries to Plumas will not be reduced during SWP shortages so long as sufficient water is available from Lake Davis. The Plumas Amendment shall apply only to the maximum Table A amount in Plumas' SWP Contract on the date that this Settlement Agreement is executed. The Plumas Amendment shall also contain assurances that Plumas' claim to area-of-origin rights will not be affected by the Amendment. The Plumas Amendment may also contain the Monterey Amendment, as modified to reflect current conditions relating to Plumas, and the Attachment A Amendments.

D. Dialogue between Plumas and DWR. Subject to Plumas' execution of this Settlement Agreement and compliance with the terms herein, DWR agrees to confer with Plumas to develop strategies and actions for the management, operation, and control of SWP facilities in Plumas County in order to increase water supply, recreational, and environmental benefits to Plumas from such facilities. In furtherance thereof, DWR and Plumas agree to evaluate and give due consideration to:

1. the potential re-operation of SWP facilities in Plumas County to increase the water supply available to Plumas;
2. the potential release of water from reservoirs, as part of planned operations, for Plumas' benefit; and
3. the appropriateness of certain charges in Plumas' SWP Contract in light of current circumstances and whether amendments thereto are warranted.

E. Future Relations. Upon the Superior Court's approval of this Settlement Agreement, Plumas agrees to maintain a positive relationship with the SWP Contractors and DWR, and to support the Monterey Amendments and the Attachment A Amendments. Plumas reserves the right to review critically the New EIR.

F. Contract Payments. Plumas shall resume and maintain timely payments under its SWP Contract. Such payments shall begin upon the earlier of (1) the first payment under Section IV(A)(2)(a) or (2) the date that Plumas or its member unit resumes taking water from Lake Davis, and shall cover the period beginning January 1 of that same year. DWR will not seek to collect the amount of any Plumas Arrearages.

V. **Kern Water Bank.**

A. Title. KWBA shall retain title to the KWB Lands. KWBA may continue to operate and administer the KWB Lands including the water bank, subject to the restrictions herein.

B. Restrictions on Use of KWB Lands.

1. *Continued Use as Water Bank*. As noted in Section III(F), the KWB Lands are subject to the HCP, which documents a plan to accomplish, among other things, certain water conservation and environmental objectives. Except as provided in Sections V(B)(2) and (3), the KWB Lands shall continue to be used for the operation of a water bank and other uses authorized by the HCP, so long as such use remains legally and economically feasible.

2. *Use of KWB Lands for other SWP Purposes*. If (a) the use of the KWB Lands as a water bank is determined by KWBA to no longer be economically and/or legally feasible, (b) DWR concurs with such determination, (c) the KWB Lands can be feasibly used for any of the SWP purposes provided in California Water Code §12930 et seq., and (d) DWR and KWBA agree on terms and conditions for such use, then the KWB Lands may be so used.

3. *Use of KWB Lands for other than SWP Purposes*. If (a) the KWB Lands can not feasibly be used for any of the SWP purposes provided in California Water Code §12930 et seq., or (b) KWBA and DWR are unable to agree on terms and conditions for such use, or (c) DWR determines not to use the KWB Lands for such purposes, then KWBA may transfer or develop all or a portion of the KWB Lands for alternative use(s), provided that any alternate use will not result in unmitigated environmental impacts. A finding by KWBA that such impacts will not occur will be subject to DWR's concurrence.

4. *The 490 Acres*. The approximately 490 acres currently subject to restrictions in the HCP, permitting use thereof as Conservation Bank Lands (as defined in the HCP), but which may be developed under the HCP, will continue to be subject to the restrictions in the HCP but may not be developed.

5. *Application of HCP Restrictions*. All of the KWB Lands, including the 490 acres, will remain subject to the restrictions contained in the HCP.

The restrictions will remain in effect regardless of amendment to, or termination of, the HCP, unless, in the event of such amendment or termination, DWR, after consultation with Plaintiffs, finds that such amendment or termination will not result in unmitigated environmental impacts. The provisions of this clause shall not apply to "Minor Amendments" to the HCP as that term is utilized in the HCP.

6. *Land Use Changes Subject to CEQA.* Changes to the allowable uses of the KWB Lands shall be subject to appropriate environmental review under CEQA.

C. Transfer/Development Proceeds. If all of the KWB Lands are transferred or developed by KWBA, the proceeds of such transfer or development (net of transaction or development costs) will be used for water management purposes identified by KWBA, subject to concurrence by DWR that such use is for bona fide water management purposes; provided, however, so long as the KWB Lands continue to be used for operation of a water bank, the proceeds (net of transaction or development costs) resulting from the transfer or development of a portion of the KWB Lands (which must be consistent with Section V(B)(5)) will be used for water management purposes identified by KWBA, subject to concurrence by DWR that the expenditure is consistent with such purposes.

D. Consultation with Plaintiffs.

1. Except as provided in Section V(D)(2), with respect to any matter that requires DWR's concurrence pursuant to Section V(B) and (C), DWR

shall consult with Plaintiffs prior to making any decision with respect thereto.

2. In lieu of consulting with Plaintiffs, following the conclusion of all litigation challenging CEQA compliance for, or the validity of, the Monterey Amendments, DWR may first provide notice and opportunity to comment to Plaintiffs and the public, and then, at Plaintiffs' request, shall consult with Plaintiffs.

E. Scope of Restrictions. The foregoing restrictions shall only apply to the KWB Lands and shall not affect the use or disposition of water stored under or withdrawn from the KWB Lands.

F. Effective Date of Restrictions. The foregoing restrictions in this Section V shall not be effective unless and until the court in the above-referenced litigation issues an order approving this Settlement Agreement and the Interim Implementation Order (as defined in Section VII(c)). The restrictions in this Section V shall become final only upon (1) filing of the Notice of Determination following the completion of New EIR, (2) discharge of the writ of mandate in the underlying litigation as provided below, and (3) conclusion of all litigation in a manner that does not invalidate any Monterey Amendment (or any portion thereof) or the Kern Fan Element Transaction. The continuing effectiveness of the restrictions in this Section V, and the obligations under this Settlement Agreement to comply with these restrictions, are subject to the terms of Section VII(K) below.

VI. Funding To Plaintiffs

A. Agreement to Pay. In accordance with the procedures and subject to the conditions described herein, DWR shall pay to Plaintiffs, collectively, the sum of $5,500,000 (in addition to the $300,000 paid pursuant to Section III(G)).

B. Schedule of Payments.

1. On or before the date that is thirty (30) days after approval of this Settlement Agreement by the Superior Court and issuance of the Interim Implementation Order under Section VII, DWR shall pay to Plaintiffs One Million Eight Hundred Seventy-Five Thousand Dollars ($1,875,000).

2. On or before the first anniversary after the date upon which delivery of funds are made by DWR pursuant to Section VI(B)(1), DWR shall pay to Plaintiffs One Million Eight Hundred Seventy-Five Thousand Dollars ($1,875,000).

3. Subject to Section VI(C), on or before the seventieth (70th) day after the Notice of Determination has been filed for the New EIR (or the first business day after said 70th day if the 70th day is not a business day), DWR shall pay to Plaintiffs One Million Seven Hundred Fifty Thousand Dollars ($1,750,000).

4. All amounts to be paid by DWR under this Section VI(B) shall be paid by wire transfer, in immediately available funds, to a JAMS Trust Account from which funds are to be disbursed therefrom to Plaintiffs in accordance with the Section VI Trust Account Agreement.

C. Effects of Litigation on Payment Obligations.

1. *Suspension of Payment Obligation*. If litigation is commenced by anyone challenging CEQA compliance for, or the validity of, any Monterey Amendment (or any portion thereof), including matters pertaining to the Kern Fan Element Transaction, the monetary obligations of DWR under Section VI(B)(3) shall be suspended until the date that is forty-five (45) days after conclusion of such litigation (without further right of appeal) in a manner that does not invalidate any Monterey Amendment (or any portion thereof) or the Kern Fan Element Transaction. Within thirty (30) days after final conclusion of any such litigation in said manner, DWR shall pay to Plaintiffs any amounts then owing under this Section VI.

2. *Termination of Payment Obligation*. If any such litigation results in a final judgment that invalidates any Monterey Amendment (or any portion thereof) or the Kern Fan Element Transaction, the obligation for payments under Section VI(B)(3) shall automatically terminate.

D. Use of Funds. The funds paid to Plaintiffs under this Section VI shall be used to implement this settlement, as determined by Plaintiffs in their reasonable judgment, including watershed restoration projects, follow-up actions arising from this settlement, and technical studies.

E. Unrelated to Attorney Fees. The payments under this Section VI are exclusive of, and in addition to, any amounts owing by DWR with respect to Plaintiffs' attorney fees, the latter of which are addressed by Section VIII.

VII. Sequence and Process for Implementation of Settlement

This Section VII addresses the process of implementing the terms of this Settlement Agreement to the extent not already addressed in this Settlement Agreement. All issues relating to the implementation of this Settlement Agreement not addressed by this Section VII or elsewhere herein shall be resolved through good faith discussions and mutual agreement among the Parties. If the Parties are unable to agree, the disputed matter shall be referred to and resolved by the Mediator.

A. Non-Reliance on 1995 EIR. DWR and the SWP Contractors who are signatories to this Settlement Agreement agree that they will not approve any new project or activity in reliance on the 1995 EIR, that was not approved, initiated or implemented prior to March 26, 2001, and the approval, initiation or implementation of which would require a separate environmental impact report or negative declaration under CEQA (other than, or in addition to, the 1995 EIR).

B. Attachment A Amendments. Within sixty (60) days after this Settlement Agreement is executed by all of the Parties, each of the SWP Contractors who are parties to this Settlement Agreement shall cause a duly authorized representative to execute an Attachment A Amendment, and deliver the executed Amendment to DWR. Upon approval of this Settlement Agreement by the Superior Court and issuance of the Interim Implementation Order, as discussed in Section VII(C), DWR shall execute the Attachment A Amendments. Thereupon, the Attachment A Amendments shall be deemed effective on an interim basis, and will not thereafter be modified without the written consent of the Plaintiffs, prior to the discharge of the writ of mandate. The Attachment A Amendments shall become

final upon (1) the filing of the Notice of Determination following the completion of the New EIR, (2) discharge of the writ of mandate in the underlying litigation as provided below, and (3) conclusion of all litigation in a manner that does not invalidate any Monterey Amendment (or any portion thereof) or the Kern Fan Element Transaction.

C. Motion for Order Approving Settlement Agreement and Interim Implementation Order. As soon as practical after the execution of this Settlement Agreement, the Parties shall jointly file with the Superior Court a motion for (1) an order approving this Settlement Agreement, and (2) an order (the "**Interim Implementation Order**") specifically authorizing on an interim basis, pursuant to Public Resources Code Section 21168.9, the administration and operation of the SWP and the KWB Lands, pending discharge of the writ of mandate in the underlying litigation, in accordance with the Monterey Amendments (as limited by Section VII(A) above), as supplemented by the Attachment A Amendments and the other terms and conditions of this Settlement Agreement, including the provisions in Section V(B) regarding the KWB Lands. Said motion shall include the proposed Section 21168.9 order attached hereto as Exhibit 3-A, and the proposed writ of mandate referenced therein and attached hereto as Exhibit 3-B. The parties shall jointly move the Superior Court for approval of said order and writ. Subject to Section VII(J), and except as provided in Section VII(I), Plaintiffs shall not seek any further order or writ concerning the Monterey Amendments or the New EIR.

D. Implementation of New Policies, Procedures and Guidelines. DWR has issued a [draft] Report of State Water Project Supply Reliability in response to paragraph 1 of the Attachment B Principles. Upon the Superior Court's approval of this Settlement Agreement, DWR shall issue Contractors' Memos on (1) the Attachment C Guidelines and (2) the Attachment D Principles. After the Superior Court's approval of this Settlement Agreement, and in no event later than January 1, 2004, DWR shall issue Contractors' Memos on the remainder of the Attachment B Principles (i.e., paragraphs 2 and 3). DWR may rely on DWR publications previously issued to comply with paragraph 2 of the Attachment B Principles, if appropriate.

E. Dismissal of Validation Cause of Action. Upon the execution of this Settlement Agreement by all the Parties and execution of the Attachment A Amendments as set forth in Section VII(B) and issuance by DWR of the Contractor Memos referenced in the second sentence of Section VII(D), Plaintiffs shall file a request for dismissal without prejudice of the Validation Cause of Action. So long as such conditions are timely met, Plaintiffs covenant and agree not to refile the Validation Cause of Action, nor any new cause of action relating thereto, nor a new claim challenging the validity of any Monterey Amendment (or any portion thereof) or the Kern Fan Element Transaction.

F. Tolling of Statute of Limitations. As between Plaintiffs, DWR and the SWP Contractors who are signatories to this Settlement Agreement, it is agreed that the statute of limitations relating to the Validation Cause of Action shall be tolled as

to Plaintiffs until the date that is forty-five (45) days after the filing of the Notice of Determination for the New EIR.

G. Notice of Determination, Return to Writ and Motion for Order Discharging Writ. Upon completion of the New EIR, DWR will file with the Superior Court (1) a Notice of Determination including a copy of the New EIR, (2) a return to writ of mandate (the "**Return to Writ**"), (3) a request for an order discharging the writ of mandate previously issued by the Superior Court in the underlying case and (4) any other information required by the Superior Court for a discharge of writ.

H. Consent to Entry of Order Discharging Writ.

1. *Obligation to File*. Concurrent with DWR's filings referenced in Section VII(G), subject only to Sections VII(H)(2) and (3), and provided Plaintiffs have not challenged the Return to Writ (under the procedures set forth in Section VII(I)), Plaintiffs shall file with the Superior Court a pleading consenting to entry of an order discharging the writ of mandate (the "**Consent to Entry of Order Discharging Writ**").

2. *Conditions Precedent to Filing*. Plaintiffs' obligation to file the Consent to Entry of Order Discharging Writ shall be subject to, and conditioned upon, satisfaction of the requirement set forth in Section VII(B).

3. *Earliest Effective Date of Discharge of Writ*. The discharge of the writ of mandate shall not be effective until at least forty-five (45) days after the filing of the Notice of Determination for the New EIR.

I. Subsequent CEQA Challenge.

1. *Limited Basis for Challenge*. Plaintiffs may only challenge the Return to Writ if, during the preparation and review of the New EIR, (a) Plaintiffs

objected to the Mediator based on one or more Mediation Issues**,** (b) the Mediator upheld that objection in a written advisory opinion as described in Section III(H), (c) DWR rejected such written advisory opinion in its final decision, either expressly or as evidenced by the contents of the final New EIR, and (d) the challenge that Plaintiffs file to the Return to Writ is on the same ground(s) as the objection upheld by Mediator in the advisory opinion. Where such an objection was made to the Mediator and Plaintiffs file such a challenge to the Return to Writ, DWR shall maintain the advisory opinion as a public record. With respect to clause (c) of this subsection (I)(1), if the Parties dispute whether DWR has rejected the Mediator's advisory opinion, such matter shall be referred to the Mediator and (s)he shall make a final determination with respect thereto in accordance with Article IX.

2. *Stipulation to Continued Operations*. In the event of such a challenge, the challenging party will stipulate that, pending compliance with such writ as the court may issue, administration and operation of the SWP may continue in accordance with the Interim Implementation Order.

3. *Order for New EIR*. If such a challenge results in an order that DWR must prepare a new or supplemental environmental impact report, the provisions set out in Section III (regarding preparation of New EIR) shall be followed, and at the conclusion of the process, the provisions of Section VII(H) (filing of a Consent to Entry of Order Discharging Writ) and this Section VII(I) shall apply.

J. No Future Challenges. Except as specifically authorized herein, and as a condition to the initial and continuing effectiveness of this Settlement Agreement, Plaintiffs agree not to initiate any future litigation challenging the validity of any Monterey Amendment (or any portion thereof) or the Kern Fan Element Transaction.

K. Mutual Interdependency. On an interim and final basis, the Attachment A Amendments, the Plumas Amendment, the provisions regarding the KWB Lands described in Section V(B), and the continued operations of the SWP based on the Monterey Amendments are mutually interdependent.

L. Implementation Dispute Resolution. Disputes arising in the implementation of this Settlement Agreement shall be addressed in accordance with Section IX.

VIII. Attorney Fees

Within forty-five (45) days after the execution of this Settlement Agreement by all Parties, the Parties shall engage in arbitration to determine the amount of attorney fees and costs to be paid to Rossmann as Plaintiffs' counsel. Such arbitration shall be conducted pursuant to the following terms and conditions:

A. The arbitrator will be selected by mutual agreement of the Parties. If the Parties cannot agree on the arbitrator, the Mediator will designate the arbitrator. JAMS arbitration rules will apply, providing for limited and focused discovery, but the arbitrator may be anyone the Parties select regardless of his/her professional affiliation.

B. Within five (5) business days after commencement of the arbitration, Rossmann shall file with the arbitrator a petition for fees. The petition for fees shall identify, in sufficient detail acceptable to the arbitrator, all fees for: (1) past service in the underlying litigation; (2) fees for participation in the settlement mediation to the

date thereof; and (3) projected fees for services to be rendered in implementing the Settlement Agreement, including fees incurred in advising Plaintiffs in connection with their participation in, and service on, the EIR Committee.

C. Rossmann may apply for a multiplier on fees earned in the underlying litigation. The award for fees relating to mediation and settlement implementation shall be subject to the lodestar amount and shall not include a multiplier.

D. The costs of the arbitration will be borne one-third (1/3) by Plaintiffs and two-thirds (2/3) by DWR.

E. DWR and CCWA reserve all rights and defenses, except the right to challenge Rossmann's entitlement to fees relating to the mediation and settlement implementation stages.

F. The arbitrator shall determine the amount of the award within thirty (30) days after submission of the fee petition to the arbitrator. The arbitrator's determination shall be binding upon the Parties.

G. DWR shall pay the fee award to Rossmann in accordance with the following schedule:

1. Sixty percent (60%) within thirty (30) days after the award;
2. Thirty percent (30%) within thirty (30) days after the filing of the Return to Writ with the Superior Court; and
3. Ten percent (10%) within thirty (30) days after the Plaintiffs' filing of the Consent to Entry of Order Discharging Writ with the Superior Court.

H. The amount of $100,000 previously paid as attorney fees to Rossmann by DWR will be credited toward the amount owed by DWR hereunder as determined by the arbitrator.

IX. **Dispute Resolution**

The Parties agree to cooperate in implementing this Settlement Agreement and to try in good faith to resolve any disputes. In addition, until the conclusion of the underlying litigation, as evidenced by the issuance of an order discharging the writ of mandate, the Mediator will decide all unresolved issues involving the interpretation and implementation of this Settlement Agreement and, to the extent permitted by law, will be authorized to enforce its terms, except for those matters properly reserved to the jurisdiction of the Superior Court. Any party may request a conference before the Mediator on seventy-two (72) hours' advance written notice to the Mediator and the other Parties. The Mediator will have the power to award reasonable attorney fees to the prevailing party in the event of frivolous, harassing or untimely motions. The party who initiates a dispute resolution proceeding with the Mediator pursuant to this Section IX shall be solely responsible for the payment of the Mediator's costs and expenses, except as otherwise provided herein.

X. **Miscellaneous**

A. No Admission. By entering into this Settlement Agreement, the Plaintiffs do not endorse or admit the validity of the Monterey Amendments, and neither DWR, KWBA, nor any of the SWP Contractors who are signatories hereto admit any of the Plaintiffs' allegations in the pending litigation including those concerning the Monterey Amendments and/or the Kern Fan Element Transaction.

B. Compliance with Laws. The Parties agree that nothing in this Settlement Agreement is intended to limit the discretion granted by law, including CEQA, to DWR, as lead agency and as the State agency responsible for administration and operation of the SWP, or the duty of DWR to comply with applicable requirements of law, including those of CEQA and the California Water Code.

C. Authority. Each of the Parties represents that: (1) it has the authority to execute and enter into this Settlement Agreement; (2) the individual executing this Settlement Agreement on behalf of the Party has the authority and has been specifically authorized to execute and deliver this Settlement Agreement on behalf of such Party; (3) upon execution by such person on behalf of the Party, this Settlement Agreement shall be valid and enforceable against such Party in accordance with the terms hereof; (4) the Party is authorized to implement this Settlement Agreement, without further action by the Party or its governing body, board of directors, or any other person or entity, as the case may be; and (5) the execution and entry into this Settlement Agreement and the implementation of its terms by the Party is not in violation of any applicable law or any other contract or agreement by which it is bound or to which it is a party. The Parties acknowledge that although DWR plans to make payments required under this Agreement pursuant to its authority under the State Water Resources Development System (Water Code Sections 12930 et seq.), and that under such authority accruals are continuously appropriated without regard to fiscal years (Water Code Section 12938), any such payments may nevertheless be contingent on the annual Budget Act and, under certain circumstances, payments may be

delayed or halted by non-party government authorities. If any payment under this Settlement Agreement is delayed beyond the date it is due, the amount due shall accrue interest at the rate of the State Pooled Money Investment Fund for the first forty-five (45) days after it is due and at eight percent (8%) per annum thereafter. The foregoing does not limit Plaintiff's rights to seek legal or equitable relief in the event of a breach of this Settlement Agreement.

D. Not a General Appearance or Concession to Jurisdiction. The execution of this Settlement Agreement by the SWP Contractors and KWBA does not constitute a general appearance in the underlying litigation, nor does it constitute a concession to jurisdiction of the Superior Court over the SWP Contractors or KWBA other than for the purpose of enforcing the terms of this settlement.

E. Successors and Assigns. This Settlement Agreement shall be binding upon and inure to the benefit of the Parties and their respective heirs, legal representatives, successors and assigns. No Party may assign their rights under this Settlement Agreement without the prior written consent of the other Parties.

F. Governance. This Agreement shall be construed under and enforced in accordance with the substantive laws of the State of California.

G. Entirety of Agreement; No Amendment. This Settlement Agreement sets forth the entire agreement among the Parties and supersedes all prior oral or written agreements, negotiations, discussions, or understandings concerning the subject matter hereof. The terms of this Settlement Agreement may not be altered, amended, waived or modified, except by a further written agreement signed by all Parties.

H. Mutual Preparation. The Parties each cooperated in the drafting and preparation of this Settlement Agreement. Thus, the language of all parts of this Settlement Agreement shall in all cases be construed as a whole, according to its fair meaning, and not strictly for or against any Party as the drafter thereof.

I. Further Acts. Each Party agrees to make, execute and deliver such other instruments or documents, and to do or cause to be done such further or additional acts, as reasonably may be necessary in order to effectuate the purposes or to implement the terms of this Settlement Agreement.

J. No Waiver. No waiver of any breach of any term or provision of this Settlement Agreement shall be construed to be, nor shall be, a waiver of any other breach of this Settlement Agreement. No waiver shall be binding unless in writing and signed by the Party waiving the breach. With respect to any breach of this Settlement Agreement by Plaintiffs, such breach may only be waived in writing by DWR, KCWA and The Metropolitan Water District of Southern California. With respect to any breach of this Settlement Agreement by the non-Plaintiffs, such breach may only be waived in writing by the Plaintiffs.

K. No Representations or Warranties. Each of Parties represents and declares that in executing this Settlement Agreement, it has relied solely upon its own judgment, belief and knowledge, and on the advice and recommendations of its independently selected counsel, concerning the nature, extent and duration of its rights and claims and that it has not been influenced to any extent whatsoever in executing the same by any representations or statements covering any matters made by any of the Parties or by any person representing them or any of them.

Each Party acknowledges that no other Party nor any of their representatives has made any promise, representation or warranty whatsoever, written or oral, as any inducement to enter into this Settlement Agreement, except as expressly set forth in this Settlement Agreement.

L. Independent Investigations. Each Party has made such investigation of the facts pertaining to this settlement and this Settlement Agreement and of all matters pertaining thereto as it deems necessary.

M. Survival. The representations, warranties and covenants contained in this Settlement Agreement are deemed to and shall survive the execution and delivery of this Settlement Agreement by all of the Parties.

N. Headings. All headings in this Settlement Agreement are included for convenience and reference only and shall not constitute a part of this Settlement Agreement for any purpose.

O. Not Binding on Others. This Settlement Agreement is not intended to, nor shall it (1) bind any non-Party persons or entities as to any claims or defenses they may otherwise now or in the future hold, or (2) waive any claims or defenses any Party hereto may have now or in the future against such non-Party persons or entities.

P. Counterparts. This Settlement Agreement may be executed in counterparts, each of which shall constitute an original, but all of which shall constitute one and the same agreement, provided each signing Party shall have received a copy of the signature page signed by every other Party.

Q. Voluntary and Knowing Execution. EACH PARTY REPRESENTS AND WARRANTS THAT IT HAS THOROUGHLY READ AND CONSIDERED

ALL ASPECTS OF THIS SETTLEMENT AGREEMENT, THAT IT UNDERSTANDS ALL PROVISIONS OF THIS SETTLEMENT AGREEMENT, THAT IT HAS HAD THE OPPORTUNITY TO CONSULT WITH COUNSEL THROUGHOUT THIS PROCESS AND THAT IT IS VOLUNTARILY ENTERING INTO THIS SETTLEMENT AGREEMENT OF ITS OWN FREE WILL, WITHOUT DURESS OR COERCION OF ANY KIND.

R. Obligations Dependent on Validity of Monterey Amendments. With respect to any obligation in this Settlement Agreement that terminates or is suspended upon a challenge to or final judgment that invalidates any portion of any Monterey Amendment, such termination or suspension of such obligation may be avoided if such invalidity is explicitly and irrevocably waived in accordance with the procedures set forth in Paragraph 29 of the Monterey Amendments.

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{SIGNATURES CONSOLIDATED BY THE STATE WATER PROJECT ANALYSIS OFFICE OF THE DEPARTMENT OF WATER RESOURCES}

IN WITNESS WHEREOF, the Parties have executed this Settlement Agreement as of the date first set forth above.

PLANNING AND CONSERVATION LEAGUE

By: Sage Sweetwood
Name: Sage Sweetwood
Title: President

PLUMAS COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

By: B. J. Pearson
Name: B. J. Pearson
Title: Chair, Board of Supervisors
Ex-officio Chair, District Board of Directors

CITIZENS PLANNING ASSOCIATION OF SANTA BARBARA COUNTY, INC.

By: Louise Boucher
Name: Louise Boucher
Title: President,
Citizens Planning association of Santa Barbara, Inc.

[Remainder of Page Intentionally Blank – Additional Signatures Follow]

{SIGNATURES CONSOLIDATED BY THE STATE WATER PROJECT ANALYSIS OFFICE OF THE DEPARTMENT OF WATER RESOURCES}

STATE OF CALIFORNIA

DEPARTMENT OF WATER RESOURCES

By: _____

Name: Thomas M. Hannigan
Title: Director

Approved as to legal form and sufficiency:

By: _____

Name: Peggy Bernardy
Title: Chief Counsel

ALAMEDA COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT, ZONE 7

By: _____

Name: William R. Stevens

Title: President, Board of Directors

Approved as to Form
RICHARD E. WINNIE, County Counsel

By _____

ALAMEDA COUNTY WATER DISTRICT

By: _____

Name: John H. Weed

Title: President

{SIGNATURES CONSOLIDATED BY THE STATE WATER PROJECT ANALYSIS OFFICE OF THE DEPARTMENT OF WATER RESOURCES}

ANTELOPE VALLEY-EAST KERN WATER AGENCY

By: _____

Name: Andy D. Rutledge

Title: Board President

CASTAIC LAKE WATER AGENCY

By: _____

Name: DAN MASNADA

Title: GENERAL MANAGER

CITY OF YUBA

By: _____

Name: WILLIAM P. LEWIS

Title: UTILITIES DIRECTOR

{SIGNATURES CONSOLIDATED BY THE STATE WATER PROJECT ANALYSIS OFFICE OF THE DEPARTMENT OF WATER RESOURCES}

COACHELLA VALLEY WATER DISTRICT

By: John W. McFadden

Name: John W. McFadden

Title: President of the Board of Directors

COUNTY OF BUTTE

By: R. J. Beeler

Name: R. J. BEELER

Title: Chairman, Board of Supervisors

COUNTY OF KINGS 3-25-03

By: Joe Neves

Name: JOE NEVES

Title: CHAIRMAN

CRESTLINE-LAKE ARROWHEAD WATER AGENCY

By: James J. McCrory

Name: James J. McCrory

Title: President, Board of Directors

{SIGNATURES CONSOLIDATED BY THE STATE WATER PROJECT ANALYSIS OFFICE OF THE DEPARTMENT OF WATER RESOURCES}

DESERT WATER AGENCY

By: _____

Name: Dan M. Ainsworth

Title: General Manager

DUDLEY RIDGE WATER DISTRICT

By: _____

Name: Joe MacIlvaine

Title: President

KERN COUNTY WATER AGENCY

By: _____

Name: Terry Rogers

Title: President

{SIGNATURES CONSOLIDATED BY THE STATE WATER PROJECT ANALYSIS OFFICE OF THE DEPARTMENT OF WATER RESOURCES}

LITTLEROCK CREEK IRRIGATION DISTRICT

By: Frances Young

Name: _____

Title: President

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

By: _____

Name: Ronald R Gastelum

Title: CEO

MOJAVE WATER AGENCY

By: _____

Name: Kirby Brill

Title: General Manager

NAPA COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT

By: Mike Rippey

Name: Mike Rippey

Title: Vice-Chair

APPROVED 3/18/03
FLOOD CONTROL & WATER
CONSERVATION DISTRICT

MARY JEAN MCLAUGHLIN
SECRETARY OF THE DISTRICT

BY S. Vattuone Deputy

{SIGNATURES CONSOLIDATED BY THE STATE WATER PROJECT ANALYSIS OFFICE OF THE DEPARTMENT OF WATER RESOURCES}

OAK FLAT WATER DISTRICT

By: _____

Name: WILLIAM D. HARRISON

Title: MANAGER / SECRETARY

PALMDALE WATER DISTRICT

By: _____

Name: Leslie O. Carter

Title: President, Board of Directors

SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT

By: _____

Name: C. Patrick Milligan

Title: President

SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

By: _____

Name: J.C, Reichenberger

Title: President

{SIGNATURES CONSOLIDATED BY THE STATE WATER PROJECT ANALYSIS OFFICE OF THE DEPARTMENT OF WATER RESOURCES}

SAN GORGONIO PASS WATER AGENCY

By: _____

Name: Stephen P. Stockton

Title: General Manager/Chief Engineer

SAN LUIS OBISPO COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT

By: _____

Name: MICHAEL P. RYAN

Title: Chairman of the Board of Supervisors

SANTA BARBARA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

By: _____

Name: _____

Title: _____

APPROVE AS TO ACCOUNTING:
ROBERT W. GEIS, CPA
AUDITOR-CONTROLLER

BY: _____
Deputy

ATTEST:
MICHAEL F. BROWN
CLERK OF THE BOARD

BY: _____
Deputy

APPROVED AS TO FORM:
STEPHEN SHANE STARK
COUNTY COUNSEL

BY: _____
Deputy

{SIGNATURES CONSOLIDATED BY THE STATE WATER PROJECT ANALYSIS OFFICE OF THE DEPARTMENT OF WATER RESOURCES}

SANTA CLARA VALLEY WATER DISTRICT

By: _____

Name: Stanley M. Williams

Title: Chief Executive Officer

SOLANO COUNTY WATER AGENCY

By: _____

Name: Don Holdener

Title: Chairman, Board of Directors

TULARE LAKE BASIN WATER STORAGE DISTRICT

By: _____

Name: THOMAS R. HURLBUTT

Title: PRESIDENT

VENTURA COUNTY FLOOD CONTROL DISTRICT

By: _____

Name: Jeff Pratt

Title: Director - Watershed Protection

{SIGNATURES CONSOLIDATED BY THE STATE WATER PROJECT ANALYSIS OFFICE OF THE DEPARTMENT OF WATER RESOURCES}

CENTRAL COAST WATER AUTHORITY

By: _____

Name: William J. Brennan

Title: Executive Director

KERN WATER BANK AUTHORITY

By: _____

Name: William D. Phillimore,

Title: Chairman

ATTACHMENT A

AMENDMENT TO STATE WATER PROJECT CONTRACT

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

AMENDMENT NO. ____ TO THE WATER SUPPLY CONTRACT BETWEEN THE STATE OF CALIFORNIA DEPARTMENT OF WATER RESOURCES AND _____

This amendment is made this ____ day of _____, 2003, pursuant to the provisions of the California Water Resources Development Bond Act, the Central Valley Project Act, and other applicable laws of the State of California, between the State of California, acting by and through its Department of Water Resources, hereinafter referred to as the "State", and _____, hereinafter referred to as the "District" [or "Agency"].

RECITALS

WHEREAS, the State and the District entered into and subsequently amended a water supply contract (the "contract") providing that the State shall supply certain quantities of water to the District and providing that the District shall make certain payments to the State, and setting forth the terms and conditions of such supply and such payments; and

WHEREAS, on December 1, 1994, the State and representatives of certain State Water Project contractors executed a document entitled "Monterey Agreement – Statement of Principles – By The State Water Contractors And The State Of California Department Of Water Resources For Potential Amendments To The State Water Supply Contracts" (the "Monterey Agreement"); and

WHEREAS, the State, the Central Coast Water Authority ("CCWA") and those contractors intending to be subject to the Monterey Agreement subsequently negotiated an amendment to their contracts to implement provisions of the Monterey Agreement, and such amendment was named the "Monterey Amendment"; and

WHEREAS, in October 1995, an environmental impact report ("EIR") for the Monterey Amendment was completed and certified by CCWA as the lead agency, and thereafter the District and the State executed the Monterey Amendment; and

WHEREAS, the EIR certified by the CCWA was challenged by several parties (the "Plaintiffs") in the Sacramento County Superior Court and thereafter in the Third District Court of Appeal, resulting in a decision in *Planning and Conservation League, et al. v. Department of*

Water Resources, 83 Cal.App.4th 892 (2000), which case is hereinafter referred to as "PCL v. DWR"; and

WHEREAS, in its decision, the Court of Appeal held that (i) the Department of Water Resources ("DWR"), not CCWA, had the statutory duty to serve as lead agency, (ii) the trial court erred by finding CCWA's EIR sufficient despite its failure to discuss implementation of Article 18, subdivision (b) of the State Water Project contracts, as a no-project alternative, (iii) said errors mandate preparation of a new EIR under the direction of DWR, and (iv) the trial court erroneously dismissed the challenge to DWR's transfer of title to certain lands to Kern County Water Agency (the "Validation Cause of Action") and execution of amended State Water Project contracts for failure to name and serve indispensable parties. The Court of Appeal remanded the case to the trial court, ordering it to take the following five actions: (1) vacate the trial court's grant of the motion for summary adjudication of the Validation Cause of Action; (2) issue a writ of mandate vacating the certification of the EIR; (3) determine the amount of attorney fees to be awarded Plaintiffs; (4) consider such orders it deems appropriate under Public Resources Code Section 21168.9(a) consistent with the views expressed in the Appellate Court's opinion; and (5) retain jurisdiction over the action until DWR, as lead agency, certifies an environmental impact report in accordance with CEQA standards and procedures, and the Superior Court determines that such environmental impact report meets the substantive requirements of CEQA; and

WHEREAS, the State, the contractors, and the Plaintiffs in *PCL v. DWR* reached an agreement to settle *PCL v. DWR*, as documented by that certain Settlement Agreement dated _____, 2003 (the "Settlement Agreement"), and in such Settlement Agreement have agreed that the contracts should be amended, for clarification purposes, to delete terms such as "annual entitlement" and "maximum annual entitlement" so that the public, and particularly land use planning agencies, will better understand the contracts; and

WHEREAS, pursuant to the Settlement Agreement, the State and the District desire to so amend the District's contract, with the understanding and intent that the amendments herein with respect to subsections (m), (n), and (o) of Article 1, subsection (b) of Article 6, and subsection (a) of Article 16, and to Table A of the District's contract are solely for clarification purposes and that such amendments are not intended to and do not in any way change the rights, obligations or limitations on liability of the State or the District established by or set forth in the contract; and

WHEREAS, pursuant to the Settlement Agreement, the State, the contractors and the Plaintiffs in *PCL v. DWR* also agreed that the contracts should be amended to include a new Article 58 addressing the determination of dependable annual supply of State Water Project water to be made available by existing Project facilities, and the State and District desire to so amend the District's contract.

NOW THEREFORE, IT IS MUTUALLY AGREED, as follows:

1. Article 1(n) is amended to read:[1]

(n) **Annual Table A Amount**

"Annual Table A Amount" shall mean the amount of project water set forth in Table A of this contract that the State, pursuant to the obligations of this contract and applicable law, makes available for delivery to the District at the delivery structures provided for the District. The term Annual Table A Amount shall not be interpreted to mean that in each year the State will be able to make that quantity of project water available to the District. The Annual Table A Amounts and the terms of this contract reflect an expectation that under certain conditions the District will receive its full Annual Table A Amount; but that under other conditions only a lesser amount, allocated in accordance with this contract, may be made available to the District. This recognition that full Annual Table A Amounts will not be deliverable under all conditions does not change the obligations of the State under this contract, including but not limited to, the obligations to make all reasonable efforts to complete the project facilities, to perfect and protect water rights, and to allocate among contractors the supply available in any year, as set forth in Articles 6(b), 6(c), 16(b) and 18, in the manner and subject to the terms and conditions of those articles and this contract. Where the term "annual entitlement" appears elsewhere in this contract, it shall mean "Annual Table A Amount." The State agrees that in future amendments to this and other contractor's contracts, in lieu of the term "annual entitlement," the term "Annual Table A Amount" will be used and will have the same meaning as "annual entitlement" wherever that term is used.

2. Article 1(o) is amended to read:

(o) Maximum Annual Table A Amount

"Maximum annual entitlement" shall mean the maximum annual amounts set forth in Table A of this contract, and where the term "maximum annual entitlement" appears elsewhere in this contract it shall mean "Maximum Annual Table A Amounts."

3. Article 1(m) is amended to read:

(m) Minimum Project Yield

"Minimum project yield" shall mean the dependable annual supply of project water to be made available assuming completion of the initial project conservation facilities and additional project conservation facilities. The project's capability of providing the minimum project yield shall be determined by the State on the basis of coordinated operations studies of initial project conservation facilities and additional project conservation facilities, which studies shall be based upon factors including but not limited to: (1) the estimated relative proportion of deliveries for agricultural use to deliveries for municipal use assuming Maximum Annual Table A Amounts

[1] The number of the articles is not the same for all the Water Supply Contractors. Article 1(n) is intended to be the article presently entitled "Annual Entitlement", whatever its number may be in each District's contract. The article numbers may have to be changed for each contractor to reflect the numbers in its contract.

for all contractors and the characteristic distributions of demands for these two uses throughout the year; and (2) agreements now in effect or as hereafter amended or supplemented between the State and the United States and others regarding the division of utilization of waters of the Delta or streams tributary thereto.

4. Article 6(b) is amended to read:

(b) District's Annual Table A Amounts

Commencing with the year of initial water delivery to the District, the State each year shall make available for delivery to the District the amounts of project water designated in Table A of this contract, which amounts shall be subject to change as provided for in Article 7(a) and are referred to in this contract as the District's Annual Table A Amounts.

5. Article 16(a) is amended to read:

(a) Limit on Total of all Maximum Annual Table A Amounts

The District's Maximum Annual Table A Amount hereunder, together with the maximum Table A amounts of all other contractors, shall aggregate no more than 4,185,000 acre-feet of project water.

6 Article 58 is added to read:

58. **Determination of Dependable Annual Supply of Project Water to be Made Available by Existing Project Facilities.**

In order to provide current information regarding the delivery capability of existing project conservation facilities, commencing in 2003 and every two years thereafter the State shall prepare and mail a report to all contractors, and all California city, county, and regional planning departments and agencies within the contractors' project service areas. This report will set forth, under a range of hydrologic conditions, estimates of overall delivery capability of the existing project facilities and of supply availability to each contractor in accordance with other provisions of the contractors' contracts. The range of hydrologic conditions shall include the delivery capability in the driest year of record, the average over the historic extended dry cycle and the average over the long-term. The biennial report will also include, for each of the ten years immediately preceding the report, the total amount of project water delivered to all contractors and the amount of project water delivered to each contractor.

7. Add the following language at the bottom of Table A:

In any year, the amounts designated in this Table A shall not be interpreted to mean that the State is able to deliver those amounts in all years. Article 58 describes the State's process for providing current information for project delivery capability.

8. Except for Article 58, the changes made by this amendment are solely for clarification purposes, and are not intended to nor do they in any way change the rights, obligations or

limitations on liability of the State or the District established by or set forth in the contract, and this amendment shall be interpreted in accordance with this intent.

9. At the time of execution of this Agreement and thereafter, the effectiveness of this Amendment is dependent upon the effectiveness of the District's Monterey Amendment (all provisions therein) and the Kern Fan Element Transaction.

IN WITNESS WHEREOF, the parties hereto have executed this amendment on the date first above written.

STATE OF CALIFORNIA DEPARTMENT OF WATER RESOURCES

By: _____
Name: _____
Title: Director

Approved as to legal form and sufficiency:

By: _____
Name: _____
Title: Chief Counsel

Attest:

_____ DISTRICT

By: _____
Name: _____
Title: _____

ATTACHMENT B

PRINCIPLES REGARDING STATE WATER PROJECT AVAILABILITY

Note: These principles are prepared in connection with the settlement agreement between PCL and DWR and are only effective pursuant to the terms therein.

1. Commencing in 2003, and every two years thereafter, the Department of Water Resources (DWR) shall prepare and deliver to all State Water Project (SWP) contractors, all city and county planning departments, and all regional and metropolitan planning departments within the project service area a report which accurately sets forth, under a range of hydrologic conditions, the then existing overall delivery capability of the project facilities and the allocation of that capacity to each contractor. The range of hydrologic conditions shall include the historic extended dry cycle and long-term average. The biennial report shall also disclose, for each of the ten years immediately preceding the report, the total amount of project water delivered and the amount of project water delivered to each contractor. The information presented in each report shall be presented in a manner readily understandable by the public.

2. DWR shall develop and, by January 1, 2004, publish guidelines to assist Municipal and Industrial Contractors in providing accurate information to land-use planning agencies with jurisdiction within the Contractors' respective service areas regarding local and regional programs to manage or supplement SWP supplies. DWR shall consult with the plaintiffs and contractors in developing the guidelines.

3. DWR shall provide assistance to enable all Municipal and Industrial Contractors to provide complete and accurate information to relevant land-use planning agencies to assure that local land-use decisions reflect accurate information on the availability of water from state, local, and other sources.

ATTACHMENT C

DWR GUIDELINES FOR REVIEW OF PROPOSED PERMANENT TRANSFERS OF STATE WATER PROJECT ANNUAL TABLE A AMOUNTS

Note: These guidelines are prepared in connection with the settlement agreement between PCL and DWR and are only effective pursuant to the terms therein.

1. Purpose: The purpose of these guidelines is to describe the process for DWR's review of proposed permanent transfers of SWP Annual Table A Amounts and by so doing, provide disclosure to SWP Contractors and to the public of DWR's process and policy on approving permanent transfer of SWP Annual Table A Amounts. Such disclosure should assist contractors in developing their transfer proposals and obtaining DWR review expeditiously, and assist the public in participating in that review.

2. Coverage: These guidelines will apply to DWR's approval of permanent transfers of water among existing SWP Contractors and, if and when appropriate, to permanent transfers of water from an existing SWP Contractor to a new SWP Contractor.

3. Interpretation: These guidelines are in furtherance of the state policy in favor of voluntary water transfers and shall be interpreted consistent with the law, including but not limited to Water Code Section 109, the Burns-Porter Act, the Central Valley Project Act, the California Environmental Quality Act, area of origin laws, the public trust doctrine, and with existing contracts and bond covenants. These guidelines are not intended to change or augment existing law.

4. Format: The guidelines shall be issued by DWR as a "Notice to State Water Contractors."

5. Revisions: Revisions may be made to these guidelines as necessary to meet changed circumstances, changes in the law or long-term water supply contracts, or to address conditions unanticipated when the guidelines are adopted. Revisions shall be in accordance with the settlement agreement reached in *Planning and Conservation League vs. Department of Water Resources*.

6. Distribution: The transfer guidelines shall be published by DWR in the next available edition of Bulletin 132, and also as part of the biennial disclosure of SWP reliability as described in the PCL v. DWR Settlement Agreement.

7. Contract Amendment: Permanent transfers of SWP water are accomplished by amendment of each participating contractor's long-term water supply contract. The amendment consists of amending the Table A upwards for a buying contractor and downwards for a selling contractor. The amendment shall be in conformity with all provisions of the long-term water supply contracts, applicable laws, and bond covenants. Other issues to be addressed in the contract amendment will be subject to negotiation among DWR and the two participating contractors. The negotiations will be conducted in public, pursuant to the settlement agreement in PCL vs. DWR.

8. Financial issues: The purchasing contractor must demonstrate to the DWR's satisfaction that it has the financial ability to assume payments associated with the transferred water. If the purchasing entity was not a SWP Contractor as of 2001, special financial requirements pertain as described below, as well as additional qualifications.

9. Compliance with CEQA: Consistent with CEQA, the State's policy to preserve and enhance environmental quality will guide DWR's consideration of transfer proposals (Public Resources Code Section 21000). Identification of the appropriate lead agency will be based on CEQA, the CEQA Guidelines, and applicable caselaw, including *Planning and Conservation League vs. Department of Water Resources, 83 Cal. App. 4th 892 (2000).* CEQA requires the lead agency at a minimum to address the feasible alternatives to the proposed transfer and its potentially significant environmental impacts (1) in the selling contractor's service area; (2) in the buying contractor's service area; (3) on SWP facilities and operations; and (4) on the Delta and areas of origin and other regions as appropriate. Impacts that may occur outside of the transferring SWP Contractors' service areas and on fish and wildlife shall be included in the environmental analysis. DWR will not approve a transfer proposal until CEQA compliance is completed. The lead agency shall consult with responsible and trustee agencies and affected cities and counties; and when DWR is not the lead agency, shall provide an administrative draft of the draft EIR or Initial Study/Negative Declaration to DWR prior to the public review period. A descriptive narrative must accompany a checklist, if a checklist is used. The lead agency shall conduct a public hearing on the EIR during the public comment period and notify DWR's State Water Project Analysis Office of the time and place of such hearing in addition to other notice required by law.

10. Place of Use: The purchasing contractor must identify the place and purpose of use of the purchased water, including the reasonable and beneficial use of the water. Typically this information would be included in the environmental documentation. If a specific transfer proposal does not fit precisely into any of the alternatives listed below, DWR will use the principles described in these Guidelines to define the process to be followed. The information to be provided under this paragraph is in addition to the CEQA information described in paragraph 9 of these guidelines.

a) If the place of use is within the contractor's service area, the contractor should disclose the purpose of the transferred water, such as whether the water is being acquired for a specific development project, to enhance overall water supply reliability in the contractor's service area, or some other purpose. If the transferred water is for a municipal purpose, the contractor should state whether the transfer is consistent with its own Urban Water Management Plan or that of its member unit(s) receiving the water.

b) If the place of use is outside the contractor's service area, but within the SWP authorized place of use, and service is to be provided by an existing SWP Contractor: In addition to Paragraph 10(a) above, the contractor should provide DWR with copies of LAFCO approval and consent of the water agency with authority to serve that area, if any. In some instances, DWR's separate consent is required for annexations in addition to the approval for the transfer.

c) If the place of use is outside the SWP authorized place of use and service is to be provided by an existing SWP Contractor, the contractor should provide information in Paragraph 10(a) and 10(b). Prior to approving the transfer, DWR will consider project delivery capability, demands for water supply from the SWP, and the impact, if any, of the proposed transfer on such demand. If DWR approves the transfer, DWR will petition State Water Resources Control Board for approval of expansion of authorized place of use. Water will not be delivered until the place of use has been approved by the SWRCB and will be delivered in compliance with any terms imposed by the SWRCB.

d) If the place of use is outside the SWP authorized place of use and service is not to be provided by an existing SWP contractor, DWR will consider the transfer proposal as a proposal to become a new state water contractor. Prior to adding a new SWP Contractor, DWR will consider project delivery capability, demands for water supply from the SWP, and the impact, if any, of the proposed transfer on such demand. DWR will consult with existing SWP Contractors regarding their water supply needs and the proposed transfer. In addition to the information in Paragraph 10(a), 10(b), and 10(c), the new contractor should provide information similar to that provided by the original SWP contractors in the 1960's Bulletin 119 feasibility report addressing hydrology, demand for water supply, population growth, financial feasibility, etc. DWR will evaluate these issues independently and ordinarily will act as lead agency for CEQA purposes. In addition, issues such as area of origin claims, priorities, environmental impacts and use of water will be addressed. The selling contractor may not be released from financial obligations. The contract will be subject to a CCP 860 validation action initiated by the new contractor. If DWR approves the transfer, DWR will petition State Water Resources Control Board for approval of expansion of authorized place of use. Water will not be delivered until the place of use has been approved by the SWRCB and will be delivered in compliance with any terms imposed by the SWRCB.

11, DWR Discretion. Consistent with the long-term water supply contract provisions, CEQA, and other provisions of law, DWR has discretion to approve or deny transfers. DWR's exercise of discretion will incorporate the following principles:

(a) As required by CEQA, DWR as an agency with statewide authority will implement feasible mitigation measures for any significant environmental impacts resulting from a transfer, if such impacts and their mitigation are not addressed by other public agencies and are within DWR's jurisdiction.

(b) DWR will invoke "overriding considerations" in approving a transfer only as authorized by law, including but not limited to CEQA, and, to the extent applicable, the public trust doctrine and area of origin laws.

ATTACHMENT D

PRINCIPLES REGARDING PUBLIC PARTICIPATION PROCESS IN SWP CONTRACT NEGOTIATIONS

Note: These principles are prepared in connection with the settlement agreement between PCL and DWR and are only effective pursuant to the terms therein.

1. Policy: Given the importance of the State Water Project to the State of California, and the key role that the long-term water supply contracts play in the administration of the State Water Project, DWR agrees that public review of significant changes to these contracts is beneficial and in the public interest.

2. Types of activities to be covered: Project-wide contract amendments (i.e., contracts with substantially similar terms intended to be offered to all long-term SWP Contractors) and contract amendments to transfer entitlements between existing SWP Contractors will not be offered to the contractors for execution unless DWR has first complied with the public participation process as described in paragraphs (3), (4), (5) and (6).

3. The Public Participation Process.

1) Negotiations will be conducted in public;

2) The public will be provided with advance notice of the time and place of the negotiations; and

3) The public will be provided the opportunity to observe negotiations and comment in each negotiating session

4. Timing of Public Participation: Public participation ordinarily will precede the formulation of the project description in the CEQA process in order to assure that the public participation is meaningful. When DWR is a responsible agency, (e.g., when existing SWP Contractors agree to transfer entitlement between themselves), the public participation will be scheduled to facilitate coordination with the lead agency's CEQA process.

5. Activities that will not be subject to public participation: Informal discussions prior to exchange of formal drafts and discussion of topics that are authorized to be kept confidential by law will not be subject to the public participation process.

6. Contract amendments resulting from litigation: If litigation has been formally initiated, and settlement negotiations result in a proposal to adopt project-wide amendments to settle the litigation, all proposed contract amendments shall be subject to the public participation process before they are approved by DWR.

ATTACHMENT E

FINAL PERMANENT TABLE A AMOUNT TRANSFERS FROM KERN COUNTY WATER AGENCY SUBSEQUENT TO MONTEREY AMENDMENTS (January 1, 2003)

Note: This Exhibit is prepared in connection with the settlement agreement between PCL and DWR.

From (Kern County Water Agency Member Unit)	To	Amount (afy)	Year Effective
Berrenda Mesa Water District	Mojave Water Agency	25,000	1998
Belridge Water Storage District	Palmdale Water Agency	4,000	2000
Berrenda Mesa Water District	Alameda County Flood Control and Water Conservation District Zone 7	7,000	2000
Lost Hills Water District	Alameda County Flood Control and Water Conservation District Zone 7	15,000	2000
Belridge Water Storage District	Alameda County Flood Control and Water Conservation District Zone 7	10,000	2001
Belridge Water Storage District and Berrenda Mesa Water District	Solano County Water Agency	5,756	2001
Belridge Water Storage District and Berrenda Mesa Water District	Napa County Flood Control and Water Conservation District	4,025	2001

EXHIBIT 1

PLAINTIFFS' EXPENSES TRUST ACCOUNT AGREEMENT

This Agreement is entered into this fifteenth day of August 2002, by JAMS and DWR, for the purpose of transferring $300,000 in trust to JAMS for use in accordance with Principles of Settlement in PCL vs. DWR.

WHEREAS, JAMS has acted as mediator between the Department and other parties to the litigation in PCL v. DWR (Superior Court No. 95CS03216).

WHEREAS, the Principles of Settlement as agreed to by the parties on July 22, 2002, provides for the placement of $300,000 in trust with JAMS.

WHEREAS, the money placed in the trust is to be provided to plaintiffs for expenses actually incurred as needed to support plaintiffs' participation in developing the new EIR to be filed as a return to the writ.

WHEREAS, the Principles of Settlement also provides that the funds will be provided based on a budget and participation plan to be submitted by plaintiffs to the mediator specifying the purposes for which the funds will be expended.

The parties agree as follows:

1. JAMS agrees to accept $300,000 in trust in accordance with the Principles of Settlement.

2. JAMS agrees to maintain the monies in trust, and following receipt of a budget and participation plan from plaintiffs, to disburse funds to plaintiffs for actual expenditures incurred for such purpose and pursuant to such schedule, budget, and participation plan, all in conformance with the Principles of Settlement. The funds will be disbursed to the plaintiffs' attorney, Antonio Rossmann, Law Offices of Antonio Rossmann.

3. Costs incurred by JAMS in providing this service will be paid as part of the mediator services as part of the existing contract between JAMS and the California Department of Justice, Office of the Attorney General.

4. This agreement may be amended in writing by agreement of both parties.

5. Funds not disbursed upon termination of the trust shall be returned to DWR.

6. The trust shall terminate upon notice to JAMS by DWR of termination based on the earlier of (a) failure of the parties to the mediation to execute a settlement agreement by January 1, 2003; (b) notice of termination given by the Director of DWR to JAMS and plaintiffs that this trust is terminated, which notice shall not be given without

defendants' consultation with plaintiffs and the mediator; or c) filing of the Notice of Determination on the new EIR.

7. JAMS will incur no liability to DWR arising from any disbursement made pursuant to this agreement.

8. This agreement is not intended to and shall not create any rights in any third party.

APPROVED:

/s/ Steve Macaulay for	8/10/02	/s/ Julie Sager	8/15/02
Thomas M. Hannigan Director	Date	Vice President & CFO JAMS	Date

EXHIBIT 1

AMENDMENT NO. 1

PLAINTIFFS' EXPENSES TRUST ACCOUNT AGREEMENT

Paragraph 6 of this Agreement is amended to read as follows:

6. The trust shall terminate upon notice to JAMS by DWR of termination based on the earlier of (a) failure of the parties to the mediation to execute a settlement agreement by May 1, 2003, (b) notice of termination given by the Director of DWR to JAMS and plaintiffs that this trust is terminated, which notice shall not be given without defendants' consultation with plaintiffs and the mediator; or (c) filing of the Notice of Determination on the new EIR.

APPROVED:

Thomas M. Hannigan Director	Date	JAMS	Date

EXHIBIT 2

KERN WATER BANK AUTHORITY
AGREEMENTS AND PERMITS
WHICH MAY HAVE RELIED ON THE KWBA ADDENDUM

AGREEMENT/PERMIT	DATE	OTHER PARTIES
Incidental Take Permit - PRT-828086	2-Oct-97	Department of Interior, U.S. Fish & Wildlife Service
Approval/Management Authorization pursuant to California Endangered Species Act for Implementation of Kern Water Bank Habitat Conservation Plan/Natural Community Conservation Plan	2-Oct-97	Calif. Department of Fish & Game
Natural Community Conservation Plan/Habitat Conservation Plan Implementation Agreement	2-Oct-97	U.S. Fish & Wildlife Service; Calif Dept of Fish & Game; Kern Water Bank Authority
Approval, Cultural Resources Assessment and Plan for the KWBA Project	January, 1997	N/A
Memorandum of Understanding Regarding Operation and Monitoring of the Kern Water Bank Groundwater Banking Program	26-Oct-95	Numerous
Approval of Kern Water Bank Authority Mosquito Abatement Program	26-Oct-95	Mosquito Abatement Districts
Service Contracts for Operations and Maintenance	1996 - current	Numerous Vendors
Grazing Leases (Sheep and Cattle)	1997- current	Various Stockmen
Minor Amendment No. 1: Hunting/Research to the KWBA HCP/NCCP and Implementation Agreement	6/30/1998	California Department of Fish and Game and U.S. Fish and Wildlife Service
State of California Standard Agreement for "Improving Wildlife Habitat for Doves" (annual contract)	1998 - current	Calif. Department of Fish and Game
Conservation Credit Certificates	1998 - current	Conservation Credit Buyers
Construction and Service Contracts for Master Plan Construction Project - KWB Canal, Head-works, Aqueduct Turnout, New Wells, Well Rehabilitation, Pipelines	7/1999 - 8/2002	Numerous Contractors and Vendors
KWB Canal and Buena Vista Main Canal Joint Use Agreement	7/20/1999	Buena Vista Water Storage District

AGREEMENT/PERMIT	DATE	OTHER PARTIES
Business Loan Agreement ($21,000,000)	7/23/1999	Bank of America, N.A.
Agreement for Grant of Easement	September 1999	State of California Acting Through the Department of Parks and Recreation
Agreement for Construction, Operation, and Maintenance of the Kern Water Bank Turnout, a Permanent Turnout Within the California Aqueduct Right of Way	11/9/1999	Department of Water Resources
License Agreement for Kern River Canal Crossing	11/17/1999	City of Bakersfield
Loan Contract No. E75002 Under the "Safe, Clean, Reliable Water Supply Act Water Conservation and Ground Water Recharge Sub account ($5,000,000)	March 2000	State of California, Department of Water Resources, Division of Planning and Local Assistance
Reclamation Board Permit No. 17147-A GM Authorizing Construction of Pedestrian Bridge Across the Outlet Canal within the Kern River Designated Floodway	10/16/2000	State of California - The Resources Agency, Department of Water Resources
Reclamation Board Permit No. 16821 GM (Revised) Authorizing Construction of a 20-foot Wide Unlined Canal and Reinforced Concrete Gated Turnout Structure on the Right (North) Bank of the Designated Floodway and Install a 108-Inch Diameter, 700-foot long, Reinforced Concrete Pipe Across (Under the Kern River	2/26/2001	State of California - The Resources Agency, Department of Water Resources
Grant Awarded Under the "Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act (Proposition 13) - Groundwater Storage Program ($3,375,000)	Jun-02	State of California, Department of Water Resources, Division of Planning and Local Assistance
Service Contracts for Well Testing and Rehabilitation Under the SB5X Program	2002	Various Vendors

Exhibit 2-2

EXHIBIT 3-A

PROPOSED 21168.9 ORDER

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF SACRAMENTO

PLANNING AND CONSERVATION LEAGUE, a California not for profit corporation, PLUMAS COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, a California public agency; CITIZENS PLANNING ASSOCIATION OF SANTA BARBARA COUNTY, INC., a California not for profit corporation, Plaintiffs and Petitioners, v. DEPARTMENT OF WATER RESOURCES, a California State Agency, et al., Defendants and Respondents,	Case No: 95CS03216 [PROPOSED] ORDER PURSUANT TO PUBLIC RESOURCES CODE SECTION 21168.9

On remand from the Third District Court of Appeal on January ___, 2003, in Department 53 of the Sacramento Superior Court, the Honorable Loren E. McMaster, presiding, this proceeding came on for a status report and joint motion. Petitioners and Plaintiffs, Planning and Conservation League, Plumas County Flood Control and Water Conservation District, and Citizens Planning Association of Santa Barbara County ("Petitioners"), appeared through Antonio Rossmann and Roger B. Moore. Respondent and Defendant, Central Coast Water Authority (CCWA), appeared through Susan F. Petrovich of the Law Firm of Hatch & Parent. Respondent and Defendant, Department of Water Resources (DWR), appeared through Deputy Attorney General Marian E. Moe. Robert S. Draper of O'Melveny and Myers, LLP and Clifford W. Schulz appeared, respectively, on behalf of the Metropolitan Water District of Southern California and Dudley Ridge Water District, entities that submitted answers to the First

Amended Complaint subsequent to the Court of Appeal's final determination in this action and prior to any further order of this Court on remand.

In light of the direction from the Third District Court of Appeal on remand in Planning and Conservation League v. Department of Water Resources (2000) 83 Cal.App.4th 892, this Court hereby makes the following findings:

1. The parties to this lawsuit and other public agencies have engaged in extensive settlement negotiations, mediated by retired Judge Daniel Weinstein of JAMS Dispute Resolution, with the intent to avoid further litigation and associated expenses, to provide for an effective way to cooperate in the preparation of a new environmental impact report (EIR), and to make other specified improvements in the administration and operation of the State Water Project.

2. The mediation has resulted in an executed Settlement Agreement for approval by this Court, attached to this Order as Exhibit A.

3. DWR as lead agency has commenced the preparation of the new EIR.

4. As part of the Settlement Agreement, DWR and the State Water Project (SWP) contractors who are signatories to the Settlement Agreement have agreed that, pending DWR's filing of a return in satisfaction of the Writ of Mandate and this Court's dismissal of the Writ of Mandate, they will not approve any new project or activity (as defined in section VII.A of the Settlement Agreement) in reliance on the 1995 Environmental Impact Report for the Implementation of the Monterey Agreement.

5. This Order is made pursuant to the provisions of Public Resources Code section 21168.9 and pursuant to this Court's equitable powers. This Court finds that the actions described in this Order, including actions taken in compliance with the Writ of Mandate, comprise the actions necessary to assure DWR's compliance with Division 13 of the Public Resources Code. This Court further finds that this Order includes only those mandates necessary to achieve compliance with Division 13.

THEREFORE, IT IS HEREBY ORDERED as follows:

1. This Court's Final Judgment denying the petition for writ of mandate, entered August 15, 1996, is reversed in accordance with the directive of the Third District Court of Appeal's decision in Planning and Conservation League v. Department of Water Resources (2000) 83 Cal.App.4th 892.

2. This Court's order granting the summary adjudication on the fifth cause of action, entered June 10, 1996, is vacated.

3. The Settlement Agreement attached as Exhibit A is hereby approved.

4. A Peremptory Writ of Mandate directed to Respondents Central Coast Water Authority and DWR shall issue under seal of this Court in the form attached hereto as Exhibit B.

5. In accordance with the Settlement Agreement and this Order, pending DWR's filing of the return in compliance with the Peremptory Writ of Mandate and this Court's Order discharging the Writ of Mandate, DWR and CCWA shall not approve any new project or activity (as defined section VII.A of the Settlement Agreement) in reliance on the 1995 EIR for the Implementation of the Monterey Agreement.

6. In the interim, until DWR files its return in compliance with the Peremptory Writ of Mandate and this Court orders discharge of the Writ of Mandate, the administration and operation of the State Water Project and Kern Water Bank Lands shall be conducted pursuant to the Monterey Amendments to the State Water Contracts, as supplemented by the Attachment A Amendments to the State Water Contracts (as defined in the Settlement Agreement) and the other terms and conditions of the Settlement Agreement.

7. Plaintiffs and petitioners shall recover such costs and attorney's fees as provided in prior court orders and in an amount as determined in the arbitration procedures agreed to in the Settlement Agreement, or as otherwise agreed to by the parties.

8. Except as provided, the Peremptory Writ of Mandate shall not limit or constrain the lawful jurisdiction and discretion of DWR. This Court retains jurisdiction until DWR files a

return that complies with the terms of the Writ of Mandate, and this Court issues an order discharging the Writ of Mandate.

IT IS SO ORDERED.

Dated: _____, 2003 _____ _____

_____
Judge of the Superior Court

EXHIBIT 3-B

PROPOSED WRIT OF MANDATE

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF SACRAMENTO

PLANNING AND CONSERVATION LEAGUE, a California not for profit corporation, PLUMAS COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, a California public agency; CITIZENS PLANNING ASSOCIATION OF SANTA BARBARA COUNTY, INC., a California not for profit corporation, Petitioners, v. DEPARTMENT OF WATER RESOURCES, a California State Agency, and CENTRAL COAST WATER AUTHORITY, A Joint Powers Agency Respondents.	Case No: 95CS03216 PROPOSED PEREMPTORY WRIT OF MANDATE (Public Resources Code § 21168.9)

TO: Respondents California Department of Water Resources and Central Coast Water Authority:

The Third District Court of Appeal, in its decision in Planning and Conservation League v. Department of Water Resources (2000) 83 Cal.App.4th 892, having directed this Court to issue a Peremptory Writ of Mandate,

YOU ARE HEREBY COMMANDED to comply with the following:

1. Respondent Central Coast Water Authority shall set aside its October 26, 1995 certification that the Final Programmatic Environmental Impact Report for Implementation of

the Monterey Agreement (the 1995 Monterey Agreement EIR) was completed in compliance with the California Environmental Quality Act [AR 2183].

2. Respondent Department of Water Resources (DWR) shall:

(a) set aside its December 13, 1995 certification, as responsible agency, that the 1995 Monterey Amendment EIR is adequate under the California Environmental Quality Act [AR 1875]; and

(b) as lead agency, prepare and certify a new EIR. in compliance with the Court of Appeal's decision, the California Environmental Quality Act, and the Settlement Agreement.

3. Upon completion and certification of the new EIR, Respondent DWR shall make written findings and decisions and file a notice of determination identifying the components of the project analyzed in the new EIR**,** all in the manner prescribed by sections 15091 – 15094 of the CEQA Guidelines.

4. Respondent DWR shall, upon the filing of a Notice of Determination, submit the new EIR, the written findings, the Notice of Determination, and such additional documents as this Court may order by way of return to this writ of mandate.

5. This Court shall retain jurisdiction over this proceeding until DWR files a return that complies with this Writ of Mandate, and this Court issues an order discharging this Writ of Mandate. Except as provided, this Writ of Mandate shall not limit or constrain the lawful jurisdiction and discretion of the Department of Water Resources.

Dated: _____, 2003

_____

_____

Clerk of the Superior Court

Let the foregoing writ issue:

_____

Judge of the Superior Court

EXHIBIT 4

SECTION VI TRUST ACCOUNT AGREEMENT

This Section VI Trust Account Agreement (this "Trust Agreement") is entered into this _____ day of _____ 2003, by JAMS and the State of California Department of Water Resources (the "Department"), for the purposes of establishing and describing the trust account in accordance with that certain Settlement Agreement entered into in *Planning & Conservation League v. Department of Water Resources* ("PCL v. DWR").

WHEREAS, Judge Daniel Weinstein (ret.) of JAMS has acted as mediator between the Department and other parties to the litigation in *PCL v. DWR* (Sacramento Superior Court No. 95CS03216).

WHEREAS, the Settlement Agreement provides for the placement over time of $5,500,000 in trust with JAMS at the specific times and under the conditions in the Settlement Agreement.

The parties agree as follows:

1. JAMS will establish a trust account for receipt and disbursal of funds received from the Department for payment pursuant to the Settlement Agreement.

2. All funds deposited with JAMS pursuant to this agreement shall be placed into a trust account and shall be disbursed only in accordance with this Trust Agreement and the Settlement Agreement. Section VI of the Settlement Agreement provides that the funds shall be used to implement the Settlement Agreement, as determined by Plaintiffs in their reasonable judgment, including watershed restoration projects, follow-up actions arising from the Settlement Agreement, and technical studies.

3. JAMS agrees to maintain the monies in trust, and after receipt of a written statement executed by all Plaintiffs (as defined in the Settlement Agreement), to disburse funds to Plaintiffs in conformance with such statement. JAMS will provide a copy of the written statement to: Chief Counsel, The Office of the Chief Counsel, Department of Water Resources, P.O. Box 942836, Sacramento, CA 95814.

4. Costs incurred by JAMS in providing this service will be paid as part of the mediator services as part of the existing contract between JAMS and the California Department of Justice, Office of the Attorney General, or any successor contract.

5. This agreement may be amended only in writing by agreement of both parties.

6. Funds not disbursed before termination of this Trust Agreement shall be returned to DWR immediately upon termination of this Trust Agreement.

7. This Trust Agreement shall terminate if and when DWR notifies JAMS that the agreement is terminated, which notice shall not be given without DWR's consultation with Plaintiffs and the mediator.

8. JAMS will incur no liability to DWR arising from any disbursement made pursuant to this agreement.

9. This Trust Agreement is intended solely for the purposes of establishing and describing the trust account at JAMS and is not intended to and shall not create any rights in any third party.

APPROVED:

Thomas M. Hannigan Director	Date	JAMS	Date

NOT TO BE PUBLISHED IN THE OFFICIAL REPORTS

California Rules of Court, rule 977(a), prohibits courts and parties from citing or relying on opinions not certified for publication or ordered published, except as specified by rule 977(b). This opinion has not been certified for publication or ordered published for purposes of rule 977.

IN THE COURT OF APPEAL OF THE STATE OF CALIFORNIA

SECOND APPELLATE DISTRICT

DIVISION FOUR

FRIENDS OF THE SANTA CLARA RIVER, Plaintiff and Appellant, v. CASTAIC LAKE WATER AGENCY, Defendant and Respondent.	B164027 (Los Angeles County Super. Ct. No. BS056954)

COURT OF APPEAL - SECOND DIST.
FILED
DEC 01 2003
JOSEPH A. LANE Clerk
Deputy Clerk

APPEAL from a judgment of the Superior Court of Los Angeles County, David P. Yaffe, Judge. Affirmed.

Law Office of Alyse M. Lazar and Alyse M. Lazar for Plaintiff and Appellant.

Rossmann and Moore, Antonio Rossmann and Roger B. Moore for Amici Curiae Planning and Conservation League and Citizens Planning Association of Santa Barbara County, Inc., in support of Plaintiff and Appellant.

Horvitz & Levy, Barry R. Levy, William N. Hancock; R. Bruce Tepper; and McCormick, Kidman & Behrens, Russell G. Behrens, H.L. (Mike) McCormick and David D. Boyer for Defendant and Respondent.

INTRODUCTION

This is the second time this case has been before us. On the first appeal we directed the trial court to issue a writ of mandate to set aside certification of respondent Castaic Lake Water Agency's Environmental Impact Report (EIR) because the EIR had been tiered upon a prior EIR that had been found to be infirm by an intervening appellate decision. Upon remand, respondent and appellant Friends of the Santa Clara River agreed a writ of mandate should issue to decertify the EIR but disagreed about whether the trial court should also enjoin the project pending certification of a new EIR. After consideration of documentary evidence and the presentation of written and oral arguments, the trial court rejected appellant's request for an injunction without prejudice to entertaining a renewed request founded on an adequate showing of entitlement to relief. This appeal follows entry of judgment in October 2002.

Appellant attacks the trial court's denial of its request for an injunction on two separate grounds. Appellant first contends the trial court's denial was in derogation of the directions contained in our earlier decision. The contention lacks merit. The clear and unambiguous dispositional language in our opinion granted the trial court the authority to deny in toto the request for an injunction. Appellant next contends the trial court erred on the merits in denying its request. Based upon the record, we find the trial court did not abuse its discretion in implicitly finding

appellant had failed to carry its burden of establishing the predicates for injunctive relief. We therefore affirm the judgment.

FACTUAL AND PROCEDURAL BACKGROUND

Respondent purchased from the Kern County Water Agency entitlement to 41,000 acre-feet per year of water. The purchase followed consummation of the Monterey Agreement which changed the allocation between agricultural and urban contractors of entitlements to State Water Project (SWP) water. Respondent approved this purchase after first certifying an EIR. This EIR was "tiered" upon an earlier EIR approving the Monterey Agreement.[1] The Legislature favors tiering to streamline the regulatory process and to avoid unnecessary duplication of effort.

Appellant filed a petition for a writ of mandate in the superior court to compel respondent to set aside its certification of the EIR for the purchase of 41,000 acre-feet per year of SWP water. Appellant advanced various grounds in support of its petition. The superior court denied the petition. Appellant appealed the adverse judgment to this court.

While that appeal was pending, our colleagues in the Third Appellate District concluded the EIR prepared for the Monterey Agreement was inadequate and therefore ordered it decertified. (*Planning & Conservation League v. Department of Water Resources* (2000) 83 Cal.App.4th 892, review den. (*PCL*).)

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1 Tiering "means the coverage of general matters and environmental effects in an environmental impact report prepared for a policy, plan, program or ordinance followed by narrower or site-specific environmental impact reports which incorporate by reference the discussion in any prior environmental impact report and which concentrate on the environmental effects which (a) are capable of being mitigated, or (b) were not analyzed as significant effects on the environment in the prior environmental impact report." (Pub. Res. Code, § 21068.5.)

We therefore concluded that in the appeal presented to us *PCL* required decertification of respondent's EIR because it had been tiered on the now-decertified EIR for the Monterey Agreement. (*Friends of the Santa Clara River v. Castaic Lake Water Agency* (2002) 95 Cal.App.4th 1373, 1383-1388, review den. (*Friends I.*) We, however, rejected all of appellant's other challenges to respondent's EIR, finding "them to be *without merit*." (*Id.* at p. 1387.) We noted: "[R]espondent may be able to cure the *PCL* problem by awaiting action by the [Department of Water Resources] complying with the *PCL* decision, then issuing a subsequent EIR, supplement to EIR, or addendum to EIR [citations] tiering upon a newly certified Monterey Agreement EIR." (*Id.* at pp. 1387-1388.)

In regard to further action in the trial court we wrote: "[W]e leave to the trial court's discretion whether to enjoin all or portions of respondent's project pending completion of an adequate EIR. The trial court is in a better position than this court to determine factually the current status of the *PCL* litigation or of a new Monterey Agreement EIR." (*Id.* at p. 1388.)

The dispositional paragraph of our decision read, in relevant part: "The judgment is reversed. The trial court shall issue a writ of mandate vacating the certification of the EIR, shall retain jurisdiction until respondent certifies an EIR complying with CEQA consistent with the views expressed in this opinion, and shall consider such orders it deems appropriate under [Public Resources Code] section 21168.9." (*Id.* at p. 1388.)

Upon remand, the parties agreed the trial court was required to issue a writ of mandate to decertify respondent's EIR. The bone of contention was whether the trial court should also enjoin respondent from proceeding with the project, e.g., the transferring of the entitlement to the 41,000 acre-feet of water per year, pending completion of the new EIR.

Appellant argued: "To allow [respondent] to use any portion of its unstudied 41,000 afy [acre feet per year] entitlement before the EIR analysis is complete will result in **new permanent water connections** that will not be able to be reversed. Once houses are in and the faucets are on, there is no way to turn back. Without the proven need for this water to serve existing users, there is no equitable justification for allowing the use of any portion of the 41,000 afy entitlement in the face of its clear consistency with CEQA policies against pre-approved projects. A fair EIR process requires that project approval not be up and running as a foregone conclusion."

The evidentiary support for this argument is found in a declaration executed in August 2002 by appellant's counsel. The declaration sought to establish respondent would have sufficient water from other sources to supply its existing customers without use of the entitlement. From these factual allegations, appellant argued any use by respondent of the entitlement would necessarily be for new customers and therefore subject to being enjoined. The declaration referenced several attached documents and included allegations grounded upon information and belief. In pertinent part it averred:

> "I am informed that [respondent] has utilized at most 3674 af [acre feet] of the subject 41,000 afy [acre feet per year] water transfer during the past year. Attached is a true copy of CLWA Production Report for 2000, 2001, and half of 2002, and also a DWR Notice to State Water Project Contractors dated May 2002. The reports speak for themselves, and reflect CLWA's use of State Water Project entitlements to its various purveyors. The allocation of SWP water was 65% in the last year, and *petitioner is informed and believes that CLWA expects an even larger allocation in the coming fiscal year to as much as 90%.* The report shows that water use is measured yearly from June to June. It is undisputed that CLWA has a 54,200 afy entitlement to SWP water that is not under any legal cloud and clearly available for use, aside from the 41,000 afy that is the subject of this litigation. Based on a 65% delivery of SWP water, CLWA's

> allocation of its undisputed 54,200 afy totals 35,230 af. The report reflects use of 38,974 af from June 2001 until June 2002; which appears to be only 3674 af more than can be supplied from the 54,200 afy entitlement. It thus appears that CLWA *may have utilized* 3674 af of its allocation from the subject 41,000 af entitlement in the past year. If the SWP allocations increase to 75% or greater, *as is apparently expected,* by doing the math it appears that the 41,000 af water transfer is not needed for existing customers of the CLWA water purveyors while the supplemental environmental review is pending." (Italics added.)

Appellant therefore sought an order enjoining respondent "from any and all use of the 41,000 afy water transfer under the current approvals."

In addition, appellant's counsel averred she had communicated with counsel in the *PCL* case and that as of August 22, 2002, "the *PCL* case remand has not yet been settled or otherwise resolved, and that the Monterey Agreement Implementation Draft EIR to be prepared by the Department of Water Resources (DWR) as required by the *PCL* decision has not yet been published." As for the status of respondent's EIR, the declaration averred that respondent's attorney had informed her "that the agency has not yet published its Draft Supplemental EIR in response to [the Court of Appeal's decision], but that it intends to prepare the EIR itself rather than await the new DWR Monterey Agreement Implementation EIR."

In opposition, respondent asked the trial court to "**issue an order allowing the Transfer of Entitlement to remain intact pending completion of a new EIR.**" In particular, respondent urged that the entitlement was "necessary to satisfy current existing and projected near-term water demand"; that a "decision to set aside the Transfer of Entitlement would cause immediate irreparable harm to the Agency and the water consumers"; and that the Transfer "has been in effect for more than three years, and there is no evidence that the Transfer has resulted in any new or increased significant adverse environmental effects."

Respondent's opposition was supported by a detailed eight-page declaration from Dan Masnada, respondent's general manager. Masnada averred that respondent had already retained consultants to prepare a new EIR and they planned to complete the process by March 2003. A portion of Masnada's declaration directly refuted the allegations made by appellant's counsel about respondent's projected water supply. In pertinent part, Masnada averred:

> "[Counsel's] declaration states that 'CLWA expects an even larger allocation made by DWR in the coming fiscal year to as much as 90%.' . . . *There is no factual basis for this statement.* There have been no indications that CLWA's SWP allocation made by DWR in the coming year will be anywhere near 90%. To the contrary, based on discussions with DWR Operations Control Office Personnel it is likely that the initial 2003 SWP allocation on December 1, 2002 will be approximately 20%, as it was last year. If dry conditions occur next year, the final SWP allocation for 2003 could remain as low as 20%.
>
> [Counsel's] Declaration also states that the CLWA Production Report 'shows that water use is measured yearly from June to June.' . . . This is incorrect. While annual water use can be measured from July to June, available SWP water supply is characterized on a calendar year basis because DWR allocates it on a calendar year basis. *[Her] accounting of water deliveries i[s] flawed.* She has utilized an approach that understates CLWA's current level of demand and projected deliveries to the retail purveyors during 2002. As discussed above, and shown in Exhibit A, CLWA's Final 2001 SWP allocation was 39%. Without the 41,000 AF in 2001, CLWA would have experienced a shortfall of 14,218 AF."

Appellant's reply to respondent's opposition did not include any additional declaration(s). Instead, its reply asserted respondent's "factual information" was "confusingly presented and misleading" and that a portion of Masnada's opinion about SWP allocations for 2003 was "complete conjecture and speculation."

After a hearing in which the parties presented argument and responded to questions from the bench, the trial court issued a writ of mandate ordering respondent to set aside its certification of the 1999 EIR and to certify a new EIR consistent with our opinion in *Friends I*. The trial court rejected appellant's request to enjoin any use of the water entitlement. It ruled: "Petitioner [appellant herein] requests that the Court also prohibit respondent from using any of the 41,000 acre feet of additional water allotted to it from the subject State Water Project. Petitioner contends that the said water will be used to approve new development that will not be able to be reversed if a Final Environmental Impact Report is not certified. Respondent contends that such a prohibition would prevent it from meeting the existing water needs in the area it services. *Both contentions appear to be speculative at this time. Respondent will not be prohibited from using the water to which it is entitled, but petitioner may renew its application for such prohibition based upon evidence of the actual use of such additional water for purposes it considers improper*." (Italics added.)

This appeal follows.[2]

DISCUSSION

A. THE DIRECTIVE IN *FRIENDS I*

Appellant first contends the trial court misconstrued our directive in *Friends I*. Appellant's position is that our decision gave the trial court the power

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[2] In July 2002, we denied respondent's motion to dismiss the appeal because denial of a *pendente lite* injunction is appealable pursuant to Code of Civil Procedure section 904.1, subdivision (a)(6).

to enjoin either all or part of the project pending certification of a new EIR but that it did not give it the power to decide, as it did in the proceedings it conducted following remand, not to enjoin any part of the project. Appellant relies upon the following language we now italicize from *Friends I*: "Like the court in *PCL, supra,* 83 Cal.App.4th at page 926 and footnote 16, we leave to the trial court's discretion whether to enjoin *all or portions* of respondent's project pending completion of an adequate EIR." (*Friends I, supra,* 95 Cal.App.4th 1373, 1388, italics added.) From that language, appellant argues "the Superior Court was not vested with the discretion to issue no injunction, but only with [the] discretion to issue a full or partial injunction."

Appellant's argument lacks merit because it ignores the clear dispositional language of our opinion which gave the trial court the authority to deny in toto a request for injunctive relief.

"Where a reviewing court has remanded a matter to the trial court with directions '. . . the trial court . . . is bound to specifically carry out the instructions of the reviewing court. . . . [A]ny material variance from the explicit directions of the reviewing court is unauthorized and void.'" (*Coffee-Rich, Inc. v. Fielder* (1975) 48 Cal.App.3d 990, 998.)

The appellate court's directions are determined by "look[ing] first to the dispositional language of the opinion--the language which constitutes the remittitur directions." (*Frankel v. Four Star International, Inc.* (1980) 104 Cal.App.3d 897, 902.) *Only if* the dispositional language is ambiguous and in need of interpretation will that language "be interpreted in light of the reasoning and holdings found in the body of the opinion. [Citations.]" (*Lesny Development Co. v. Kendall* (1985) 164 Cal.App.3d 1010, 1021.)

As set forth earlier, the pertinent portion of the dispositional language in *Friends I* read: "The judgment is reversed. The trial court shall issue a writ of

mandate vacating the certification of the EIR, shall retain jurisdiction until respondent certifies an EIR complying with CEQA consistent with the views expressed in this opinion, *and shall consider such orders it deems appropriate under section 21168.9.*" (*Friends I, supra,* 95 Cal.App.4th 1373, 1388, italics added.) The statutory provision referenced--Public Resources Code section 21168.9--is lengthy and set forth in toto below in footnote 3.[3] The definitive

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[3] The statute provides:

"(a) If a court finds, as a result of a trial, hearing, or remand from an appellate court, that any determination, finding, or decision of a public agency has been made without compliance with this division, the court shall enter an order that includes one or more of the following:

"(1) A mandate that the determination, finding, or decision be voided by the public agency, in whole or in part.

"(2) If the court finds that a specific project activity or activities will prejudice the consideration or implementation of particular mitigation measures or alternatives to the project, a mandate that the public agency and any real parties in interest suspend any or all specific project activity or activities, pursuant to the determination, finding, or decision, that could result in an adverse change or alteration to the physical environment, until the public agency has taken any actions that may be necessary to bring the determination, finding, or decision into compliance with this division.

"(3) A mandate that the public agency take specific action as may be necessary to bring the determination, finding, or decision into compliance with this division.

"(b) Any order pursuant to subdivision (a) shall include only those mandates which are necessary to achieve compliance with this division and only those specific project activities in noncompliance with this division. The order shall be made by the issuance of a peremptory writ of mandate specifying what action by the public agency is necessary to comply with this division. However, the order shall be limited to that portion of a determination, finding, or decision or the specific project activity or activities found to be in noncompliance only if a court finds that (1) the

(Fn. continued.)

construction of that statute is found in our Supreme Court's opinion in *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376. It concluded that the statute permits but does not require a court to enjoin a project while a new EIR is prepared. (*Id.* at pp. 423-425.) In deciding whether injunctive relief is appropriate, a court is to rely upon "traditional equitable principles." (*Id.* at p. 423.) Given this long-standing construction of section 21168.9,[4] it is clear our dispositional language granted the trial court the option to decline to grant any injunctive relief after it properly considered the pertinent equities. Appellant's argument that the trial court failed to follow our directions by declining to grant equitable relief is therefore without merit.

In any event, appellant engages in a crabbed interpretation of one phrase in our opinion to argue the trial court had no discretion to deny a request for

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> portion or specific project activity or activities are severable, (2) severance will not prejudice complete and full compliance with this division, and (3) the court has not found the remainder of the project to be in noncompliance with this division. The trial court shall retain jurisdiction over the public agency's proceedings by way of a return to the peremptory writ until the court has determined that the public agency has complied with this division.
>
> "(c) Nothing in this section authorizes a court to direct any public agency to exercise its discretion in any particular way. Except as expressly provided in this section, nothing in this section is intended to limit the equitable powers of the court."

4 See also *City of Santee v. County of San Diego* (1989) 214 Cal.App.3d 1438, 1456 ["Section 21168.9, as construed by the Supreme Court in *Laurel Heights*, merely grants a reviewing court the authority to stay all activity or use of a project until an agency certifies a proper EIR; it does not require it to do so. [Citation.] The court in *Laurel Heights* relied upon traditional equitable principles in deciding that injunctive relief there was not appropriate."].

injunctive relief. The sentence in which the phrase is found began with a specific reference to the *PCL* opinion: its dispositional language found at page 926, including footnote 16. That language included the same direction found in our dispositional language: the direction the trial court shall make any such orders it deems appropriate under section 21168.9. Footnote 16 read: "We earlier declined to stay implementation of the Monterey amendments and transfer of the Kern Fan Element. Consequently, the project was permitted to proceed pending disposition of this appeal. The record does not reflect the current status of the project and, in the absence of such information, we shall issue no orders concerning further implementation of the project. The trial court, acting under the authority provided by Public Resources Code section 21168.9, is the more appropriate forum to consider and rule upon requests *to enjoin all or portions of the project pending* the completion of administrative and judicial proceedings necessitated by our opinion." (*PCL, supra,* 83 Cal.App.4th 892, fn. 16 at p. 926, italics added.) Just as the *PCL* court did not intend to limit the trial court's authority by requiring it to enjoin at least a portion of the project, neither did we. We, as did the *PCL* court, were simply describing the types of requests that might be made, e.g., requests for a partial or full injunction. We did not intend to divest the trial court of its power to deny a request for injunctive relief if it either concluded that the moving party had failed to establish the predicates for relief or that, given the equities, relief was not required.

B. DENIAL OF INJUNCTIVE RELIEF

Appellant next contends: "The Superior Court's decision regarding injunctive relief was an abuse of discretion, because there is no factual basis to support the decision." (Bold omitted.) We disagree.

A decision to grant or deny a request for injunctive relief rests within the trial court's discretion. Its order will not be reversed on appeal unless an abuse of discretion is shown. It is, of course, the appellant's burden to establish an abuse of discretion. (*Cohen v. Board of Supervisors* (1985) 40 Cal.3d 277, 286.) "A trial court will be found to have abused its discretion only when it has exceeded the bounds of reason or contravened the uncontradicted evidence. [Citation.]" (*Lubavitch Congregation v. City of Long Beach* (1990) 217 Cal.App.3d 1388, 1391.)

It was appellant's burden as moving party in the trial court to establish the predicates for injunctive relief. In particular, Public Resources Code section 21168.9, subdivision (a)(2) requires the court to first find that a "specific project activity . . . will prejudice the consideration or implementation of particular mitigation measures or alternatives to the project" and that such activities "could result in an adverse change or alteration to the physical environment" before an injunction will issue. The trial court found appellant's claim of irreparable harm--new permanent water connections that will not be able to be reversed--to be speculative. In other words, it concluded appellant had failed to discharge its burden of proof.[5] However, it specifically left open the opportunity for appellant

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[5] To a certain extent, appellant relies upon four documents not presented to the trial court to support its contention of abuse of discretion. Three of those documents were prepared after the trial court entered judgment in October 2002. Each document is a portion of a report prepared for respondent. Prior to the submission of briefing, we granted appellant's request to take judicial notice of these documents.

Appellant wants to use this information to show respondent is improperly representing to third parties it is entitled to the 41,000 acre-feet per year of water. Appellant argues this is proof of the irreparable harm it is suffering because the trial court declined to enjoin respondent.

Our prior grant of appellant's motion for judicial notice does not require us to consider these documents. "Although a reviewing court may take judicial notice of

(Fn. continued.)

to renew its claim "based upon evidence of the actual use of such additional water for purposes it considers improper."

Distilled to its essence, appellant's present position is nothing more than an argument the trial court was required to credit the allegations in its counsel's declaration which allegedly supported its request for injunctive relief. That is, appellant would have us find that no reasonable judge could have found its evidentiary showing insufficient. We cannot make that finding.

The evidence on this issue was conflicting. As set forth above, Masnada's declaration directly contradicted some of the allegations made by appellant's counsel. Given the (purported) deficiencies Masnada pointed out in counsel's declaration, the fact that much of counsel's declaration was based upon information and belief, and appellant's failure to file a reply declaration addressing those points with its reply memorandum, the trial court was well within its discretion to conclude that *at that point in time* appellant had failed to make the requisite showing.

Appellant argues such a conclusion is insupportable because the trial court also found respondent's trial court contention to be speculative. Not so. Appellant

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matters not before the trial court, . . . the reviewing court need not give effect to such evidence. 'Having taken judicial notice of such a matter, the reviewing court may or may not apply it in the particular case on appeal. The effect to be given to matters judicially noticed on appeal, where the question has not been raised below, depends on factors that are not evidentiary in character.' [Citation.]" (*Doers v. Golden Gate Bridge etc. Dist.* (1979) 23 Cal.3d 180, 184, fn. 1.)

In this instance, given that (1) these documents essentially constitute "new evidence" in support of appellant's request for injunctive relief and (2) the trial court explicitly anticipated appellant would renew its request before it, we decline to consider the documents on this appeal.

If appellant wishes to renew a request for injunctive relief, it can bring these documents to the trial court's attention.

is conflating two distinct points respondent made in the trial court. First, based upon a claim of irreparable harm, respondent had affirmatively sought an order that the transfer of entitlement remain in effect until the new EIR was completed. Second, respondent refuted the factual allegations about its water sources contained in the declaration executed by appellant's counsel. The trial court's finding of speculation was directed at the first point: respondent's claim it would suffer irreparable harm if the trial court denied its request for an order that the transfer remain in effect until the EIR was completed. The finding of speculation was not directed at the second point: respondent's discrete refutations of appellant's allegations. The trial court could reasonably find respondent had failed to meet its burden to establish the predicate for the relief it sought but could also reasonably find that the portions of Masnada's declaration set forth above were sufficient to show appellant's claim for relief was likewise subject to serious question and therefore grounded in speculation. We therefore reject appellant's claim that "[r]espondent's entire argument that there was no abuse of discretion is incorrectly based on evidence that the lower court determined was mere speculation, not fact."[6] (Fn. omitted.)

Lastly, we address an argument raised in the amici brief jointly filed by the Planning and Conservation League and the Citizens Planning Association of Santa

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6 Appellant cites to various comments the court made as well as questions it posed during the hearing as proof that the court grounded its decision either in facts unsupported by the evidence or on legal principles inapplicable to the case. This approach is in error. A contextual reading of the transcript of the hearing indicates the court's questions and comments were intended to gather information, to focus the parties' arguments, and to test the strength of the parties' respective positions. The "bottom line" is whether the trial court abused its discretion in finding appellant had failed to discharge its burden to establish the predicates for injunctive relief. As explained above, the court did not so abuse its discretion.

Barbara County, Inc. in support of appellant. Amici are two of the environmental organizations that were the prevailing parties in *PCL, supra,* 83 Cal.App.4th 892.

Amici first inform us that in May 2003--seven months after the trial court entered judgment in this matter--the superior court in Sacramento approved a settlement agreement entered into by the parties in the *PCL* case. Pursuant to that agreement, work has commenced on a new EIR in regard to the Monterey Agreement and related issues. The settlement agreement recognizes that the transfer underlying this lawsuit is "'subject to pending litigation in the Los Angeles Superior Court following remand from the Second District Court of Appeal'"; that "'jurisdiction with respect to that litigation should remain in the [Los Angeles Superior Court]'"; and that "'nothing in this settlement agreement is intended to predispose the remedies or other actions that may occur in that pending litigation.'"

Amici argue the trial court abused its discretion in denying appellant's request for injunctive relief because the court ignored "the specific directions of *Friends I*" that its determination on interim relief should be based upon the status of the *PCL* litigation and the new statewide EIR to be prepared for the Monterey Agreement.[7] As support for that proposition, Amici cites us to the last two paragraphs of our opinion in *Friends I*. There, after concluding that other than the *PCL*/tiering issue all of appellant's complaints about the EIR were meritless, we wrote: "This suggests that respondent may be able to cure the *PCL* problem by awaiting action by the DWR complying with the *PCL* decision, then issuing a subsequent EIR, supplement to EIR, or addendum to EIR [citations] tiering upon a newly certified Monterey Agreement EIR. Appellant itself so suggests. [¶] Like the court in *PCL, supra,* 83 Cal.App.4th at page 926 and footnote 16, we leave to

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7 Appellant raised this point in the trial court and its opening brief.

the trial court's discretion whether to enjoin all or portions of respondent's project pending completion of an adequate EIR. The trial court is in a better position than this court to determine factually the current status of the *PCL* litigation or of a new Monterey Agreement EIR." (*Friends I, supra,* 95 Cal.App.4th 1373, 1387-1388.)

Amici misapprehend our directions to the trial court. As explained above, those directions are found in the dispositional language of our opinion. That language directed the trial court, inter alia, to "consider such orders it deems appropriate under [Public Resources Code] section 21168.9." (*Ibid.*) That section grants the trial court broad powers to fashion equitable relief. (See fn. 3, *ante*, and accompanying text at pp. 10-12.) Amici's argument that the exercise of said discretion was to be based upon the status of either the *PCL* litigation or the new EIR for the Monterey Agreement is at odds with the clear dispositional language we employed. The two paragraphs in our opinion upon which amici rely were merely suggestions as to how respondent could proceed and a statement that in exercising its discretion whether to grant equitable relief pending completion of a new EIR for this project, the trial court could ascertain, and if it so chose, rely upon the status of the *PCL* litigation and new Monterey Agreement EIR.

In any event, the parties' papers in the trial court informed it of what was then the current status of both the *PCL* litigation and the new Monterey Agreement EIR and the issue was discussed at the hearing. Nothing in the record suggests the court did not consider those facts in rendering its decision, a decision that was properly framed by the specific prayers for relief each party advanced in the trial court. To a large extent, amici's position is nothing more than an attempt to reargue the motion and to do so based upon events that occurred after judgment was rendered. Because the *PCL* litigation settled *after* the trial court entered its judgment, that settlement and the status of the preparation of the new Monterey Agreement EIR are matters that can be brought to the attention of the trial court if

appellant seeks to renew its request for injunctive relief. Lastly, in order to forestall any unnecessary future litigation, we hasten to add that nothing stated in this opinion is to be construed to be an indication as to how the trial court should rule in any further proceeding(s) on any specific issue(s).

DISPOSITION

The judgment is affirmed.

NOT TO BE PUBLISHED IN THE OFFICIAL REPORTS

VOGEL (C.S.), P.J.

We concur:

HASTINGS, J.

CURRY, J.

R. Bruce Tepper
1880 Century Park East
Suite 200
Los Angeles, CA 90067-1602

Division 4
Friends of the Santa Clara River
v.
Castaic Lake Water Agency
B164027

DWR "News for Immediate Release"
April 18, 2006

DEPARTMENT OF
WATER RESOURCES

News for Immediate Release

April 18, 2006

Contacts:

- Dan Flory, State Water Project Analysis Office, (916) 653-4313
- Dave Paulson, State Water Project Analysis Office, (916) 653-9593
- Don Strickland, Information Officer, (916) 653-9515

DWR Increases 2006 State Water Project Allocation to 100%

SACRAMENTO -- In an unprecedented move, the Department of Water Resources (DWR) has announced it is increasing its allocation of 2006 State Water Project (SWP) water for long-term contractors from 80 percent to 100 percent of requests.

This is the first time since SWP Water Contractors began asking for their full Table A amounts that DWR has been able to deliver 100 percent of the requested amounts. A "Table A" amount is the maximum contractual quantity of water that an SWP Contractor can request each year.

An uncommon combination of very wet conditions and conveniently spaced storm events occurring later than normal in the year has led to a very healthy water supply.

"The increase in snowpack during March and April has made 2006 a banner year for water supply," commented Dan Flory, Chief of the Department's State Water Project Analysis Office. "This is the second wettest March/April combination for the Northern Sierra since 1921. We are only two and a half weeks into April and the precipitation is already three times the average for the entire month. All of the SWP contractors' Table A requests will be met during 2006."

Flory added, "While the current snowpack and precipitation are great for water supply, DWR continues to monitor the snowpack for potential impacts to the flood control system, especially along the San Joaquin River."

Last year, heavy precipitation in the northern Sierra allowed DWR to increase SWP allocations to 90 percent at the end of May. This year, the State is again experiencing higher than normal rainfall and snowpack amounts.

A 100 percent allocation amounts to 4.13 million acre-feet, distributed among the 29 SWP Contractors who serve more than 23 million Californians and about 750,000 acres of irrigated farmland.

The Department of Water Resources operates and maintains the State Water Project, provides dam safety and flood control and inspection services, assists local water districts in water management and water conservation planning, and plans for future statewide water needs.

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Contact the DWR Public Affairs Office for more information about DWR's water activities.

STATE OF CALIFORNIA • RESOURCES AGENCY • DEPARTMENT OF WATER RESOURCES

NOTICE TO

STATE WATER PROJECT CONTRACTORS

NUMBER: 07-06

DATE: MAY 23 2007

SUBJECT: Final 2007 Water Allocation

FROM: DIRECTOR, DEPARTMENT OF WATER RESOURCES

Due to current water conditions, the Department of Water Resources (DWR) is announcing a final 2007 water allocation to its 29 Long-Term Water Supply Contractors of 60 percent, and Contractors are advised to begin implementation of any additional water conservation measures available to them.

Although 2006 water conditions left a promising 2007 water supply outlook, 2007 water supply conditions to date have been well below average. In 2006, the Northern Sierra Precipitation 8-Station Index was 160 percent of average. This generated a 100 percent water allocation, over 630 TAF of Article 21 water, over 380 TAF of carryover water, and left the State Water Project reservoirs essentially full.

However, so far for 2007, the Northern Sierra Precipitation 8-Station Index is only 77 percent of average and the statewide snow pack is only 27 percent of average. It's now official, for 2007, the Sacramento Region is listed as a "Dry" water year and the San Joaquin Region is listed as a "Critically Dry" water year.

Because of these conditions, please be advised that water allocations for 2008 could be low if a below average water year materializes. Also, Contractors' scheduled Carryover water into 2008 is only 155 TAF. Therefore, Contractors are being asked to begin implementation of any and all additional water conservation measures available to soften the potential water shortages in 2008.

Water conditions for 2008 are uncertain at best. Accordingly we should prepare for dry conditions. DWR staff will be in contact to discuss conservation and Dry Year Program strategies.

BULLETIN
132-04
SEPTEMBER 2005

MANAGEMENT OF THE
CALIFORNIA STATE WATER PROJECT

MANAGEMENT OF THE CALIFORNIA STATE WATER PROJECT

BULLETIN 132-04

SEPTEMBER 2005

ARNOLD SCHWARZENEGGER
Governor, State of California

MIKE CHRISMAN
Secretary for Resources, The Resources Agency

LESTER A. SNOW
Director, Department of Water Resources

Chapter 9
Water Contracts and Deliveries

San Luis Reservoir

Significant Events in 2003

- On May 5, 2003, the Monterey Settlement Agreement was formally executed and was approved by the court on May 20, 2003. This settlement agreement offered an alternative to further litigation and, with certain conditions, allows the State Water Project to continue to operate pursuant to the Monterey Agreement while the new EIR is being prepared.
- The Department executed 39 long-term water supply contract amendments, 18 water conveyance/exchange agreements, 1 turn-in agreement, 10 turnout agreements, 34 Turnback Water Pool Program agreements, and 16 Article 21 Water Program agreements, with State Water Project contractors.
- The SWP approved delivery of 90 percent of SWP contractors' Table A requests, and conveyed 4,223,255 acre-feet to 27 long-term contractors and 26 other agencies.
- In 2003, 29,770 acre-feet of water were sold and purchased under the Turnback Water Pool Program.
- Implementation of the 2003 Colorado River Quantification Settlement Agreement resulted in a 2003 Exchange Agreement, pending execution, among Coachella Valley Water District, Metropolitan Water District of Southern California, and Desert Water District, which provides for the transfer of 88,100 acre-feet of Metropolitan's Table A amounts to Coachella, and 11,900 acre-feet of Metropolitan's Table A amounts to Desert.

The long-term water supply contracts for water service from the State Water Project between the Department and 29 local agencies are basic to the project's construction and operation. In return for State financing, constructing, operating, and maintaining facilities needed to provide water service, the agencies contractually agreed to repay all associated SWP capital and operating costs.

The Department delivers water to SWP contractors in accordance with their long-term water supply contracts.

These contracts set forth Table A amounts, which determine how much water a contractor may request each year from the Department.

Annual Table A represents the total amount of project water that an SWP contractor may request each year, according to that contractor's long-term water supply contract.

Approved Table A represents the amount of annual Table A requested by the contractors and approved for delivery by the Department, based on hydrologic conditions, current reservoir storage, and total requests by the SWP water contractors. The Department is not always able to deliver the quantity of water requested by the contractors; under certain

Long-Term SWP Water Supply Contracts

The first water supply contract was signed with the Metropolitan Water District of Southern California on November 4, 1960. The contract was negotiated by the Department and Metropolitan according to terms of the contracting principles for water service contracts announced by Governor Edmund G. Brown on January 20, 1960.

The Metropolitan contract became the prototype for all water contracts; by the end of 1967, 31 agencies had contracted for water. In addition, a water supply contract was executed with the City of West Covina in December 1963, but was terminated in August 1965; the city's Table A amount was transferred to Metropolitan through an amendment to the district's long-term contract with the Department. Long-term contracts with Hacienda Water District and Devil's Den Water District were also terminated when those districts transferred their Table A amounts, through contract amendments, to Tulare Lake Basin Water Storage District (1981) and Castaic Lake Water Agency (1992), respectively. Today the SWP has long-term water supply contracts with 29 agencies. Those contracts have been amended periodically to incorporate mutually desired modifications.

All water contracts signed in the 1960s included an estimate of the date water would first be delivered and a schedule of the amount of water the agency could expect to be delivered annually (annual Table A amounts). That amount was designed to increase gradually until the maximum amount of annual Table A was reached. The total combined maximum annual Table A amount for all water contracting agencies was initially 4,230,000 acre-feet, assuming full development of the SWP.

The contracts were initially designed to be valid for 75 years or until all bonds sold as part of the California Water Resources Development Bond Act were repaid, whichever period was longer. As a result of amendments to contracts in the 1990s, the current combined maximum annual Table A amount totals 4,172,786 acre-feet, and the contracts are in effect for the longest of the following periods: (1) the project repayment period, which extends to the year 2035; (2) 75 years from the date of the contract; or (3) the period ending with the latest maturity date of any bond used to finance the construction costs of project facilities.

conditions, a lesser amount, allocated according to the long-term water supply contracts and the process noted above, is made available for delivery.

Approved Table A amounts may also be referred to in this chapter as *approved amounts* or *approved water.*

The long-term water supply contracts are amended as needed. During 2003, 39 amendments were executed, 27 of which were related to the Monterey Settlement Agreement. A number of long-term consolidated contracts, with the amendments integrated into the contract, are available online at www.swpao.water.ca.gov/wsc/index.cfm.

The Department also enters into miscellaneous agreements with SWP contractors and other agencies—which may be amended periodically—to convey SWP and non-SWP water through the California Aqueduct and to approve the construction, operation, and maintenance of turnouts along SWP facilities. During 2003, the Department executed 18 water conveyance/exchange agreements, 1 turn-in agreement, 10 turnout agreements, 34 Turnback Water Pool Program agreements, and 16 Article 21 Water Program agreements with SWP contractors. The Department also delivered water pursuant to 11 miscellaneous agreements executed prior to 2003 with the SWP contractors. Pending execution are 3 water conveyance/exchange agreements (including one unscheduled water program agreement) and 8 storage agreements.

The State Water Project Analysis Office has developed a numbering system for contracts, amendments, and agreements executed by the Department. These numbers, designated as SWPAO #XXXXX, are located in parentheses after each contract, amendment, or agreement.

Detailed information about amendments and agreements follows.

Amendments to Long-Term SWP Water Supply Contracts

All the original contracts signed by the Department and local agencies have been previously amended to incorporate mutually desired changes. Most amendments fall under the following five general categories:

(1) revision of annual Table A amounts in the water supply contracts;
(2) allocation of costs and benefits for the enlargement or extension of the East Branch and extension of the Coastal Branch of the California Aqueduct;
(3) purchase of excess capacity in the California Aqueduct;
(4) provisions to allow contractors, under certain conditions, to carry over undelivered SWP approved Table A water from one year for delivery in the next year; and
(5) implementation of Monterey Agreement principles.

The following long-term SWP Water Supply Contracts were amended during 2003.

Alameda County Flood Control and Water Conservation District-Zone 7. The Department executed Amendment No. 23 to the Water Supply Contract between Alameda-Zone 7 and the Department on August 1, 2003. The Amendment provided for the permanent transfer of 400 acre-feet of SWP Table A amounts from Tulare Lake Basin Water Storage District to Alameda-Zone 7, and set forth conditions for the transfer. The transfer is effective January 1, 2003. (SWPAO #03001)

Alameda County Flood Control and Water Conservation District-Zone 7. The Department executed Amendment No. 24 to the Water Supply Contract between Alameda-Zone 7 and the Department on November 7, 2003. This Amendment set forth the terms and conditions for the financing and repayment of costs attributable to the South Bay Aqueduct Enlargement. (SWPAO #03013)

Alameda County Flood Control and Water Conservation District-Zone 7. The Department executed Amendment No. 25 to the Water Supply Contract between Alameda-Zone 7 and the Department on October 31, 2003. The Amendment provided for the permanent transfer of 2,219 acre-feet of SWP Table A amounts from Kern County Water Agency to Alameda-Zone 7, and set forth conditions for the transfer. The transfer becomes effective January 1, 2004. (SWPAO #04002)

Coachella Valley Water District. The Department executed Amendment No. 18 to the Water Supply Contract between Coachella and the Department on October 10, 2003. The amendment provided for the permanent transfer of 88,100 acre-feet of SWP Table A amounts from Metropolitan Water District of Southern California to Coachella, and set forth conditions for the transfer. This amendment is a result of the 2003 Exchange Agreement pending execution, among Coachella, Metropolitan, and Desert Water Agency, which will provide for the transfer of 88,100 acre-feet of Metropolitan's Table A amounts to Coachella, and 11,900 acre-feet of Metropolitan's Table A amounts to Desert. The transfer is consistent with the implementation of the 2003 Colorado River Quantification Settlement Agreement. The amendment will become effective the later of January 1, 2004, or January 1 of the subsequent year that the 2003 Exchange Agreement becomes effective. The 2003 Exchange Agreement was not executed at the end of 2003. (SWPAO #04009)

County of Kings. The Department executed Amendment No. 16 to the Water Supply Contract between County of Kings and the Department on December 5, 2003. The amendment provided for the permanent transfer of 5,000 acre-feet of SWP Table A amounts from Tulare to County of Kings, and set forth conditions for the transfer. The transfer is effective January 1, 2004. (SWPAO #04004)

Desert Water Agency. The Department executed Amendment No. 18 to the Water Supply Contract between Desert and the Department on November 3, 2003. The amendment provided for the permanent transfer of 11,900 acre-feet of SWP Table A amounts from Metropolitan to Desert, and set forth conditions for the transfer. This amendment is a result of the 2003 Exchange Agreement pending execution, among Coachella, Metropolitan, and Desert Water Agency, which will provide for the transfer of 88,100 acre-feet of Metropolitan's Table A amounts to Coachella, and 11,900 acre-feet of Metropolitan's Table A amounts to Desert. The transfer is consistent with the implementation of the 2003 Colorado River Quantification Settlement Agreement. The amendment will become effective the later of January 1, 2004, or January 1 of the subsequent year that the 2003 Exchange Agreement becomes effective. The 2003 Exchange Agreement was not executed at the end of 2003. (SWPAO #04011)

Kern County Water Agency. The Department executed Amendment No. 36 to the Water Supply Contract between Kern and the Department on October 31, 2003. The amendment provided for the permanent transfer of 2,219 acre-feet of SWP Table A amounts from Kern to Alameda-Zone 7, and set forth conditions for the transfer. The transfer becomes effective January 1, 2004. (SWPAO #04001)

Metropolitan Water District of Southern California. The Department executed Amendment No. 27 to the Water Supply Contract between Metropolitan and the Department on October 24, 2003. The amendment provided for the permanent transfer of 88,100 acre-feet of SWP Table A amounts from Metropolitan to Coachella, and set forth conditions for the transfer. This amendment is a result of the 2003 Exchange Agreement pending execution, among Coachella, Metropolitan, and Desert, which will provide for the transfer of 88,100 acre-feet of Metropolitan's Table A amounts to Coachella, and 11,900 acre-feet of Metropolitan's Table A amounts to Desert. The transfer is consistent with the implementation of the 2003 Colorado River Quantification Settlement Agreement. The amendment will become effective the later of January 1, 2004, or January 1 of the subsequent year that the 2003 Exchange Agreement becomes effective. The

2003 Exchange Agreement was not executed at the end of 2003. (SWPAO #04008)

Metropolitan Water District of Southern California. The Department executed Amendment No. 28 to the Water Supply Contract between Metropolitan and the Department on October 24, 2003. The amendment provided for the permanent transfer of 11,900 acre-feet of SWP Table A amounts from Metropolitan to Desert, and set forth conditions for the transfer. This amendment is a result of the 2003 Exchange Agreement pending execution, among Coachella, Metropolitan, and Desert, which will provide for the transfer of 88,100 acre-feet of Metropolitan's Table A amounts to Coachella, and 11,900 acre-feet of Metropolitan's Table A amounts to Desert. The transfer is consistent with the implementation of the 2003 Colorado River Quantification Settlement Agreement. The amendment will become effective the later of January 1, 2004, or January 1 of the subsequent year that the 2003 Exchange Agreement becomes effective. The 2003 Exchange Agreement was not executed at the end of 2003. (SWPAO #04010)

Solano County Water Agency. The Department executed Amendment No. 19 to the Water Supply Contract between Solano and the Department on November 12, 2003. The amendment provided for the approval for Solano to pay only the prospective charge for the North Bay Aqueduct costs attributable to the 5,756 acre-feet annual Table A increase made effective in Amendment No. 17 to Solano's long term Water Supply Contract. The amendment becomes effective January 1, 2004. (SWPAO #03005)

Tulare Lake Basin Water Storage District. The Department executed Amendment No. 29 to the Water Supply Contract between Tulare and the Department on June 2, 2003. The amendment provided for the permanent transfer of 400 acre-feet of SWP Table A amounts from Tulare to Alameda-Zone 7, and set forth conditions for the transfer. The transfer is effective January 1, 2003. (SWPAO #03002)

Tulare Lake Basin Water Storage District. The Department executed Amendment No. 30 to the Water Supply Contract between Tulare and the Department on December 5, 2003. The amendment provided for the permanent transfer of 5,000 acre-feet of SWP Table A amounts from Tulare to Kings County, and set forth conditions for the transfer. The transfer becomes effective January 1, 2004. (SWPAO #04003)

Monterey Amendments

The Monterey Amendments increase the reliability of existing water supplies; provide stronger financial management for the SWP; and increase water management flexibility, providing more tools for local water agencies to maximize use of existing facilities.

The Monterey Amendments incorporated changes in determination of approved Table A water, the transfer of Table A amounts and land, financial restructuring, and increased operational flexibility. The Monterey Amendments are discussed in detail in Chapter 1, *Summary of Significant Events*, of Bulletin 132-95.

Plumas County Flood Control and Water Conservation District and Empire West Side Irrigation District, the only long-term SWP contractors who have not signed the Monterey Amendment, await completion of the EIR to decide whether to sign.

The Planning and Conservation League filed a lawsuit on December 27, 1995, challenging the California Environmental Quality Act compliance for the Monterey Amendment. A Sacramento County Superior Court judge later dismissed the lawsuit. PCL appealed the decision and on September 15, 2000, the Third District Court of Appeal reversed the Superior Court ruling. On December 13, 2000, the California Supreme Court denied review. The parties commenced mediation on March 26, 2002, and proceedings in Superior Court were stayed pending completion of mediation. On July 18, 2002, the parties reached agreement on principles for settling the lawsuit.

Monterey Settlement Agreement

On May 5, 2003, the Monterey Settlement Agreement was formally executed and was approved by the court on May 20, 2003. This settlement agreement offered an alternative to further litigation and, with certain conditions, allows the State Water Project to continue to operate pursuant to the Monterey Agreement while the new EIR is being prepared. The Department and the contractors agree not to approve any new projects or activity in reliance on the 1995 EIR, which was not approved, initiated or implemented prior to March 26, 2001, and the approval, initiation, or implementation of which would require a separate environmental document under CEQA. Information on the litigation can be found in *Chapter 6, Legislation and Litigation.*

The settlement agreement is a complex agreement with multiple components that balance the interests of the Department, the SWP contractors, Central Coast Water Authority, and Kern Water Bank Authority, with the disparate interests of the three plaintiffs.

All litigation costs will be paid by all SWP contractors, apportioned according to each agency's portion of the total maximum Table A Amounts as of January 1, 2003. Most of the contractors executed an agreement with the Department providing that the litigation costs will be allocated as incurred.

In addition to procedural items including attorney fees, mediation, and disposition of the lawsuit, items concerning the operation and management of the SWP are described below.

New Amendments to the SWP Contracts

The Department and 28 SWP contractors executed new amendments to the SWP long-term water supply contracts to improve and clarify disclosure of information about the delivery capability of the SWP. The amendments deleted the term "entitlement" and replaced that term with "Table A Amount." This does not change the Department's water delivery obligations or any other rights under the SWP contracts.

Language is also added to the bottom of each contractor's Table A to clarify that Table A is not to be interpreted to mean that the Department is able to deliver those amounts in all years. Empire, which has never signed the Monterey Amendment, did not execute the Monterey Settlement Amendment.

The amendment also requires the Department to distribute a biennial report to SWP contractors and all city, county, and regional planning agencies within the SWP project area, providing information as to SWP delivery capabilities, historic deliveries, and estimated deliveries under a range of hydrologic conditions. This report is intended to assist the SWP contractors in the assessment of the adequacy of the SWP component of their overall water supplies. The first edition of this report was issued in 2003 for SWP deliveries through 2002. More information on this report can be found in *Chapter 7, Water Supply Development and Reliability.*

SWP Availability

In addition to the biennial report mentioned above, the settlement agreement requires the Department to develop guidelines to assist the SWP urban contractors in providing information to land use planning agencies regarding local and regional programs to manage or supplement SWP supplies. The Department is also required to assist these contractors in providing complete and accurate information to land use agencies to assure that local land use decisions reflect accurate information on the availability of water from State, local, and other sources. Preparation of this document is underway.

New EIR

Agreement was reached on the content, scope, and process for the new EIR. The project to be analyzed in the new EIR is the Monterey Amendment and certain components of the settlement agreement. The Department will act as lead agency in preparing the new EIR. A Notice of Preparation was issued in January 2003 and scoping meetings were held throughout the State.

Under the agreement, a committee of plaintiffs and SWP contractors advises the Department on developing the EIR. The Department's Director serves as chair of this committee. Preparation of the new EIR is underway. The committee met nine times during 2003.

Public Participation in SWP Contract Negotiations

Future negotiations for SWP-wide contract amendments and for contract amendments to transfer Table A Amounts between SWP contractors will be conducted in public. The Department agrees that public review of significant changes to the water supply contracts is beneficial and in the public interest. The Department notified the contractors of this new process through Notice to State Water Project Contractors No. 03-10, on July 3, 2003, which is available online at swpao.water.ca.gov/notices/index.cfm).

Guidelines for Review and Approval of Permanent Water Transfers

The Department is required to issue guidelines to describe the process for the Department's review of proposed permanent transfers of Table A Amounts. These guidelines are to assist contractors in developing their transfer proposals and obtaining Department review expeditiously, and to assist the public in participating in that review. The Department issued these guidelines on July 3, 2003, through Notice to State Water Project Contractors No. 03-09 and published them in Bulletin 132-02, Chapter 9 (available online at swpao.water.ca.gov/publications/bulletin/02/Bulletin132-02.pdf).

Kern Water Bank

The Kern Water Bank will remain in local ownership and will operate as it has, but will be subject to additional restrictions on use. The Department agrees to prepare an independent study of KWB regarding impacts related to the transfer, development, and operation of KWB in light of the Kern environmental permits, as part of the new EIR.

Permanent Table A Transfers

The following permanent Table A transfers from Kern already completed under the Monterey Amendment are final:

- Kern to Mojave, Table A Amount of 25,000 acre-feet, effective 1998;
- Kern to Palmdale, Table A Amount of 4,000 acre-feet, effective 2000;
- Kern to Alameda-Zone 7, Table A Amount of 7,000 acre-feet, effective 2000;
- Kern to Alameda-Zone 7, Table A Amount of 15,000 acre-feet, effective 2000;
- Kern to Alameda-Zone-7, Table A Amount of 10,000 acre-feet, effective 2001;
- Kern to Solano, Table A Amount of 5,756 acre-feet, effective 2001; and
- Kern to Napa, Table Amount of 4,025 acre-feet, effective 2001.

The parties recognize that the Kern-Castaic Lake Water Agency 41,000 acre-feet Table A transfer is subject to pending litigation and agree that jurisdiction with respect to that litigation remain in the Los Angeles County Superior Court and that nothing in the agreement is intended to predispose the remedies or other actions that may occur in the pending litigation.

The potential environmental effects of these transfers are required to be analyzed in the new EIR.

Plumas County Flood Control and Water Conservation District

Plumas will resume payments pursuant to its SWP water supply contract beginning in 2003. The Department will not collect any Plumas arrearages. Plumas agreed to support the Monterey Amendments and, along with the other contractors, executed the amendment discussed above which deleted the term "entitlement" and replaced that term with "Table A Amounts."

Up to $8 million will be paid over 8 years to Plumas beginning in 2003, primarily for watershed

improvements for the mutual benefit of Plumas and the SWP in the Feather River watershed, and for other district-related purposes, to be disbursed with input from a watershed forum composed of representatives of Plumas, the Department, and SWP contractors. A technical committee composed of the Department, Plumas, SWP contractors, and local resource management groups was formed to assist the forum. To help the forum set priorities for watershed management and restoration action, a consultant was hired during 2003 to help prepare the Feather River Watershed Management Strategy.

In addition, the Department will offer Plumas an amendment to its water supply contract which will include the Department's agreement that water supplied to Plumas be determined based on availability of Lake Davis' water supply and that water deliveries to Plumas will not be reduced during SWP shortages so long as sufficient water is available from Lake Davis.

Miscellaneous Agreements with Long-Term SWP Contractors

2003 Water Conveyance/Exchange Agreements

During 2003, water conveyance/exchange agreements were executed or pending execution with long-term SWP contractors as described below.

Dudley Ridge Water District. A long-term agreement executed June 30, 2003, among the Department, Dudley Ridge, and Tulare, approved a change in point of delivery of a portion of Dudley Ridge's annual approved SWP water and other water supplies to Tulare's turnout at Reach 8D of the California Aqueduct. Two long-term water supply contract amendments with Tulare (Amendment No. 26) and Dudley Ridge (Amendment No. 24), were executed in December 2001 for the permanent transfer of 3,973 acre-feet of Tulare's Table A amounts to Dudley Ridge to accommodate the needs of Sandridge Partners, a landowner who farms in both Tulare and Dudley Ridge service areas. This is a subsequent agreement to provide delivery of water to Sandridge Partners in Dudley Ridge's service area through Tulare's turnout at Reach 8D. No water was delivered in 2003. (SWPAO #02005)

Dudley Ridge Water District. A letter agreement dated October 8, 2003, and executed November 18, 2003, among the Department, Dudley Ridge, and Tulare, approved the delivery of up to 4,000 acre-feet of Dudley Ridge's 2003 Table A amounts to Tulare at Tulare's turnout B in Reach 8D of the California Aqueduct. The agreement facilitated the water transfer from Dudley Ridge to Tulare on behalf of Sandridge Partners, who farms in both Dudley Ridge and Tulare service areas. During 2003, a total of 1,100 acre-feet was delivered to Tulare. (SWPAO #03052)

Dudley Ridge Water District. A letter agreement dated November 19, 2003, and executed November 20, 2003, among the Department, Dudley Ridge, and San Gabriel Valley Municipal Water District, approved the delivery of up to 11,458 acre-feet of Dudley Ridge's 2003 Table A amounts to San Gabriel at Reach 26A of the California Aqueduct. In exchange, San Gabriel will return a like amount of its future Table A amounts to Dudley Ridge by December 31, 2013. During 2003, a total of 8,700 acre-feet of Dudley Ridge's 2003 Table A amounts was delivered to San Gabriel. (SWPAO #03055)

Empire West Side Irrigation District. An agreement, pending execution between the Department and Empire, will provide for the delivery of unscheduled water to Empire in 2003 at times when project water is not needed for fulfilling approved Table A deliveries or for meeting project operational commitments. A total of 175 acre-feet of unscheduled water was delivered to Empire in 2003. (SWPAO #03012)

Kern County Water Agency. A letter agreement dated June 6, 2003, and executed July 3, 2003, between the Department and Kern, approved the delivery of up to 20,000 acre-feet of 2002 CVP water from three CVP contractors

to Kern. In exchange, Kern would return a like amount of its 2003 approved Table A amounts to the CVP contractors by December 31, 2003. The Department petitioned the State Water Resources Control Board on July 25, 2003, and received approval on August 26, 2003, for a temporary change of place of use for delivery of the return water. A total of 18,428 acre-feet was delivered to Kern from O'Neill Forebay and 18,428 acre-feet of water was returned to the CVP contractors at O'Neill Forebay in 2003. (SWPAO #03009)

Kern County Water Agency. A letter agreement dated June 12, 2003, and executed July 3, 2003, between the Department and Kern, approved the delivery of up to 13,000 acre-feet of 2001 CVP water from two CVP contractors to Kern. In exchange, Kern would return a like amount of its 2002 approved Table A amounts to the CVP contractors by December 31, 2002. The Department petitioned SWRCB on June 21, 2002, and received approval on August 16, 2002, for a temporary change of place of use for delivery of the return water. A total of 7,400 acre-feet was delivered to Kern from O'Neill Forebay and a total of 7,400 acre-feet of water was returned to the CVP contractors at O'Neill Forebay in 2002. (SWPAO #02014)

Kern County Water Agency. A letter agreement dated October 2, 2003, and executed December 15, 2003, among the Department, Kern, and Dudley Ridge, approved the delivery of up to 8,000 acre-feet of Kern's 2003 approved Table A amounts to Dudley Ridge at Reach 8D of the California Aqueduct. The agreement facilitated the water transfer from Kern to Dudley Ridge on behalf of the landowner Sandridge Partners who farms in both Kern and Dudley Ridge service areas. During 2003, a total of 8,000 acre-feet was delivered to Dudley Ridge. (SWPAO #03054)

Santa Clara Valley Water District. A letter agreement, pending execution between the Department and Santa Clara, provides for the delivery of up to 3,100 acre-feet of Brown's Valley Irrigation District's water (nonproject) to Santa Clara. This water, which is under Brown's Valley pre-1914 water rights, will be made available at Banks Pumping Plant and conveyed to Santa Clara at Reach 9 of the South Bay Aqueduct. Santa Clara requested this water be delivered pursuant to Article 55 of its long-term Water Supply Contract. During 2003, a total of 2,480 acre-feet of Brown's Valley water (nonproject) was delivered to Santa Clara. (SWPAO #03058)

Solano County Water Agency. A settlement agreement executed May 19, 2003, among the Department, Solano, and the Cities of Fairfield, Vacaville, and Benicia, and a conveyance agreement, executed concurrently between the Department and Solano, approved the delivery of up to 31,260 acre-feet annually of settlement water to Solano for delivery to the Cities of Fairfield, Vacaville, and Benicia. The agreements resulted from negotiations following the cities' petitions to SWRCB to appropriate water from the Sacramento River. The purpose of the agreements was to avoid disputing issues of appropriation before SWRCB. The agreement provides a supplemental water supply to the cities to assist in meeting current and future water demands through the North Bay Aqueduct. Water will be made available during excess conditions in the Delta as defined in the Coordinated Operations Agreement, or during balanced conditions when Water Rights Standard Permit term 91, which relates to availability of water for appropriation, is not in effect. The cities pay a fee per acre-foot of settlement water delivered during balanced conditions at NBA. The agreement remains in effect until December 31, 2035. During 2003, a total of 860 acre-feet of the settlement water was delivered to the Cities of Fairfield, Vacaville, and Benicia through Reaches 1 and 3A of the North Bay Aqueduct. (SWPAO #03017)

Tulare Lake Basin Water Storage District. A letter agreement dated April 14, 2003, and executed April 22, 2003, between the Department and Tulare, approved the transfer of up to 5,000 acre-feet of Tulare's 2003 approved Table A amounts to Westlands Water District at Reaches 5, 6, and 7 of the California Aqueduct on behalf of two landowners, Hansen Ranches

and Newton Farms, who farm in both the Tulare and Westlands service areas. The Department petitioned SWRCB on April 1, 2003, and received approval on May 23, 2003, for a temporary change of place of use. During 2003, a total of 3,900 acre-feet was delivered to Westlands at Reach 5. (SWPAO #03006)

Tulare Lake Basin Water Storage District. A letter agreement dated August 6, 2003, and executed August 25, 2003, between the Department and Tulare, approved the delivery of up to 25,000 acre-feet of Lower Tule River Irrigation District's water (nonproject) to Tulare at Reaches 8C and 8D of the California Aqueduct. Tulare requested this water be delivered pursuant to Article 55 of its long-term water supply contract. No water was delivered in 2003. (SWPAO #03007)

Tulare Lake Basin Water Storage District. A letter agreement dated April 4, 2003, and executed April 10, 2003, between the Department and Tulare, approved the transfer of up to 1,000 acre-feet of Tulare's 2003 Table A amounts to Westlands at Reach 7 of the California Aqueduct on behalf of Westlake Farms Inc., who farms in both Tulare and Westlands service areas. The water was delivered to Westlands for use on lands within the Kings County portion of Westland's service area. During 2003, a total of 1,000 acre-feet was delivered to Westlands at Reach 7. (SWPAO #03011)

Tulare Lake Basin Water Storage District. A letter agreement dated June 5, 2003, and executed August 25, 2003, between the Department and Tulare, approved the delivery of up to 10,000 acre-feet of nonproject water to Tulare at Reaches 8C and 8D (SWPAO #02025). Lower Tule River Irrigation District requested this water be delivered to Tulare and, in exchange, will receive a like amount of Tulare's Tule River water. Tulare requested the water be delivered pursuant to Article 55 of its long-term water supply contract. The water was made available at Banks Pumping Plant and delivered to Tulare in 2002. A subsequent Amendment pending execution between the Department and Tulare, will amend the delivery amounts to 10,596 acre-feet. (SWPAO #04022)

Water Conveyance/Exchange Agreements Prior to 2003

During 2003, water delivered pursuant to agreements with SWP contractors that were executed prior to 2003, is described below.

Alameda County Flood Control and Water Conservation District-Zone 7. A conveyance agreement dated July 28, 1995, between Alameda-Zone 7 and the Department, provides for the transfer of up to 5,000 acre-feet of Byron-Bethany Irrigation District's local water annually to Alameda-Zone 7 through SWP facilities. An amendment to extend the agreement to December 31, 2001, was executed April 26, 2002. Byron-Bethany may only transfer water that has been made available by conservation and crop idling. In 2003, 1,000 acre-feet of Byron Bethany's local water was pumped at Banks Pumping Plant and delivered to Alameda-Zone 7's turnouts in the South Bay Aqueduct. (SWPAO #02325)

Castaic Lake Water Agency. An agreement executed on December 27, 2001, among the Department, Castaic Lake, United Water Conservation District, Newhall Land and Farming Company, Newhall County Water District, and Los Angeles County, provided for the temporary extension through December 31, 2001, to store and release up to 8,786 acre-feet of local flood flows in Castaic Reservoir to Castaic Lake. United, a member unit of Ventura, transferred 4,512 acre-feet of stored local water to Castaic Lake in 2001. In 2003, Castaic Lake released 6,768 acre-feet of its 2003 Table A allocation to the Department (1.5 times the amount transferred by United). The Department in turn released 6,768 acre-feet of local water from Piru Creek to United. (SWPAO #01036)

Kern County Water Agency. An agreement executed on June 8, 2000, among the Department, Kern, and Western Hills Water District, approved delivery of 8,000 acre-feet of pre-1914 Lower Kern River Rights water banked in

Kern's share of the Pioneer Groundwater Banking Project. A portion of Kern's annual Table A amounts will be delivered annually to Western Hills from Reach 2A of the California Aqueduct; in exchange, Kern will take a like amount of banked local water from the Pioneer Groundwater Bank. The Department petitioned SWRCB and by SWRCB Order dated April 21, 2000, Western Hills' service area was included within the authorized SWP place of use. During 2003, a total of 917 acre-feet of Kern's Table A amounts was delivered to Western Hills at Reach 2A. (SWPAO #01001)

Kern County Water Agency. A letter agreement executed October 11, 2002, between the Department and Kern, approved the delivery of up to 30,000 acre-feet of nonproject water from four CVP contractors, members of the San Luis and Delta Mendota Water Authority, to Kern in 2000. In exchange, Kern would return a like amount of its approved Table A amounts to CVP contractors by December 31, 2003. During 2000, a total of 23,941 acre-feet of CVP water was delivered to Kern. During 2003, a total of 1,787 acre-feet was returned to CVP contractors. A balance of 22,154 acre-feet remained to be returned to the CVP contractors at the end of the contract term. (SWPAO #00032)

In a letter dated August 1, 2003, Kern requested an extension on the return period of the CVP water since Kern was unable to return all the water by December 31, 2003. Extension of the return period and other possible alternatives for Kern to return the remaining water to CVP contractors are being discussed among the Department, Kern, and San Luis and Delta Mendota Water Authority.

Mojave Water Agency. An agreement executed November 13, 1997, among AVEK, Mojave, and the Department, approved a change in point of delivery through 2019 of up to 2,250 acre-feet annually of Mojave's approved Table A amount to AVEK's Fairmont Turnout in Reach 19 of the California Aqueduct. Mojave does not have conveyance facilities to provide service to a solar energy generating station located within its service area. AVEK has conveyance capability and has agreed to provide service. During 2003, the Department delivered 816 acre-feet of Mojave's 2003 approved Table A amounts through AVEK's turnout at Reach 19. (SWPAO #97003)

San Bernardino Valley Municipal Water District. San Bernardino and Metropolitan entered into an agreement, Attachment 2, Coordinated Use Agreement for Conveyance Facilities and State Water Project Water Supplies, on May 14, 2001. The Department responded on February 27, 2002, concurring with the agreement and acknowledging the coordinated use of local facilities currently existing within San Bernardino's jurisdictional boundaries. This coordinated use involves delivery of San Bernardino's SWP water to Metropolitan's facilities within San Bernardino's service area. This action is permitted under Article 10 of the long-term water supply contract. During 2003, a total of 5,000 acre-feet of San Bernardino's approved Table A amounts was delivered to Metropolitan at Reach 26A. (SWPAO #02035)

Tulare Lake Basin Water Storage District. A letter agreement, dated June 15, 2001, and executed July 26, 2001, between the Department and Tulare, approved the delivery of up to 50,000 acre-feet of nonproject water from Westlands to Tulare between December 2000 and April 15, 2001, in exchange for a like amount of Tulare's Table A amounts during 2001 through 2003. The delivery of SWP exchange water to Westlands will be from the Delta to Reach 7 of the California Aqueduct, for use within the Kings County portion of Westlands' service area. A combined total of 28,145 acre-feet was delivered to Tulare during 2000 and 2001. During 2001, 1,975 acre-feet were returned to Westlands. During 2002, a total of 12,067 acre-feet was delivered to Westlands, leaving a balance of 14,103 acre-feet to be returned to Westlands. During 2003, a total of 14,103 acre-feet was returned to Westlands, completing this agreement. (SWPAO #01009)

EWA 2:1 Exchange Agreements

During 2002, six SWP contractors had agreements with the Department for the in lieu exchange of a portion of their 2002 Table A amounts for stored Environmental Water Account water. A portion of the EWA water subject to "spilling" in San Luis Reservoir was made available for exchange as of midnight March 29, 2002. For every two units of EWA water delivered to each contractor noted below, the contractor returned one unit of its 2002 approved Table A amounts to EWA by August 31, 2002. The following agreements include provisions concerning the exchanges.

Alameda County Flood Control and Water Conservation District, Zone 7. A letter agreement, dated March 27, 2003, and executed April 4, 2003, between the Department and Alameda-Zone 7, approved an in lieu exchange of a portion of Alameda-Zone 7's 2002 approved Table A amounts for up to 2,000 acre-feet of stored EWA water. During 2002, a total of 803 acre-feet of EWA water was delivered to Semitropic in April in accordance with the *Alameda County Flood Control and Water Conservation District, Zone 7 and Semitropoic Water Storage District Banking Program Agreement*, pursuant to a change in point of delivery agreement among the Department, Alameda-Zone 7, and Kern (SWPAO #02010); a total of 402 acre-feet of Alameda-Zone 7's 2002 Table A amounts was returned to EWA in July and August. (SWPAO #02017)

Alameda County Water District. A letter agreement, dated March 28, 2003, and executed April 8, 2003, between the Department and Alameda County, approved an in lieu exchange of a portion of Alameda County's 2002 approved Table A amounts for up to 2,000 acre-feet of stored EWA water. During 2002, a total of 571 acre-feet of EWA water was delivered to Alameda County in March and April, and a total of 286 acre-feet of Alameda County's 2002 Table A amount was returned to EWA in July and August. (SWPAO #02018)

Dudley Ridge Water District. A letter agreement, dated March 27, 2003, and executed April 9, 2003, between the Department and Dudley Ridge, approved an in lieu exchange of a portion of Dudley Ridge's 2002 approved Table A amount for up to 4,000 acre-feet of stored EWA water. During 2002, the Department delivered a total of 2,140 acre-feet of EWA water to Dudley Ridge, of which 1,597 acre-feet were delivered to Dudley Ridge's turnout and 543 acre-feet were delivered to Tulare's turnout in March and April pursuant to a long-term change in point of delivery agreement among the Department, Dudley Ridge, and Tulare (SWPAO #02005). A total of 1,070 acre-feet of Dudley Ridge's 2002 Table A amounts was returned to EWA in July and August. (SWPAO #02020)

Kern County Water Agency. A letter agreement, dated March 28, 2003, and executed April 15, 2003, between the Department and Kern, approved an in lieu exchange of a portion of Kern's 2002 approved Table A amounts for stored EWA water. During 2002, a total of 6,744 acre-feet of EWA water was delivered to Kern in March and April, and a total of 3,372 acre-feet of Kern's 2002 Table A amounts was returned to EWA in July and August. (SWPAO #02021)

Santa Clara Valley Water District. A letter agreement, dated March 27, 2003, and executed April 15, 2003, between the Department and Santa Clara, approved an in lieu exchange of a portion of Santa Clara's 2002 approved Table A amounts for up to 2,176 acre-feet of stored EWA water. During 2002, a total of 1,448 acre-feet of EWA water was delivered to Santa Clara in March and April, and a total of 724 acre-feet of Santa Clara's 2002 Table A amounts was returned to EWA in July and August. (SWPAO #02019)

Tulare Lake Basin Water Storage District. A letter agreement, dated March 28, 2003, and executed August 25, 2003, between the Department and Tulare, approved an in lieu exchange of a portion of Tulare's 2002 approved Table A amounts for up to 800 acre-feet of stored EWA

water. During 2002, a total of 675 acre-feet of EWA water was delivered to Tulare in March and April, and a total of 337 acre-feet of Tulare's 2002 Table A amounts was returned to EWA in July and August. (SWPAO #02023)

Turn-in Agreements

Antelope Valley-East Kern Water Agency. A turn-in agreement executed April 1, 2003, between the Department and AVEK, approved the introduction of local water into the California Aqueduct during 2001. The local water was introduced from a temporary turn-in structure located at Reach 22B, and AVEK took delivery of local water by exchange with project water delivered upstream in Reach 22A. During 2001, a total of 152 acre-feet of local water was introduced at Reach 22B and 152 acre-feet of SWP water was delivered to AVEK at Reach 22A. (SWPAO #01029)

Kern County Water Agency. During 2003, a total of 20,486 acre-feet of local water was introduced into California Aqueduct through Kern's existing turnouts in Reaches 12E and 13B. Letter agreements to allow the introduction of local water are pending.

Turnout Agreements

Alameda County Flood Control and Water Conservation District, Zone 7. An agreement dated January 23, 2002, between the Department and Alameda-Zone 7, allowed the construction, operation, and maintenance of the Corbett-Ising Turnout at Milepost 14.2, Reach 4 of the South Bay Aqueduct. The turnout has a design capacity of 6.7 cfs. Construction was essentially completed in 2002, but not formally accepted in 2003.

Antelope Valley-East Kern Water Agency. An agreement dated March 28, 2000, between the Department and AVEK, allowed the construction, operation, and maintenance of the Rancho Vista Turnout at Milepost 339.68, Reach 20B of the California Aqueduct. The turnout has a design capacity of 5 cfs. Construction was completed in March 2000, but was not formally accepted in 2003.

Kern County Water Agency and Belridge Water Storage District. An agreement dated October 29, 2001, among the Department, Kern, and Belridge Water Storage District, allowed the modification, operation, and maintenance of the existing Belridge Turnout No. 1A at Milepost 209.71, Reach 10A of the California Aqueduct. The turnout has a design capacity of 100 cfs. Modification work was completed in 2002, and formally accepted on March 27, 2003.

Agreements and Activities Related to the Monterey Amendments

Turnback Water Pool Program. Pursuant to Article 56(d) of the Monterey Amendments, the eighth year of the Turnback Water Pool Program was initiated through Notice to State Water Project Contractors No. 03-02, dated February 3, 2003. All SWP contractors who signed Monterey Amendments were permitted to participate in the program. The program allowed SWP contractors to offer a portion of their approved 2003 Table A water for sale in a turnback pool for use by interested SWP contractors. Based on Table A supply and demand, the turnback water was allocated among the selling and purchasing contractors. In 2003, 29,770 acre-feet of water were purchased under the Turnback Water Pool Program.

Transactions for Pool A and Pool B of the Turnback Water Pool Program occurred in February and March 2003, respectively. Turnback water sold for $11.90 per acre-foot—50 percent of the Delta Water Rate—through Pool A, and for $5.95 per acre-foot—25 percent of the Delta Water Rate—through Pool B. All money collected through the Turnback Water Pool Program was paid to the selling contractors. The 2003 Turnback Water Pool Program closed April 1, 2003. Notices to State Water Project Contractors describing the Turnback Water Pool Program are available online at www.swpao.water.ca.gov/notices/index.cfm.

Table 9-1 lists contractors who participated in Pool A and Pool B of the Turnback Water Pool Program.

Storage of Water Outside Service Area. Pursuant to Article 56 of the Monterey Amendments, six SWP contractors have agreements with the Department to deliver and store SWP water outside their service area for later use within their service area. The following agreements include provisions concerning the points of delivery and method for transporting such water.

Table 9-1. 2003 Turnback Water Pool Program (Acre-feet)

Contractor	Sold	Purchased
	Pool A	
Butte	375	
Mojave	16,900	
Ventura County	6,750	
Yuba City	2,320	
Alameda County		314
Alameda-Zone 7		583
AVEK		250
Coachella		172
Desert		285
Dudley Ridge		428
Kern		7,476
Kings		30
Metropolitan		15,024
Napa		160
Oak Flat		43
Santa Clara		747
Tulare		833
Total	*26,345*	*26,345*
	Pool B	
Butte	175	
Mojave	2,500	
Ventura	750	
Alameda County		40
Alameda-Zone 7		73
Castaic Lake		90
Coachella		22
Desert		36
Dudley Ridge		54
Kern		943
Kings		4
Metropolitan		1,896
Napa		20
Oak Flat		5
Santa Barbara		43
Santa Clara		94
Tulare		105
Total	*3,425*	*3,425*

Alameda County Flood Control and Water Conservation District, Zone 7. A change in point of delivery agreement pending execution, among the Department, Alameda-Zone 7, and Kern, will provide for the delivery of Alameda-Zone 7's approved 2002 carryover water and a portion of Alameda-Zone 7's approved 2003 SWP water supplies for storage in and later recovery from Semitropic, in accordance with the Alameda County Flood Control and Water Conservation District, Zone 7 and Semitropic Water Storage District Banking Program Agreement. Alameda-Zone 7 signed similar delivery agreements annually since 1998. All return water is to be delivered to Alameda-Zone 7 by December 31, 2013. During 2003, the Department delivered a total of 6,500 acre-feet of Alameda-Zone 7's 2002 extended carryover to Reach 10A for storage in Semitropic. (SWPAO #03008)

Alameda County Water District. A change in point of delivery agreement pending execution, among the Department, Alameda County, and Kern, will provide for the delivery of a portion of Alameda County's approved 2003 SWP water supplies for storage and later recovery from Semitropic, in accordance with the Alameda County and Semitropic Banking Program Agreement. Alameda County has signed similar delivery agreements annually since 1996. All return water is to be delivered to Alameda County by December 31, 2013. During 2003, the Department delivered a total of 18,800 acre-feet of Alameda County's approved SWP water to Reach 10A for storage in Semitropic, of which 16,100 acre-feet were 2003 Table A amounts and 2,700 acre-feet were 2002 extended carryover water. (SWPAO #03014)

Castaic Lake Water Agency. A change in point of delivery agreement pending execution, among the Department, Castaic Lake, and Kern, will provide for the delivery of up to 35,000 acre-feet of Castaic Lake's 2003 approved SWP water supplies for storage in and later recovery from Semitropic, in accordance with the Castaic Lake and Semitropic Banking Program Agreement. All return water is to be delivered to Castaic

Lake by March 31, 2014. No water was delivered in 2003. (SWPAO #03060)

Dudley Ridge Water District. A change in point of delivery agreement pending execution, among the Department, Dudley Ridge, and Kern, will provide for the delivery of up to 1,000 acre-feet of Dudley Ridge's approved 2003 Table A amounts for storage in and later recovery from Kern Water Bank. Dudley Ridge has signed similar delivery agreements annually since 1996. All return water is to be delivered to Dudley Ridge by December 31, 2013. During 2003, the Department delivered 350 acre-feet of Dudley Ridge's approved 2003 Table A amounts for storage in KWB. (SWPAO #03018)

Dudley Ridge Water District. A long-term change in point of delivery agreement pending execution, among the Department, Dudley Ridge, and Kern, will approve the delivery of a portion of Dudley Ridge's approved annual SWP water supplies to Kern to be used within Cawelo Water District, a member unit of Kern, the return of a like amount of such water, and the delivery of local Cawelo water supplies to Dudley Ridge by in lieu exchange for a portion of Cawelo's future allocation of Kern's SWP water supplies. This agreement is effective July 1, 2003, and remains in force until December 31, 2035. No water was delivered in 2003. (SWPAO #03053)

Dudley Ridge Water District. A letter agreement, executed November 10, 1997, among the Department, Dudley Ridge, and Kern, approved the delivery of up to 5,000 acre-feet of Dudley Ridge's 1997 Article 21 water and up to 2,000 acre-feet of Dudley Ridge's Table A amounts to KWB for storage and later recovery. A like amount of water is to be returned to Dudley Ridge by December 31, 2007. During 1997, a total of 5,342 acre-feet was delivered to Kern. During 2002, a total of 721 acre-feet was recovered and delivered to Dudley Ridge at Reach 8D. During 2003, a total of 350 acre-feet was recovered and delivered to Dudley Ridge at Reach 8D. (SWPAO #97021)

Metropolitan Water District of Southern California. A long-term change in point of delivery agreement pending execution, among the Department, Metropolitan, and Kern, will provide the delivery of a portion of Metropolitan's approved SWP supplies for storage in and later recovery from the groundwater basin underlying Kern Delta Water District, a member unit of Kern, in accordance with the Metropolitan and Kern Delta Water Management Program Agreement. During 2003, a total of 20,134 acre-feet of Metropolitan's Table A amounts was delivered to Kern Delta at Reaches 12E and 13B. (SWPAO #03019)

Metropolitan Water District of Southern California. A change in point of delivery agreement pending execution, among the Department, Metropolitan, and Mojave Water Agency, will provide for the delivery of up to 75,000 acre-feet of Metropolitan's 2003 and 2004 approved SWP water supplies for storage in and later recovery from Mojave River Basin within Mojave, in accordance with the Metropolitan and Mojave Water Banking Demonstration Program Agreement. The water is to be returned to Metropolitan by January 15, 2010. During 2003, the Department delivered a total of 24,874 acre-feet of Metropolitan's approved SWP water to Mojave at Reaches 22B and 24. (SWPAO #03057)

Metropolitan Water District of Southern California. A long-term agreement (SWPAO #01013), pending execution among the Department, Metropolitan, and Kern, will approve the delivery of a portion of Metropolitan's annual Table A and other water supplies for storage and later recovery from groundwater basins within Arvin-Edison Water Storage District, in accordance with the Metropolitan and Arvin-Edison Water Management Program Agreement. The return water is to be delivered to Metropolitan from Arvin-Edison and /or by exchange of Metropolitan's water for a like amount of Kern's SWP approved Table A amounts or other water delivered from the California Aqueduct. The water is to be returned to Metropolitan by December 31, 2035.

Before this long-term agreement was prepared, three interim agreements dated December 29, 1997 (SWPAO #97025), September 17, 1998 (SWPAO #98018, first amendment to SWPAO #97025), and April 13, 1999 (SWPAO #99009, second amendment to SWPAO #97025), among the Department, Metropolitan, and Kern, provided temporary authorization for Metropolitan to store water in Arvin-Edison. Water was delivered to Arvin-Edison for storage each year from 1997 to 2000 under these agreements. During 2001, water previously stored under SWPAO #97025 was returned to Metropolitan, completing the agreement. During 2003, a total of 7,297 acre-feet previously stored under SWPAO #98018 was recovered and delivered to Metropolitan at Reach 26A, completing this agreement. During 2003, a total of 5,083 acre-feet previously stored under SWPAO #99009 was recovered and delivered to Metropolitan at Reach 26A. During 2003, a total of 40,631 acre-feet of Metropolitan's Table A amounts was delivered to Arvin-Edison for storage at Reaches 12C and 14E. (SWPAO #01013)

Metropolitan Water District of Southern California. A letter agreement executed April 21, 1993, among the Department, Metropolitan, and Kern, approved the delivery of Metropolitan's 1992 carryover water for storage in and later recovery from Semitropic. Water is to be returned by December 31, 2010. A subsequent long-term agreement, executed August 21, 1995, among the Department, Metropolitan, and Kern, approved the annual delivery of a portion of Metropolitan's annual Table A and other water supplies for storage in and later recovery from Semitropic, in accordance with the Metropolitan and Semitropic's Water Banking Program Agreement. This agreement remains in effect until November 4, 2035. Water was delivered to Semitropic for storage in 1993, and each year from 1995 to 1999. During 2001, a total of 31,500 acre-feet was recovered and delivered to Metropolitan at Reach 30. During 2003, a total of 10,000 acre-feet was recovered and delivered to Metropolitan at Reach 26A, and a total of 70,940 acre-feet of Metropolitan's Table A amounts was delivered to Reach 10A for storage in Semitropic. (SWPAO #95010)

Santa Clara Valley Water District. A change in point of delivery agreement pending execution, among the Department, Santa Clara, and Kern, will provide for the delivery of a portion of Santa Clara's approved 2003 SWP water supplies for storage in and later recovery from Semitropic, in accordance with the Santa Clara and Semitropic Banking Program Agreement. Santa Clara has signed similar delivery agreements annually since 1996. All return water is to be delivered to Santa Clara by December 31, 2013. During 2003, the Department delivered 33,000 acre-feet of Santa Clara's 2003 Table A amounts to Reach 10A for storage in Semitropic. (SWPAO #03051)

Article 21 Water Program

Pursuant to Article 21 of the Monterey Amendments, Article 21 water replaces surplus, wet weather, and Article 12(d) water. The Article 21 water program allows a contractor to take delivery of water over the approved and scheduled Table A amounts for the current year. Article 21 water is available for delivery on a short-term basis as determined by the Department when water is still available after operational requirements for project water deliveries, water quality, and other requirements are being met.

The conditions for the Article 21 Water Program for 2003 were described in the March 14, 2003, Notice to State Water Project Contractors No. 03-03, available online at www.swpao.water.ca.gov/notices/index.cfm. Sixteen participants signed the notice, which indicated acceptance of the criteria, procedures, and charges for the program, and collectively received a total of 59,653 acre-feet of Article 21 water (Table 9-2).

During the Article 21 water program period, unscheduled water was also made available to Empire pursuant to its long-term water supply contract. Empire received 175 acre-feet of unscheduled water in 2003 for agricultural purposes.

Table 9-2. 2003 Article 21 Water Deliveries (Acre-feet)

Contractor	Amount
Castaic Lake	991
Coachella	204
Kings	58
Desert	330
Dudley Ridge	1,928
Empire[a]	175
Kern	27,891
Metropolitan	17,622
Napa	376
Oak Flat	19
San Bernardino	200
San Gabriel	200
San Luis Obispo	36
Santa Barbara	339
Santa Clara	936
Solano	2,280
Tulare	6,243
Total	*59,828*

[a]Unscheduled agricultural water

Flexible Storage Program

Pursuant to Article 54 of the Monterey Amendments, the Flexible Storage Program provides SWP contractors participating in the repayment of the capital costs of Castaic Lake and Lake Perris the option to withdraw water in excess of approved deliveries. The objective of this program is to provide additional flexibility and water management benefits to local participating agencies.

Available "flexible storage" is approximately 50 percent of active storage, providing for 160,000 acre-feet at Castaic Lake and 65,000 acre-feet at Lake Perris. Participating contractors of the Castaic Lake program include Metropolitan, Ventura, and Castaic Lake. Each can withdraw a maximum amount of 153,940 acre-feet, 1,377 acre-feet, and 4,683 acre-feet, respectively. At Lake Perris, Metropolitan can withdraw a maximum amount of 65,000 acre-feet. Any participating contractor is given 5 years to replace the water with Table A amounts, purchased water, exchange water, or local water.

One SWP contractor participated in the Flexible Storage Program in 2003. At the end of 2002, Metropolitan had a zero balance in Castaic Lake and Lake Perris. Metropolitan withdrew 77,804 acre-feet from Castaic Lake in 2003, and replaced 77,804 acre-feet in 2003, resulting in a zero water balance at the end of 2003. Metropolitan withdrew 17,993 acre-feet from Lake Perris, and replaced 17,993 acre-feet of Article 21, carryover, and Table A water in 2003, resulting in a zero water balance at the end of 2003. At the end of 2002, Castaic Lake Water Agency had a negative balance of 395 acre-feet from Castaic Lake. There was no action in 2003. Therefore, at the end of 2003, a negative balance of 395 acre-feet remains in Castaic Lake.

Carryover Programs

Pursuant to Article 56 of the Monterey Amendments, contractors can elect to store project water outside of their service area for later use within their service area. Qualified contractors can request carryover Table A amounts for delivery in the following year to the extent that such deliveries do not adversely affect current or future project operations. Factors that influence how much extended carryover water can be delivered include operational constraints of project facilities, filling of SWP conservation storage facilities, flood control releases, and water quality restrictions. If storage requests exceed the available storage capacity, the amount available is allocated among the contractors requesting storage in proportion to their annual Table A amounts for that year. Six SWP contractors took direct delivery of 75,584 acre-feet of 2002 approved Table A amounts carried over into 2003 as extended carryover. One SWP contractor used 45,600 acre-feet of this extended carryover for flexible storage payback. Two SWP contractors had a combined total of 9,200 acre-feet of their extended carryover delivered to storage outside their service areas.

Pursuant to Article 12(e) of the Water Supply Contract, contractors can carry over approved Table A water previously scheduled during October, November, and December that was not delivered due to local outages of wet conditions. One SWP contractor took delivery of 140 acre-feet of 2002 approved Table A amounts carried over into 2003 as Article 12(e) carryover. Addi-

tionally, another SWP contractor took delivery of 187 acre-feet of 2002 approved Table A amounts carried over into 2003 as Article 45(f) carryover.

2002 Summer Allocation Carryover Program

To help contractors prepare for potentially limited water supplies in 2003, the Department provided a 2002 Summer Allocation Carryover Program on October 11, 2002. Under this program, long-term SWP contractors were allowed to carry over up to 5 percent of their 2003 Table A amounts for temporary storage in San Luis Reservoir during 2003. This program is separate from, and in addition to, other carryover programs afforded by Articles 12(e) and 56 of the long-term water supply contracts. Twelve SWP contractors took a total delivery of 89,204 acre-feet of 2002 approved Table A amounts carried over into 2003 (Table 9-3).

Dry Year Water Purchase Program

In 2003, the Department initiated a Dry Year Water Purchase Program to reduce the possibility of adverse economic impacts and hardship associated with water shortages. Two SWP contractors and two Delta farmers participated in the program by signing a Memorandum of Understanding with the Department. The program participants requested a total of 11,355 acre-feet of dry year water. To meet participant demands, the Department obtained water from Butte Water District who made it available through crop idling.

Table 9-3. 2002 Summer Allocation Carryover Program Deliveries (Acre-feet)

Contractor	Amount
AVEK	7,049
Castaic Lake	4,760
Dudley Ridge	1,452
Metropolitan	54,975
Mojave	3,528
Napa	1,055
Palmdale	1,065
San Bernardino	1,844
Santa Barbara	2,274
Santa Clara	5,000
Solano	1,918
Tulare	4,284
Total	*89,204*

The four participants and the amount of water purchased from the 2003 Dry Year Program is detailed below:

- Kern County Water Agency - 8,741 acre-feet
- Dudley Ridge Water District - 2,220 acre-feet
- Phelps Brothers - 300 acre-feet
- Ronald Conn - 94 acre-feet

The participants entered into separate conveyance agreements with the Department to convey the dry year water across the Delta and through SWP facilities. Actual dry year water received by these participants was less than the amount purchased due to the Delta being in excess conditions during all of May and most of June 2003 which prevented the transfer and conveyance of the dry year water. The cumulative amount of dry year water made available to all participants was 7,653 acre-feet.

Environmental Water Account

EWA is a cooperatively managed program intended to provide protection to the fish of the Bay-Delta Estuary through environmentally beneficial changes and increased flexibility in the operations of the SWP and CVP, at no uncompensated water cost to the projects' water users. Responsibility for implementing EWA rests with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the Department of Fish and Game (management agencies), as well as with the Bureau of Reclamation and the Department (project agencies).

Under EWA, fish protection is achieved by periodically curtailing project water delivery from the Bay-Delta to project water users south of the Delta and replacing it at a later date within the same calendar year. This necessitates the acquisition of alternative sources of project water, called EWA assets, which are used to replace the project water supply (i.e., the undelivered water). EWA assets consist of *purchase assets*,

which are acquired through purchases from willing water sellers; *variable assets*, which are acquired through changes in operations; and *source shifting*, which involves deferral of scheduled delivery of water allocations by willing participants. EWA is considered operational for any year when these assets are in place and Endangered Species Act commitments are provided by the management agencies.

In 2003, EWA's third operational year, a total of 316,216 acre-feet of curtailments for fish protection was requested by the management agencies between January and May. These exports occurred at Clifton Court Forebay (290,213 acre-feet) and Tracy Pumping Plants (25,799 acre-feet) in the Delta. All purchase asset acquisitions in 2003 were made by the Department as single-year transactions and environmental studies were carried out to ensure that the transactions complied with CEQA.

In fall 2002, the SWP backed approximately 20,000 acre-feet of EWA assets into Lake Oroville, transferring the debt from San Luis Reservoir to Lake Oroville. In spring 2003, heavy rains forced Oroville Reservoir into flood control status which led to the spill of 20,000 acre-feet of stored EWA water. In July, the SWP released 8,474 acre-feet of SWP water from Lake Oroville, using EWA's 500 cfs capacity at Clifton Court Forebay and creating a debt in Lake Oroville, as the likelihood of spilling EWA's debt to the SWP from Oroville Reservoir was deemed to be greater than that in San Luis Reservoir. The SWP also backed 18,922 acre-feet of EWA water (Yuba transfer) into Lake Oroville in July.

The Department and the Bureau acquired 90,591 acre-feet in variable assets and 214,914 acre-feet of purchase assets through contract agreements. A source shift was not implemented because there was no risk of low-point problems at San Luis Reservoir. The initial year of EWA operation ended with an 83,437 acre-foot credit of water for use during 2002 EWA actions. The second year of EWA operation ended with a 31,273 acre-foot credit for use during 2003 EWA actions. The third year of EWA ended with a 252 acre-foot credit for use during 2004 EWA actions.

The following section lists the SWP contractors and non-SWP contractors that participated in the EWA Program in 2003.

Purchase Assets

The purchase asset water amounts below represent the total amounts of water acquired for EWA from various sources. These amounts have not been adjusted to reflect conveyance losses.

Kern County Water Agency. An agreement executed on August 27, 2003, between the Department and Kern approved the purchase of up to 198,240 acre-feet of water stored in Kern Water Bank through the exchange of approved Table A water for support of EWA under the CALFED Program. A total of 125,000 acre-feet of Kern's water was purchased and used to repay SWP debt. (SWPAO #03704)

Yuba County Water Agency. An agreement executed on April 22, 2003, between the Department and Yuba approved the transfer of up to 185,000 acre-feet of water from storage in New Bullards Bar Reservoir and groundwater substitution for support of EWA under the CALFED Program. A total of 65,000 acre-feet of Yuba's water was purchased. Of the total, 6,000 acre-feet was used to repay CVP debt and 59,000 was used to repay SWP debt incurred through Delta fish actions (pumping curtailments at Tracy and Banks pumping plants) (SWPAO #03702).

Santa Clara Valley Water District and Kern County Water Agency. An agreement executed on December 1, 2003, between the Department, Santa Clara, and Kern approved the purchase of up to 30,000 acre-feet of water stored in Santa Clara's portion of Semitropic Groundwater Bank through the exchange of approved Table A water for support of EWA under the CALFED Program. A total of 20,000 acre-feet of Santa Clara's water was purchased and used to repay CVP debt. No water was delivered in 2003. (SWPAO #03703)

Metropolitan Water District of Southern California and Kern County Water Agency. An agreement executed on June 4, 2003, between the Department, Metropolitan, and Kern approved the exchange of up to 36,776 acre-feet of water for support of EWA under the CALFED program. The water was delivered by Kern to the Department, conveyed through the California Aqueduct, and delivered to Metropolitan in exchange for Metropolitan's approved Table A water. A total of 29,596 acre-feet of water was exchanged and Kern provided the remaining 7,180 acre-feet directly to the Department. (SWPAO #03700)

South Feather Water and Power Agency. An agreement executed on February 21, 2003, between the Department and South Feather Water and Power Agency, formerly Oroville-Wyandotte Irrigation District, approved the transfer of up to 10,000 acre-feet of water that would otherwise remain in storage from Little Grass Valley Reservoir and Sly Creek Reservoir for support of EWA under the CALFED Program. A total of 4,914 acre-feet of South Feather's water was transferred. (SWPAO #03701)

Operational Assets

Relaxation of the Export/Import Ratio. The Department has the opportunity to gain water credits if the EWA management agencies decide that the E/I ratio can be relaxed, thus allowing the SWP and CVP to pump any extra water that the fisheries do not need. In 2003, relaxation of the E/I ratio resulted in a total of 65,780 acre-feet of water being credited to EWA. (SWPAO #03730)

EWA Share of State Gain. The Department has the opportunity to pump half the CVPIA (b)(2) releases that reach the Delta on behalf of EWA. A total of 19,208 acre-feet of water was pumped at Banks Pumping Plant in 2003, and credited to EWA. (SWPAO #03740).

For additional information on EWA, see Chapter 7, *Water Supply Development and Reliability.*

Miscellaneous Agreements with Other Agencies

In addition to negotiating agreements with SWP contractors to provide for specified water deliveries, the Department also entered into several agreements with other agencies for water conveyance, or exchange, between January 1, 2003, and December 31, 2003.

Water Conveyance Agreements-CVP Water

The Department regularly enters into agreements to convey CVP water such as agreements with contractors receiving water from the Bureau through the Cross Valley Canal, a water conveyance facility that connects with the Aqueduct near Tupman in Kern County. Other agencies or corporations receive CVP water through agreements between the Department and the Bureau, including the U.S. Department of Veterans Affairs, USFWS, and Musco Family Olive Company. Occasionally, the Department also enters into agreements with the Bureau to convey CVP or SWP water from the Delta to O'Neill Forebay through CVP or SWP facilities. Some of these agreements allow the Bureau to make up for curtailed water exports from Tracy Pumping Plant associated with improving conditions for fish in the Delta. Other agreements allow replacing water exports foregone during maintenance and repair of Tracy and Banks Pumping Plants and CVP and SWP conveyance facilities between the Delta and O'Neill Forebay.

Byron-Bethany Irrigation District. An agreement executed May 28, 2003, between the Department and Byron-Bethany Irrigation District, approved the annual diversion of up to 50,000 acre-feet of Byron-Bethany's water from the Delta for agricultural, municipal and industrial uses. Historically, Byron-Bethany diverted water from the Delta under a pre-1914 water right and the diversions were primarily for agricultural purposes during the irrigation season. Land use within the District is changing from strictly agricultural uses to a mixture of agriculture, urban, and industrial which resulted in a change in the pattern of demand within the District from sea-

sonal to year-round use. This agreement describes the nature and extent of the District's diversion rights between the District and the Department, and is effective until December 31, 2035. No water was delivered in 2003. (SWPAO #02027)

Cross Valley Canal. Eight CVP water contractors use CVC to obtain water from the California Aqueduct either by exchange with other agencies or by direct delivery. The eight water contractors are: County of Fresno, County of Tulare, Hills Valley Irrigation District, Kern-Tulare Water District, Lower Tule River Irrigation District, Pixley Irrigation District, Rag Gulch Water District, and Tri-Valley Water District. These agencies have had water conveyance service by the Department since 1976 through

- long-term 3-party contracts with the Department and the Bureau, executed in 1976, and amendments extending the contracts through February 29, 1996; and
- interim renewal contracts: (1) March 1, 1996, through February 28, 1998; (2) March 1, 1998, through February 28, 2000; (3) March 1, 2000, through November 30, 2000; (4) December 1, 2000, through February 28, 2001; (5) March 1, 2001, through February 28, 2002; (6) March 1, 2002 through February 28, 2003; and (7) April 24, 2003 through February 29, 2004.

Between January 1, 2003, and December 31, 2003, the Department delivered CVP water to the CVC contractors as follows:

In May 2003, the following six CVC contractors received part of their 2003-04 approved CVP water: Kern-Tulare Water District (1,076 acre-feet), Rag Gulch Water District (357 acre-feet), Tri-Valley Water District (82 acre-feet), Hills Valley Irrigation District (242 acre-feet), Fresno County Public Works (216 acre-feet), and County of Tulare (383 acre-feet). The water delivered to the CVC contractors totaled 2,356 acre-feet. (SWPAO #s 03300, 03301, 03304, 03305, 03306, and 03307)

Department of Parks and Recreation. Water is provided for recreation facilities at several SWP lakes and reservoirs under an agreement between the Department and the Department of Parks and Recreation, dated October 28, 1971. The agreement implements the provisions of the Davis-Dolwig Act, and specifies maximum quantities of water that can be allocated to each lake per year. The lakes included in the agreement are Del Valle Reservoir, Lake Perris, Castaic Lake and Lagoon, Bethany Reservoir, and the San Luis Division facilities. Allocations to each lake are based on the percentages of Table A water allocated to SWP contractors in a given year.

Madera Irrigation District. On July 22, 2003, Madera Irrigation District requested that the Department convey 1,237 acre-feet of CVP water from the San Joaquin River Exchange Contractor Authority to Madera through SWP facilities. Under an agreement executed on March 22, 2004, the Department delivered 1,200 (1,237 minus 3 percent conveyance loss) acre-feet of water in October 2003. (SWPAO #03318)

Musco Family Olive Company. An agreement dated September 22, 2003, and executed November 21, 2003, among Musco Family Olive Company, Plain View Water District, the Department, and the Bureau, provides for the conveyance of up to 800 acre-feet of Plain View's CVP water to Reach 2A of the California Aqueduct for use by Musco Family Olive Company. A total of 719 acre-feet—95 acre-feet (SWPAO #02320) and 62 acre-feet (SWPAO #03311)—was delivered in 2003 under this agreement. Construction of a permanent turnout is currently being pursued.

U.S. Department of Veterans Affairs. A letter agreement dated November 6, 2002 and executed January 1, 2003, among the U.S. Department of Veterans Affairs, the Department, and the Bureau, provides for the conveyance of up to 450 acre-feet of CVP-approved water to Reach 2B of the California Aqueduct to the U.S. Department of Veterans Affairs' San

Joaquin Valley National Cemetery. A total of 5 acre-feet was delivered to the National Cemetery in Reach 2B of the California Aqueduct in 2003 under this 2002 agreement (SWPAO #02321), and a total of 80 acre-feet was delivered to the National Cemetery in Reach 2B of the California Aqueduct in 2003 under a pending letter agreement. (SWPAO #03312)

U.S. Fish and Wildlife Service Cooperative Agreement. The Bureau initiated a cooperative agreement with the Department to deliver CVP water to the Kern National Wildlife Refuge for USFWS. Under the terms of this cooperative agreement, dated September 9, 1994, up to 26,530 acre-feet of CVP water would be delivered from Check 21 to the Buena Vista Water Storage District Turnout BV-1B, on Reach 10A of the California Aqueduct, from October 1, 1993, through April 10, 1995. Since the cooperative agreement was signed, 13 modifications to the agreement have been executed. Under Modification No. 001, dated October 31, 1994, additional funding was provided. Similar funding adjustments through modifications were made each year to the agreement. Modification No. 013, executed February 3, 2002, extended the agreement through April 30, 2002, and defined the water delivery rates for 2001 and 2002. A new 5-year agreement with the Bureau for Kern National Wildlife Refuge is currently pending. The Department conveyed 14,936 acre-feet of CVP water to Kern National Wildlife Refuge in 2003.

Other Turnout Agreements. In 2003, there was one new turnout agreement with a non-SWP contractor agency.

Plain View Water District. An agreement executed October 1, 2003, between the Department and Plain View Water District, allowed the construction, operation, and maintenance of a permanent Musco Family Olive Turnout at Milepost 12.47, Reach 2A of the California Aqueduct. Construction is currently unscheduled. The agreement contains provisions for submitting plans and specifications within 1 year of executing the agreement.

Water Deliveries

Approved Table A Deliveries

Each year, by October 1, the SWP long-term water contractors submit initial requests for approved Table A deliveries allocated to contractors for use in the subsequent calendar year. Initial approved Table A amounts for the coming year are made by the Department in December and are based on operations studies that assume 90 percent exceedence of historic water supply (where exceedence refers to the possibility that water supply in the coming year will be exceeded by the historic water supply), current reservoir storage, and total requests by the SWP water contractors. Forecasts for the year are updated as hydrological conditions change. Approved Table A amounts are increased or decreased depending on both actual and projected hydrologic conditions.

On October 1, 2002, SWP long-term contractors submitted initial requests for 2003.

The Department approved deliveries of 825,375 acre-feet on December 3, 2002, resulting in initial approved Table A amounts of 20 percent of most SWP contractor requests. The Department increased the 2003 approved Table A amounts to 1.86 million acre-feet, or 45 percent on January 16, 2003. As water conditions improved, approved Table A amounts were increased to 2.06 million acre-feet (50 percent) on March 28; 2.89 million acre-feet (70 percent) on April 24; and finally to 3.71 million acre-feet (90 percent) on May 16.

Notices to State Water Project Contractors informing them of increases or decreases in approved Table A amounts are online at www.swpao.water.ca.gov/notices/index.cfm.

SWP Deliveries

The SWP delivers water for a variety of beneficial uses. In addition to delivering approved Table A water to long-term water supply contractors, the SWP

- conveys water to, and stores water for, other public agencies through special contracts and agreements;
- provides water for wildlife and recreational uses; and
- stores, releases, and delivers local runoff water from SWP facilities to agencies that hold local water rights.

In 2003, 4,223,255 acre-feet of water were conveyed to 27 long-term contractors and 26 other agencies. That amount includes

- 2,901,041 acre-feet of approved Table A water;
- 59,653 acre-feet of Article 21 water and 175 acre-feet of unscheduled water;
- 2,846 acre-feet of SWP water for recreation, fish and wildlife; and
- 1,037,324 acre-feet of water delivered to satisfy water rights settlement agreements and agreements with SWP contractors for local water supplies.

Figure 9-1, located before the tables at the end of the chapter, shows amounts of water delivered to various locations during 2003.

Specific information about water deliveries made to long-term contractors and other agencies during 2003 and historical deliveries from 1962 through 2003 are presented in the following three sections, each with a corresponding table, located at the end of the chapter:

- Water Delivered to Long-term Water Supply Contractors in 2003, by Service Area (Table 9-4);
- Water Delivered in 2003, by Month (Table 9-5); and
- Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962-03 (Table 9-6).

Water Deliveries and Credits to Long-Term SWP Contractors

Table 9-4 shows amounts of water delivered in 2003. The following information is arranged by column number.

2003 Approved Table A Water Delivered. Columns 1 through 6 show a detailed breakdown of approved Table A water delivered to long-term water supply contractors in 2003.

Turnback Pool Water. Column 5 shows 29,770 acre-feet of turnback pool water was delivered to long-term water supply contractors in 2003.

2002 Carryover Approved Table A Water Delivered During 2003. For several years, the Department has offered contractors the opportunity to carry over a portion of their approved Table A water for delivery in the current year to be delivered during the next year.

The carryover program was designed to encourage the most effective and beneficial use of water and to avoid obligating the contractors to use or lose the water by December 31 of each year. The SWP contractors' long-term contracts and amendments state the criteria for carrying over approved Table A water from one year to the next. Column 7 shows 219,915 acre-feet of water was carried over from 2002 for delivery in 2003.

Total Table A Water Delivered. Column 8 shows all approved Table A water delivered in 2003—a total of 2,898,144 acre-feet.

2003 Water Bank Recoveries. Column 9 shows 72,812 acre-feet of water bank recoveries in 2003.

2003 Article 21 Water. Column 10 shows 59,828 acre-feet of 2003 Article 21 water delivered to long-term water supply contractors in 2003 (includes 59,653 acre-feet of Article 21 water and 175 acre-feet of unscheduled water). Long-term water supply contractors who have

not signed the Monterey Amendment receive unscheduled water.

Dry Year Water Purchase Program. Column 11 shows 7,388 acre-feet of Dry Year Water Purchase Program water delivered in 2003.

2003 Article 54 Flexible Storage Withdrawal Recoveries. Column 12 shows 95,797 acre-feet of Article 54, Flexible Storage Withdrawal in 2003.

Total SWP Water Delivered. Column 13 shows 3,134,769 acre-feet of total SWP water delivered in 2003. This includes total approved Table A water, water bank recoveries, Dry Year Water Purchase Program, Flexible Storage Withdrawal, and Article 21 and unscheduled water.

Non-SWP Water Deliveries. Column 14 includes deliveries of nonproject water to long-term water contractors. Nonproject water is generally local and permit water that a SWP contractor has a water right to, or water purchased from, exchanged with, or transferred from non-SWP agencies. In 2003, nonproject water deliveries totaled 51,769 acre-feet.

Total Deliveries. Column 15 shows total amounts of water delivered to long-term contractors. In 2003, the SWP delivered 3,186,528 acre-feet to 27 long-term contractors. This amount included 2,901,041 acre-feet of approved Table A water, 59,828 acre-feet of Article 21 and unscheduled water, and 51,139 acre-feet of nonproject water.

Water Delivered in 2003 by Month

During 2003, the SWP provided water service to 53 agencies, including 27 long-term water contractors. Those agencies and the amounts of water delivered to them by month are listed in Table 9-5, and are summarized below as SWP water and nonproject water.

SWP Water. SWP water as defined in the *long-term water supply contracts,* includes Article 21 water; carryover approved Table A water; current year approved Table A amounts; flexible storage water; transfer and exchange of approved Table A water; and turnback pools A and B.

Related water includes operational flood release and recreation and fish and wildlife. There was no operational flood water released in 2003.

Article 21 Water. The Article 21 water program allows a contractor to take delivery of water over the approved and scheduled Table A amounts for the current year. In 2003, 16 contractors participated in the program. A total of 59,828 acre-feet of Article 21 water was delivered to Napa, Solano, Santa Clara, County of Kings, Dudley Ridge, Castaic Lake, Metropolitan, Kern, Oak Flat, Tulare, San Luis Obispo, Santa Barbara, Coachella, Desert, San Bernardino, and San Gabriel. Empire took delivery of 175 acre-feet of unscheduled water.

2002 Carryover Approved Table A Water. In 2003, 174,315 acre-feet of 2002 approved Table A water were delivered that had been stored in SWP storage facilities in 2002.

Approved Table A Water. A total of 2,735,926 acre-feet of 2003 approved Table A water was delivered to 27 long-term contractors. Also, 174,315 acre-feet of carryover water, and 95,797 acre-feet of flexible storage withdrawal water were delivered in 2003.

Exchanges and Transfers of Approved Table A Water. During 2003, a total of 66,677 acre-feet of approved Table A water was exchanged or transferred to SWP long-term contractors and non-SWP water agencies as follows:

- Kern transferred 8,000 acre-feet to Dudley Ridge;
- Tulare transferred 4,900 acre-feet of water to Westlands and exchanged 14,103 acre-feet with Westlands;
- Metropolitan exchanged 24,874 acre-feet with Mojave;
- Dudley Ridge exchanged 8,700 acre-feet with San Gabriel and transferred 1,100 acre-feet to Tulare; and

- San Bernardino transferred 5,000 acre-feet to Metropolitan.

Turnback Pool Water. A total of 29,770 acre-feet of turnback pool water was delivered to long-term water supply contractors.

Water for Recreation and Fish and Wildlife. A total of 2,846 acre-feet of SWP water was conveyed for recreational use and enhancement of fish and wildlife.

Recreational Use. The SWP delivered 563 acre-feet of water for facilities at Lake Oroville, Lake del Valle, O'Neill Forebay, Silverwood Lake, and Lake Perris. In addition, 1,776 acre-feet were delivered to Castaic Lake and Castaic Lagoon, an impoundment downstream from Castaic Lake devoted entirely to recreation.

Wildlife Management. The SWP delivered 507 acre-feet of water to use in managing wildlife in the Pilibos Wildlife Area, located on about 770 acres of land near O'Neill Forebay, 40 miles south of Los Banos.

Water for North Bay Aqueduct Flow Test. A total of 27 acre-feet was conveyed through the North Bay Aqueduct to test the flow capacity downstream of Barker Slough Pumping Plant, following a clean out of a portion of the pipeline.

Non-SWP Water

In 2003, the Department used SWP facilities to convey non-SWP water for various agencies according to the terms of water rights and water transfer and exchange agreements. Detailed information concerning those conveyances is found under the *Miscellaneous Agreements with Other Agencies* section in this chapter.

Floodwater. Occasionally, during wet years, the Department accepts floodwater from the Kern River into the California Aqueduct through the Kern River-California Aqueduct Intertie under an agreement entitled *Agreement among the State of California, Kern County Water Agency, and the Kern River Interests for Diversions of Floodwaters through the Kern River-California Aqueduct Intertie*, dated November 18, 1975. In 2003, the Department did not accept any floodwater into the California Aqueduct.

Water Rights Water. Water in this category is transported through SWP facilities to long-term SWP contractors and other agencies according to terms of various local water rights agreements. Some water simply passes through SWP transportation facilities; a portion is stored in SWP reservoirs for release at a later time. In 2003, 1,037,324 acre-feet of water in this category were delivered to the Feather River, South Bay, North Bay, and Southern California.

Feather River Area. Ten nonproject agencies in the Feather River area received 1,008,093 acre-feet. Those agencies are

- Last Chance Creek Water District, 6,598 acre-feet
- Thermalito Irrigation District, 2,398 acre-feet
- South Feather Water and Power Agency, formerly Oroville-Wyandotte Irrigation District, 4,879 acre-feet
- Western Canal Water District, 282,251 acre-feet
- Joint Water Districts Board, 682,403 acre-feet
- Oswald Water District, 445 acre-feet
- Tudor Mutual Water Company, 3,220 acre-feet
- Garden Highway Mutual Water Company, 16,303 acre-feet
- Plumas Mutual Water Company, 8,498 acre-feet
- Dana Brothers, 1,098 acre-feet

North Bay Area. In the North Bay Area, 4,600 acre-feet of Solano permit and settlement water were delivered.

South Bay Area. In the South Bay area, a total of 17,290 acre-feet of local water was delivered to Alameda-Zone 7 (9,378 acre-feet) and Alameda County (7,912 acre-feet). These two South Bay Aqueduct contractors hold water rights to runoff from Lake Del Valle watershed.

Southern California. In Southern California, 573 acre-feet of local runoff from the Houston Creek watershed were stored and delivered to Crestline under water rights held by the Department on Houston Creek. The authorized place of use is limited to Crestline.

The Department also released 6,768 acre-feet of local water from Piru Creek to United Water Conservation District, a member unit of Ventura.

Annual Table A Water and Water Delivered Since 1962

Information about annual Table A water and water conveyed for the past 40 years is contained in Table 9-6. The following discussion of conveyed Table A water is arranged according to column numbers.

Annual Table A. Columns 1 through 7 of Table 9-6 show the amount of long-term contractor's annual Table A water by area for years 1962 through 2003 as specified in the Table A schedules of the long-term water supply contracts.

In some instances Table A schedules—projections of each contractor's need for water to 2035—have been amended to meet the needs of individual contractors. The amounts of annual Table A water each contractor may request for years 1962 through 2035 can be found in Table B-4 in Appendix B.

Water Delivered. Columns 8 through 16 show water delivered or conveyed, including initial fill water and operational losses and storage changes.

Approved Table A Water. Column 8 shows amounts of approved Table A water delivered each year from 1962 through 2003.

Article 21 and Unscheduled Water. Article 21 and unscheduled water is water in excess of that required to meet all demands for the year's approved Table A water and water to be stored in SWP reservoirs.

Column 9 shows amounts of Article 21 water, as defined under *SWP Deliveries*, and unscheduled water delivered from 1962 through 2003.

Other Water. Column 10 includes amounts of water classified as other water delivered in 2003, including nonproject water conveyed through SWP facilities and regulated delivery of local supply.

In 2003, a total of 251,447 acre-feet of other water was delivered.

Feather River Diversions. Column 11 includes amounts of water from the Feather River delivered according to agreements for water rights water. In 2003, a total of 1,008,093 acre-feet in this category was delivered to agencies in the Feather River area.

Recreation Water. Column 12 shows water conveyed for recreational use or to provide water to improve water quality for fish and wildlife. In 2003, a total of 2,846 acre-feet of SWP water was conveyed for this purpose.

Initial Fill Water. The quantities listed in Column 14 represent the amounts used to initially fill the aqueducts and reservoirs south of the Delta to maximum operating capacities. Initial filling began in 1962 with the filling of the South Bay Aqueduct and was completed in 1979 when Lake Perris reached its maximum operating capacity of 127,000 acre-feet. In 1996 and 1997, the Coastal Aqueduct was initially filled.

Operational Losses. Column 15 includes the total amounts of water lost through evaporation and seepage, net storage changes in reservoirs south of the Delta, and amounts of inflow from local drainage areas, including inflows into San Luis Canal and from the Kern River Intertie.

Negative values are indicated for years when withdrawals and evaporation from reservoirs south of the Delta exceed the amounts of water added to the reservoirs.

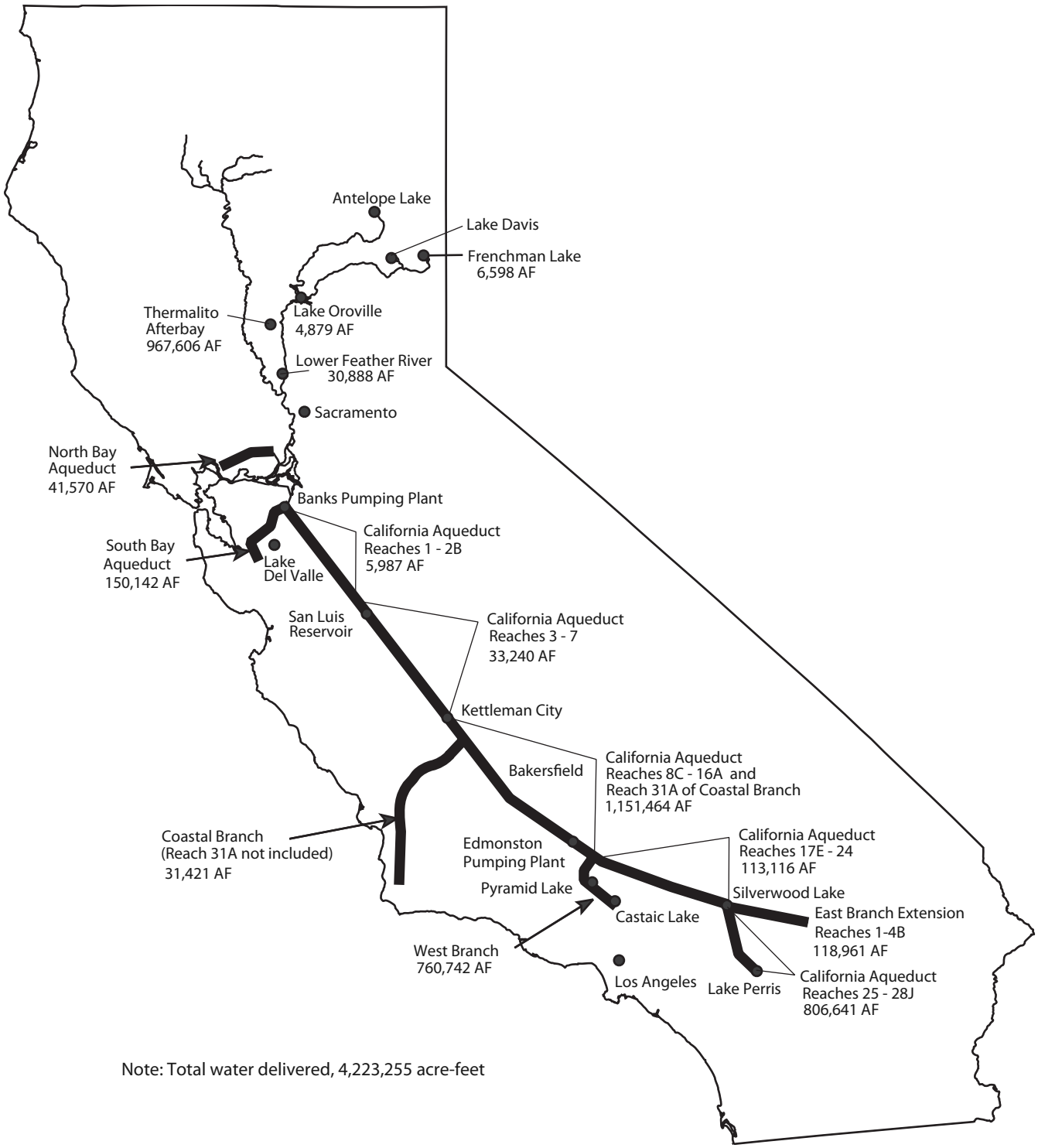

Figure 9-1. Water Delivered in 2003 and Delive ry Locations of Long-Term Water Supply Contractors and Feather River Area Districts with Water Right Agreements with the Department

Table 9-4. Water Delivered to Long-Term Contractors through 2003, by Service Area (Acre-Feet)

Water Contractor or Agency	Approved Table A Water Deliveries														
	2003 Table A without Transfers, Exchanges, and Storage (1)	2003 Table A Supplied (Not a Delivery) (2)	2003 Table A Delivered through Transfers and Exchanges (3)	2003 Table A Delivered to Storage (4)	Pool Water (5)	Total 2003 Table A Delivered (6)	2002 Carryover Table A Delivered during 2003 (7)	Total Table A Deliveries (8)	Water Bank Recoveries (9)	2003 Article 21 Water (10)	2003 Dry Year Water Purchase (11)	2003 Article 54 Flexible Withdrawal (12)	Total SWP Water Delivered (13)	Non-SWP Water Deliveries (14)	Total Deliveries
Feather River Area															
County of Butte	551	0	0	0	0	551	0	551	0	0	0	0	551	0	551
Plumas County Flood Control and Water Conservation District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Yuba City	1,324	0	0	0	0	1,324	0	1,324	0	0	0	0	1,324	0	1,324
North Bay Area															
Napa County Flood Control and Water Conservation District	6,026	0	0	0	180	6,206	1,055	7,261	0	376	0	0	7,637	0	7,637
Solano County Water Agency	25,135	0	0	0	0	25,135	1,918	27,053	0	2,280	0	0	29,333	4,600[p]	33,933
South Bay Area															
Alameda County Flood Control and Water Conservation District-Zone 7	30,695	0	0	6,500[h]	656	31,351	13,099[h]	44,450	0	0	0	0	44,450	10,378[q]	54,828
Alameda County Water District	14,986	0	0	18,800[i]	354	31,440	5,150[i]	36,590	0	0	0	0	36,590	7,912[r]	44,502
Santa Clara Valley Water District	57,000	0	0	33,000[j]	841	90,841	14,104	104,945	0	936	0	0	105,881	3,100[s]	108,981
San Joaquin Valley Area															
Castaic Lake Water Agency	3,506	0	0	0	0	3,506	0	3,506	0	495	0	0	4,001	0	4,001
County of Kings	3,600	0	0	0	34	3,634	0	3,634	0	58	0	0	3,692	0	3,692
Dudley Ridge Water District	39,274	0	9,800[c]	350[k]	482	49,906	1,452	51,358	350	1,928	1,496	0	55,132	0	55,132
Empire West Side Irrigation District	1,074	0	0	0	0	1,074	187	1,261	0	175[m]	0	0	1,436	0	1,436
Kern County Water Agency	697,169	155,565[a]	8,000[d]	0	8,419	713,588	22,380	735,968	0	27,891[n]	5,892	0	790,237	18,428[t]	808,665
Oak Flat Water District	4,059	0	0	0	48	4,107	140	4,247	0	19	0	0	4,266	0	4,266
Tulare Lake Basin Water Storage District	75,373	0	19,003[e]	0	938	95,314	4,284	99,598	0	6,243	0	0	105,841	0	105,841
Central Coastal Area															
San Luis Obispo County Flood Control and Water Conservation District	4,417	0	0	0	0	4,417	0	4,417	0	36	0	0	4,453	0	4,453
Santa Barbara County Flood Control and Water Conservation District	24,312	0	0	0	43	24,355	2,274	26,629	0	339	0	0	26,968	0	26,968
Southern California															
Antelope Valley-East Kern Water Agency	52,730	0	0	0	250	52,980	7,049	60,029	0	0	0	0	60,029	0	60,029
Castaic Lake Water Agency	46,389	0	0	0	90	46,479	4,760	51,239	0	496	0	0	51,735	0	51,735
Coachella Valley Water District	14,045	0	0	0	194	14,239	0	14,239	0	204	0	0	14,443	0	14,443
Crestline-Lake Arrowhead Water Agency	1,563	0	0	0	0	1,563	0	1,563	0	0	0	0	1,563	573[u]	2,136
Desert Water Agency	23,168	0	0	0	321	23,489	0	23,489	0	330	0	0	23,819	0	23,819
Littlerock Creek Irrigation District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Metropolitan Water District of Southern California	1,261,502	107,771[b]	24,874[f]	131,705[l]	16,920	1,435,001	134,845[w]	1,524,246	51,976	17,622[o]		95,797	1,689,641	0	1,689,641
Mojave Water Agency	10,907	0	0	0	0	10,907	3,528	14,435	0	0	0	0	14,435	0	14,435
Palmdale Water District	9,701	0	0	0	0	9,701	1,846	11,547	0	0	0	0	11,547	0	11,547
San Bernardino Valley Municipal Water District	20,371	0	5,000[g]	0	0	25,371	1,844	27,215	0	200	0	0	27,415	0	27,415
San Gabriel Valley Municipal Water District	13,034	0	0	0	0	13,034	0	13,034	0	200	0	0	13,234	0	13,234
San Gorgonio Pass Water Agency	116	0	0	0	0	116	0	116	0	0	0	0	116	0	116
Ventura County Watershed Protection District	5,000	0	0	0	0	5,000	0	5,000	0	0	0	0	5,000	6,768[v]	11,768
Total	2,447,027	263,336	66,677	190,355	29,770	2,724,629	219,915	2,898,944	72,812	59,828	7,388	95,797	3,134,769	51,769	3,186,528

[a]Kern supplied 125,000 af to EWA; exchanged 350 af of Dudley Ridge for Kern Water Bank water exchanged 10,000 af to Metropolitan for Semitropic Water Bank water; exchanged 6,436 af with Del Puerto Water District; exchanged 4,284 af with Panoche Water District; exchanged 9,495 af to San Luis Water District.

[b]Metropolitan supplied 29,596 af to EWA; used 45,600 af of carryover for flexible storage payback; used 32,575 af for flexible storage payback.

[c]Dudley Ridge exchanged 8,700 af with San Gorgonio; transferred 1,100 af to Tulare.

[d]Kern transferred 8,000 af to Dudley Ridge.

[e]Tulare exchanged 14,103 af with Westlands; transferred 4,900 af to Westlands.

[f]Metropolitan exchanged 24,874 af with Mojave.

[g]San Bernardino transferred 5,000 af to Metropolitan.

[h]6,500 af of 2002 carryover water delivered to Semitropic Water Bank (not shown in Column 6).

[i] 2,700 af of 2002 carryover water delivered to Semitropic Water Bank(not shown in Column 6).

[j]Delivered to Semitropic Water Bank.

[k]350 af delivered to Kern Water Bank.

[l]40,631 af to Arvin-Edison Water Bank, 20,134 af to Kern Delta Water Bank, and 70,940 af to Semitropic Water Bank..

[m]Empire's unscheduled water.

[n]Kern's Article 21 includes 7,180 af delivered to EWA.

[o]Metropolitan's Article 21 was used for flexible storage payback

[p]Santa Clara's permit and settlement water.

[q]Alameda Zone-7's 9,378 af of local water and 1,000 af of Byron-Bethany water.

[r]Alameda County's 7,912 af of local water.

[s]6,000 af of transferred water from Del Puerto WD, transferred 4,000 af from Panoche WD, and transferred 8,418 af from San Luis Water District.

[t]Transferred water from Browns Valley Irrigation District.

[u]Crestline's local water.

[v]Ventura's local water.

[w]Metropolitan used 45,600 af of carryover for flexible storage payback (not a delivery and not shown in Column 8).

Table 9-5. Water Delivered in 2003, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2003 Total Deliveries	2003 Contract Table A
Feather River Area														
City of Yuba City														
Approved Table A water	0	0	0	0	0	0	741	583	0	0	0	0	1,324	9,600
Pool A water sale[a]	2,320	0	0	0	0	0	0	0	0	0	0	0	2,320	
Agency total	0	0	0	0	0	0	741	583	0	0	0	0	1,324	
County of Butte														
Approved Table A water	34	18	107	62	3	95	54	24	71	5	1	77	551	3,500
Pool A water sale[a]	375	0	0	0	0	0	0	0	0	0	0	0	375	
Pool B water sale[a]	175	0	0	0	0	0	0	0	0	0	0	0	175	
Agency total	34	18	107	62	3	95	54	24	71	5	1	77	551	
Plumas County Flood Control and Water Conservation District														
Approved Table A water	0	0	0	0	0	0	0	0	0	0	0	0	0	1,690
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water	0	0	0	0	0	1	1	0	1	0	0	0	3	
Last Chance Creek Water District														
Regulated delivery of local supply	0	0	0	0	1,127	2,493	1,210	990	611	167	0	0	6,598	
Thermalito Irrigation District														
Regulated delivery of local supply	31	50	123	112	193	367	402	336	301	269	112	102	2,398	
South Feather Water and Power Agency														
Regulated delivery of local supply	0	0	0	0	200	893	922	922	893	678	199	172	4,879	
Western Canal Water District														
Regulated delivery of local supply	3,130	0	0	1,110	30,937	49,316	58,530	47,044	15,467	27,994	33,700	15,023	282,251	
Joint Water Districts Board														
Regulated delivery of local supply	31,850	0	0	2,027	62,250	110,610	123,760	106,821	66,885	46,240	71,130	60,830	682,403	
Oswald Water District														
Regulated delivery of local supply	0	0	0	0	13	130	156	93	53	0	0	0	445	
Tudor Mutual Water Company														
Regulated delivery of local supply	0	0	0	0	97	961	1,025	426	553	158	0	0	3,220	
Garden Highway Mutual Water Company														
Regulated delivery of local supply	0	0	0	696	2,205	3,050	3,906	2,801	1,567	2,017	61	0	16,303	
Plumas Mutual Water Company														
Regulated delivery of local supply	0	0	0	0	645	2,123	2,432	929	1,748	621	0	0	8,498	
Dana Brothers														
Regulated delivery of local supply	0	0	0	32	189	439	285	51	25	77	0	0	1,098	
SWP	34	18	107	62	3	96	796	607	72	5	1	77	1,878	
Non-SWP	35,011	50	123	3,977	97,856	170,382	192,628	160,413	88,103	78,221	105,202	76,127	1,008,093	
Feather River Area Total	35,045	68	230	4,039	97,859	170,478	193,424	161,020	88,175	78,226	105,203	76,204	1,009,971	14,790
North Bay Area														
Napa County Flood Control and Water Conservation District														
Approved Table A water	0	42	554	690	286	578	731	681	673	473	438	880	6,026	21,475
Article 21 water	0	0	376	0	0	0	0	0	0	0	0	0	376	
2002 summer allocation carryover	335	720	0	0	0	0	0	0	0	0	0	0	1,055	
Pool A water	0	0	0	0	0	160	0	0	0	0	0	0	160	
Pool B water	0	0	0	0	0	20	0	0	0	0	0	0	20	
Flow capacity test[a]	9	0	0	0	0	0	0	0	0	0	0	0	9	
Agency Total	335	762	930	690	286	758	731	681	673	473	438	880	7,637	
Solano County Water Agency														
Approved Table A water	0	0	100	925	2,365	3,464	5,320	4,126	3,531	1,660	1,546	2,098	25,135	46,756
Article 21 water	0	0	0	0	1,210	1,070	0	0	0	0	0	0	2,280	
2002 summer allocation carryover	279	782	857	0	0	0	0	0	0	0	0	0	1,918	
Solano settlement water	0	0	0	0	0	0	0	0	0	860	0	0	860	
Vallejo permit water	0	0	0	0	0	0	0	0	26	1,338	941	1,435	3,740	
Flow capacity test[a]	18	0	0	0	0	0	0	0	0	0	0	0	18	
Agency Total	279	782	957	925	3,575	4,534	5,320	4,126	3,557	3,858	2,487	3,533	33,933	
Delivery of Dry Year Purchase Water to Non-SWP Agencies														
Dry year purchase water to Ronald Conn	0	0	0	0	0	0	0	0	0	0	63	0	63	
Dry year purchase water to the Phelps Brothers	0	0	0	0	0	0	0	0	0	0	202	0	202	
SWP	614	1,544	1,887	1,615	3,861	5,292	6,051	4,807	4,204	2,133	1,984	2,978	36,970	
Non-SWP	0	0	0	0	0	0	0	0	26	2,198	941	1,435	4,600	
North Bay Area Total	614	1,544	1,887	1,615	3,861	5,292	6,051	4,807	4,230	4,331	2,925	4,413	41,570	68,231
South Bay Area														
Alameda County Flood Control and Water Conservation District, Zone 7														
Approved Table A water	0	0	286	1,136	231	3,778	6,369	5,820	4,629	5,041	1,945	1,460	30,695	78,400
Article 56 extended carryover stored in Semitropic[a]	3,800	2,700	0	0	0	0	0	0	0	0	0	0	6,500	
Article 56(c) extended carryover	1,513	2,304	2,782	0	0	0	0	0	0	0	0	0	6,599	
Local water	283	338	292	2,255	3,904	1,185	65	39	637	34	20	326	9,378	

[a]Excluded water from Agency Total

Table 9-5. Water Delivered in 2003, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2003 Total Deliveries	2003 Contract Table A
Pool A water	0	0	0	0	0	583	0	0	0	0	0	0	583	
Pool B water	0	0	0	0	0	73	0	0	0	0	0	0	73	
Transfer water from Byron-Bethany	0	0	0	0	0	0	0	0	500	500	0	0	1,000	
Agency Total	1,796	2,642	3,360	3,391	4,135	5,619	6,434	5,859	5,766	5,575	1,965	1,786	48,328	
Alameda County Water District														
Approved Table A water	0	0	0	0	0	566	3,116	2,733	3,471	3,608	722	770	14,986	42,000
Approved Table A water stored in Semitropic[a]	0	0	0	0	10,000	6,100	0	0	0	0	0	0	16,100	
Article 56 extended carryover water stored in Semitropic[a]	2,000	700	0	0	0	0	0	0	0	0	0	0	2,700	
Article 56C extended carryover	918	1,169	363	0	0	0	0	0	0	0	0	0	2,450	
Local water	203	0	1,207	1,491	1,841	2,053	65	599	84	34	19	316	7,912	
Pool A water	0	0	0	0	0	314	0	0	0	0	0	0	314	
Pool B water	0	0	0	0	0	40	0	0	0	0	0	0	40	
Agency Total	1,121	1,169	1,570	1,491	1,841	2,973	3,181	3,332	3,555	3,642	741	1,086	25,702	
Santa Clara Valley Water District														
Advanced approved Table A water	0	0	0	0	0	0	0	0	0	0	0	620	620	100,000
Approved Table A water	0	0	3,675	4,842	6,131	6,923	7,295	6,250	9,656	4,187	3,407	4,014	56,380	
Approved Table A water stored in Semitropic[a]	0	0	0	0	0	20,000	0	0	9,500	3,500	0	0	33,000	
Article 21 water	0	0	714	222	0	0	0	0	0	0	0	0	936	
Article 56C extended carryover	24	6,871	2,209	0	0	0	0	0	0	0	0	0	9,104	
2002 Summer Allocation Carryover	5,000	0	0	0	0	0	0	0	0	0	0	0	5,000	
Pool A water	0	0	0	0	0	747	0	0	0	0	0	0	747	
Pool B water	0	0	0	0	0	94	0	0	0	0	0	0	94	
Transfer water from Browns Valley Irrigation District	0	0	0	0	0	0	0	0	0	3,100	0	0	3,100	
Agency Total	5,024	6,871	6,598	5,064	6,131	7,764	7,295	6,250	9,656	7,287	3,407	4,634	75,981	
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water, Lake Del Valle	2	2	4	4	11	19	26	21	20	15	5	2	131	
SWP	7,457	10,346	10,033	6,204	6,373	13,137	16,806	14,824	17,776	12,851	6,079	6,866	128,752	
Non-SWP	486	338	1,499	3,746	5,745	3,238	130	638	1,221	3,668	39	642	21,390	
South Bay Area Total	7,943	10,684	11,532	9,950	12,118	16,375	16,936	15,462	18,997	16,519	6,118	7,508	150,142	220,400
San Joaquin Valley Area														
Castaic Lake Water Agency	0	105	2,197	538	0	0	0	0	0	0	0	666	3,506	12,700
Approved Table A water	0	0	396	99	0	0	0	0	0	0	0	0	495	
Article 21 water	0	105	2,593	637	0	0	0	0	0	0	0	666	4,001	
Agency total														
County of Kings														
Approved Table A water	0	0	0	0	0	500	500	500	500	500	550	550	3,600	4,000
Article 21 water	0	0	50	8	0	0	0	0	0	0	0	0	58	
Pool A water	0	0	0	0	0	0	0	30	0	0	0	0	30	
Pool B water	0	0	0	0	0	0	0	4	0	0	0	0	4	
Agency Total	0	0	50	8	0	500	500	534	500	500	550	550	3,692	
Dudley Ridge Water District														
Approved Table A water	0	2,312	2,540	2,288	5,189	8,296	9,745	8,267	61	399	0	177	39,274	57,343
Approved Table A water in Kern Water Bank[a]	0	0	0	0	0	0	0	0	0	0	0	350	350	
Article 21 water	0	0	1,801	127	0	0	0	0	0	0	0	0	1,928	
Bank water recovery, Kern Water Bank	0	0	350	0	0	0	0	0	0	0	0	0	350	
2002 Summer Allocation Carryover	1,359	93	0	0	0	0	0	0	0	0	0	0	1,452	
Dry Year Water Purchase Program	0	0	0	0	0	0	0	0	0	1,249	247	0	1,496	
Exchange approved Table A water to San Gabriel[a]	0	0	0	0	0	0	0	754	2,555	2,889	2,502	0	8,700	
Pool A water	0	0	0	428	0	0	0	0	0	0	0	0	428	
Pool B water	0	0	0	54	0	0	0	0	0	0	0	0	54	
Transfer of approved water to Tulare[a]	0	0	0	0	0	0	0	0	0	1,100	0	0	1,100	
Transfer of approved from Kern	0	0	0	0	0	0	0	0	5,300	2,700	0	0	8,000	
Agency Total	1,359	2,405	4,691	2,897	5,189	8,296	9,745	8,267	5,361	4,348	247	177	52,982	
Empire West Side Irrigation District														
Approved Table A water	11	395	90	0	200	105	0	0	0	0	0	273	1,074	3,000
Carryover wet	187	0	0	0	0	0	0	0	0	0	0	0	187	
Unscheduled water	0	0	171	4	0	0	0	0	0	0	0	0	175	
Agency Total	198	395	261	4	200	105	0	0	0	0	0	273	1,436	
Kern County Water Agency														
Approved Table A water	1,630	3,446	20,468	12,373	50,130	114,180	190,415	107,059	55,209	49,607	47,967	45,768	696,252	1,000,949
Approved Table A water to EWA[a]	0	0	0	0	0	36,000	36,000	36,000	17,000	0	0	0	125,000	
Approved Table A water to Western Hills	0	0	28	110	114	155	181	104	107	81	29	8	917	
Article 21 water	0	0	18,478	2,233	0	0	0	0	0	0	0	0	20,711	
Article 21 water to EWA	0	0	7,180	0	0	0	0	0	0	0	0	0	7,180	
Article 56C extended carryover	7,031	15,177	172	0	0	0	0	0	0	0	0	0	22,380	

[a]Excluded water from Agency Total

Table 9-5. Water Delivered in 2003, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2003 Total Deliveries	2003 Contract Table A
Dry Year Water Purchase Program	0	0	0	0	0	0	0	0	0	0	5,892	0	5,892	
Exchange approved Table A water for water bank water[a]	0	0	350	0	0	0	0	0	0	0	0	0	350	
Exchange approved Table A water for water bank water[a]	0	0	0	8,867	1,133	0	0	0	0	0	0	0	10,000	
Exchange approved Table A water to Del Puerto[a]	0	0	0	0	0	0	0	0	436	0	0	0	436	
Exchange approved Table A water to Panoche[a]	0	0	0	0	0	0	0	0	284	0	0	0	284	
Exchange approved Table A water to San Luis[a]	0	0	0	0	0	0	0	0	1,067	0	0	0	1,067	
Exchange approved Table A water to Del Puerto[a]	0	0	0	0	0	0	0	0	6,000	0	0	0	6,000	
Exchange approved Table A water to Panoche[a]	0	0	0	0	0	0	0	0	1,129	750	1,168	953	4,000	
Exchange approved Table A water to San Luis[a]	0	0	0	0	0	0	0	0	2,922	4,533	973	0	8,428	
Exchange water from Del Puerto	0	4,942	979	79	0	0	0	0	0	0	0	0	6,000	
Exchange water from Panoche	0	3,070	858	72	0	0	0	0	0	0	0	0	4,000	
Exchange water from San Luis	0	5,000	3,428	0	0	0	0	0	0	0	0	0	8,428	
Pool A water	0	0	0	0	0	0	7,476	0	0	0	0	0	7,476	
Pool B water	0	0	0	0	0	0	943	0	0	0	0	0	943	
Turn-in water recovered by Kern	0	0	678	19,808	0	0	0	0	0	0	0	0	20,486	
Transfer of approved Table A water to Dudley Ridge[a]	0	0	0	0	0	0	0	0	5,300	2,700	0	0	8,000	
Deliveries to water banks in Kern														
Approved Table A water from Alameda County stored in Semitropic	3,800	2,700	0	0	0	0	0	0	0	0	0	0	6,500	
Article 56 extended carryover from Alameda-Zone 7 stored in Semitropic	0	0	0	0	10,000	6,100	0	0	0	0	0	0	16,100	
Article 56 extended carryover from Alameda County stored in Semitropic	2,000	700	0	0	0	0	0	0	0	0	0	0	2,700	
Approved Table A water from Santa Clara stored in Semitropic	0	0	0	0	0	20,000	0	0	9,500	3,500	0	0	33,000	
Approved Table A water from Dudley Ridge stored in Kern Water Bank	0	0	0	0	0	0	0	0	0	0	0	350	350	
Approved Table A water from Metropolitan stored in Semitropic	0	0	0	0	0	16,000	14,940	40,000	0	0	0	0	70,940	
Approved Table A water from Metropolitan stored in Arvin-Edison	0	0	0	0	5,477	13,990	11,799	1,900	1,400	1,520	675	3,870	40,631	
Approved Table A water from Metropolitan stored in Kern Delta	0	0	0	0	0	837	1,491	17,806	0	0	0	0	20,134	
Subtotal (Water Bank Deliveries)	5,800	3,400	0	0	15,477	56,927	28,230	59,706	10,900	5,020	675	4,220	190,355	
Agency Total[a]	14,461	35,035	45,089	34,675	65,721	171,262	227,245	166,869	66,216	54,708	52,563	49,996	983,840	
Oak Flat Water District														
Approved Table A water	0	0	0	194	635	704	926	776	416	400	7	1	4,059	5,700
Article 21 water	0	0	7	12	0	0	0	0	0	0	0	0	19	
Carryover 12(e)	0	18	122	0	0	0	0	0	0	0	0	0	140	
Pool A water	0	0	0	0	0	43	0	0	0	0	0	0	43	
Pool B water	0	0	0	0	0	5	0	0	0	0	0	0	5	
Agency Total	0	18	129	206	635	752	926	776	416	400	7	1	4,266	
Tulare Lake Basin Water Storage District														
Approved Table A water	0	1,288	1,241	2,883	1,077	14,373	12,363	20,616	1,428	3,441	12,275	4,388	75,373	111,127
Article 21 water	0	0	5,993	250	0	0	0	0	0	0	0	0	6,243	
2002 Summer Allocation Carryover	2,413	1,871	0	0	0	0	0	0	0	0	0	0	4,284	
Exchange approved Table A water to Westlands	0	0	0	0	11,103	3,000	0	0	0	0	0	0	14,103	
Pool A water	0	0	0	0	0	0	818	15	0	0	0	0	833	
Pool B water	0	0	0	0	0	0	102	3	0	0	0	0	105	
Transfer approved Table A water to Westlands	0	0	0	0	0	3,200	0	0	0	0	0	700	3,900	
Transfer approved Table A water to Westlands	0	0	0	0	250	250	250	0	0	0	250	0	1,000	
Transfer approved Table A water from Dudley	0	0	0	0	0	0	0	0	0	1,100	0	0	1,100	
Agency Total	2,413	3,159	7,234	3,133	1,077	14,373	13,283	20,634	1,428	4,541	12,275	4,388	87,938	
Westlands Water District														
Exchange approved Table A water from Tulare	0	0	0	0	11,103	3,000	0	0	0	0	0	0	14,103	
Transfer approved Table A water from Tulare	0	0	0	0	0	3,200	0	0	0	0	0	700	3,900	
Transfer approved Table A water from Tulare	0	0	0	0	250	250	250	0	0	0	250	0	1,000	
Agency Total	0	0	0	0	11,353	6,450	250	0	0	0	250	700	19,003	
Recreation/Fish and Wildlife														
Department of Fish and Game, O'Neill Forebay/Lateral 4	23	14	37	3	55	63	93	30	37	37	62	53	507	
Department of Parks and Recreation, O'Neill Forebay/San Luis/Cattle	3	0	2	5	9	10	17	11	9	6	1	1	74	
Total	26	14	39	8	64	73	110	41	46	43	63	54	581	
SWP	18,457	28,119	62,001	41,447	84,239	201,811	252,059	197,121	73,967	63,291	59,816	56,805	1,139,103	
Non-SWP	0	13,012	5,265	151	0	0	0	0	0	1,249	6,139	0	25,816	
San Joaquin Valley Area subtotal	18,457	41,131	67,266	41,568	84,239	201,811	252,059	197,121	73,967	64,540	65,955	56,805	1,164,919	
Other non-SWP Water Conveyed														
Tracy Golf and Country Club	0	0	0	0	0	0	0	0	0	0	0	0	0	
CVP Water Conveyed–Annual Contracts														
Plain View Water District/ Musco Family Olive Company	44	51	0	0	0	0	0	0	0	0	0	0	95	
Plain View Water District/ Musco Family Olive Company	0	0	62	64	63	71	72	72	74	87	56	3	624	
U.S. Department of Veteran Affairs, S.J.V. National Cemetery	1	4	0	0	0	0	0	0	0	0	0	0	5	
U.S. Department of Veteran Affairs, S.J.V. National Cemetery	0	0	3	4	7	9	14	16	15	7	3	2	80	
Subtotal	45	55	65	68	70	80	86	88	89	94	59	5	804	

[a]Excluded water from Agency Total

Table 9-5. Water Delivered in 2003, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2003 Total Deliveries	2003 Contract Table A
Cross Valley Canal Contracts														
CVP water to Tulare	0	0	0	383	0	0	0	0	0	0	0	0	383	
CVP water to Fresno County Public Works	0	0	0	216	0	0	0	0	0	0	0	0	216	
CVP water to Hills Valley Irrigation District	0	0	242	0	0	0	0	0	0	0	0	0	242	
CVP water to Kern-Tulare	0	0	0	1,076	0	0	0	0	0	0	0	0	1,076	
CVP water to Rag Gulch	0	0	0	357	0	0	0	0	0	0	0	0	357	
CVP water to Tri-Valley Irrigation District	0	0	0	82	0	0	0	0	0	0	0	0	82	
Agency Total	0	0	242	2,114	0	0	0	0	0	0	0	0	2,356	
Bureau of Reclamation														
Conveyance of nonproject water to O'Neill Forebay	0	0	0	0	0	0	0	0	6,000	0	0	0	6,000	
Kern National Wildlife Refuge	1,136	2,139	1,291	220	236	145	0	1,008	3,497	0	1,255	4,009	14,936	
Recreation/fish and wildlife water	18	13	34	5	53	60	88	35	38	37	52	43	476	
Transfer of water to Madera Water District	0	0	0	0	0	0	0	0	0	1,200	0	0	1,200	
Agency Total	0	0	0	0	0	0	0	0	6,000	1,200	0	0	7,200	
SWP	0	0	0	0	0	0	0	0	0	0	0	0	0	
Non-SWP	45	55	307	2,182	70	80	86	88	6,089	1,294	59	5	25,772	
San Joaquin Valley Area subtotal	45	55	307	2,182	70	80	86	88	6,089	1,294	59	5	25,772	
SWP (Total)	18,457	28,119	62,001	41,417	84,239	201,811	252,059	197,121	73,967	63,291	59,816	56,805	1,139,103	
Non-SWP (Total)	45	13,067	5,572	2,333	70	80	86	88	6,089	2,543	6,198	5	51,588	
San Joaquin Valley Area Total	18,502	41,186	67,573	43,750	84,309	201,891	252,145	197,209	80,056	65,834	66,014	56,810	1,190,691	1,194,819
Central Coastal Area														
San Luis Obispo County Flood Control and Water Conservation District														
Approved Table A water	180	352	330	325	398	452	476	493	441	423	266	281	4,417	25,000
Article 21 water	0	0	24	12	0	0	0	0	0	0	0	0	36	
Agency Total	180	352	354	337	398	452	476	493	441	423	266	281	4,453	
Santa Barbara County Flood Control and Water Conservation District														
Approved Table A water	0	665	1,887	2,761	3,322	3,193	3,089	2,942	2,686	1,799	717	1,251	24,312	45,486
Article 21 water	0	0	236	103	0	0	0	0	0	0	0	0	339	
Carryover special (2002)	1,414	860	0	0	0	0	0	0	0	0	0	0	2,274	
Pool B water	0	0	0	43	0	0	0	0	0	0	0	0	43	
Agency Total	1,414	1,525	2,123	2,907	3,322	3,193	3,089	2,942	2,686	1,799	717	1,251	26,968	
SWP	1,594	1,877	2,477	3,244	3,720	3,645	3,565	3,435	3,127	2,222	983	1,532	31,421	
Non-SWP	0	0	0	0	0	0	0	0	0	0	0	0	0	
Central Coastal Area Total	1,594	1,877	2,477	3,244	3,720	3,645	3,565	3,435	3,127	2,222	983	1,532	31,421	70,486
Southern California Area														
Antelope Valley-East Kern Water Agency														
Approved Table A water	0	0	187	3,253	5,074	6,972	8,946	8,224	6,797	5,846	3,984	3,447	52,730	141,400
2002 Summer Allocation Carryover	2,274	2,143	2,632	0	0	0	0	0	0	0	0	0	7,049	
Pool A water	0	0	0	0	0	250	0	0	0	0	0	0	250	
Mojave's Approved Table A water delivered through AVEK	0	0	0	84	0	0	162	202	155	108	81	24	816	
Agency Total	2,274	2,143	2,819	3,337	5,074	7,222	9,108	8,426	6,952	5,954	4,065	3,471	60,845	
Castaic Lake Water Agency														
Approved Table A water	0	0	1,964	3,262	3,481	4,122	5,578	5,659	5,216	4,856	3,088	2,395	39,621	82,500
Approved Table A water to the Department	0	0	0	0	768	2,000	2,737	1,263	0	0	0	0	6,768	
Article 21 water	0	0	397	99	0	0	0	0	0	0	0	0	496	
2002 Summer Allocation Carryover	2,609	1,931	220	0	0	0	0	0	0	0	0	0	4,760	
Pool B water	0	0	0	0	0	90	0	0	0	0	0	0	90	
Agency Total	2,609	1,931	2,581	3,361	3,481	4,212	5,578	5,659	5,216	4,856	3,088	2,395	44,967	23,100
Coachella Valley Water District														
Approved Table A water	0	0	0	2,310	2,310	2,310	2,310	3,557	1,248	0	0	0	14,045	(1,748)
Article 21 water	0	0	152	52	0	0	0	0	0	0	0	0	204	
Pool A water	0	0	0	172	0	0	0	0	0	0	0	0	172	
Pool B water	0	0	0	0	0	22	0	0	0	0	0	0	22	
Agency Total	0	0	152	2,534	2,310	2,332	2,310	3,557	1,248	0	0	0	14,443	
Crestline-Lake Arrowhead Water Agency														
Approved Table A water	146	24	0	0	0	166	263	269	250	229	180	36	1,563	5,800
Local water	0	98	122	110	113	28	0	0	0	0	0	102	573	
Agency Total	146	122	122	110	113	194	263	269	250	229	180	36	2,136	
Desert Water Agency														
Approved Table A water	0	0	0	3,810	3,810	3,810	3,810	5,869	2,059	0	0	0	23,168	38,100
Article 21 water	0	0	246	84	0	0	0	0	0	0	0	0	330	
Pool A water	0	0	0	285	0	0	0	0	0	0	0	0	285	
Pool B water	0	0	0	0	0	36	0	0	0	0	0	0	36	
Agency Total	0	0	246	4,179	3,810	3,846	3,810	5,869	2,059	0	0	0	23,819	
Littlerock Creek Irrigation District														
Approved Table A water	0	0	0	0	0	0	0	0	0	0	0	0	0	2,300
Agency Total	0	0	0	0	0	0	0	0	0	0	0	0	0	
Metropolitan Water District of Southern California														
Approved Table A water	0	0	77,525	101,953	134,116	121,735	152,455	154,742	145,886	150,859	115,721	106,510	1,261,502	2,011,500

[a]Excluded water from Agency Total

Table 9-5. Water Delivered in 2003, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2003 Total Deliveries	2003 Contract Table A
Approved Table A water to EWA[a]	0	0	0	0	29,596	0	0	0	0	0	0	0	29,596	
Approved Table A water stored in Semitropic[a]	0	0	0	0	0	16,000	14,940	40,000	0	0	0	0	70,940	
Approved Table A water stored in Arvin-Edison[a]	0	0	0	0	5,477	13,990	11,799	1,900	1,400	1,520	675	3,870	40,631	
Approved Table A water stored in Kern Delta[a]	0	0	0	0	0	837	1,491	17,806	0	0	0	0	20,134	
Article 56(c) extended carryover	0	0	34,270	0	0	0	0	0	0	0	0	0	34,270	
Bank water recovery, Arvin-Edison	5,795	1,502	0	0	0	0	0	0	0	0	0	0	7,297	
Bank water recovery, Arvin-Edison	0	4,186	897	0	0	0	0	0	0	0	0	0	5,083	
Bank water recovery, Semitropic	0	0	0	8,867	1,133	0	0	0	0	0	0	0	10,000	
2002 Summer Allocation Carryover	27,803	23,018	4,154	0	0	0	0	0	0	0	0	0	54,975	
Exchange approved water in behalf of EWA	12,287	15,309	2,000	0	0	0	0	0	0	0	0	0	29,596	
Exchange approved water to Mojave[a]	0	0	0	0	0	0	0	0	0	0	4,683	20,191	24,874	
Flexible storage replacement with Article 21 water (Lake Perris)	0	0	1,139	0	0	0	0	0	0	0	0	0	1,139	
Flexible storage replacement with Article 21 water (Castaic Lake)	0	0	12,000	4,483	0	0	0	0	0	0	0	0	16,483	
Flexible storage replacement with carryover special water (Lake Perris)[a]	0	1,100	0	0	0	0	0	0	0	0	0	0	1,100	
Flexible storage replacement with carryover special water (Castaic Lake)[a]	0	6,000	38,500	0	0	0	0	0	0	0	0	0	44,500	
Flexible storage replacement with Table A water (Lake Perris)[a]	0	0	0	15,754	0	0	0	0	0	0	0	0	15,754	
Flexible storage replacement with Table A water (Castaic Lake)[a]	0	0	0	16,821	0	0	0	0	0	0	0	0	16,821	
Flexible storage withdrawal (Lake Perris)	9,712	8,281	0	0	0	0	0	0	0	0	0	0	17,993	
Flexible storage withdrawal (Castaic Lake)	36,059	41,745	0	0	0	0	0	0	0	0	0	0	77,804	
Pool A water	0	0	0	15,024	0	0	0	0	0	0	0	0	15,024	
Pool B water	0	0	0	0	0	1,896	0	0	0	0	0	0	1,896	
Transfer approved Table A water from Santa Barbara	0	0	0	0	0	0	0	0	0	0	0	5,000	5,000	
Agency Total	91,656	94,041	131,985	130,327	135,249	123,631	152,455	154,742	145,886	150,859	115,721	111,510	1,538,062	
Mojave Water Agency														
Approved Table A water	0	0	395	2,211	1,025	678	1,024	908	1,288	1,871	433	258	10,091	75,800
Mojave's approved Table A water delivered through AVEK	0	0	0	84	0	0	162	202	155	108	81	24	816	
2002 Summer Allocation Carryover	502	671	2,355	0	0	0	0	0	0	0	0	0	3,528	
Exchange approved water from Metropolitan	0	0	0	0	0	0	0	0	0	0	4,683	20,191	24,874	
Pool A water sale[a]	16,900	0	0	0	0	0	0	0	0	0	0	0	16,900	
Pool B water sale[a]	2,500	0	0	0	0	0	0	0	0	0	0	0	2,500	
Agency Total[a]	502	671	2,750	2,211	1,025	678	1,024	908	1,288	1,871	5,116	20,449	38,493	
Palmdale Water District														
Approved Table A water	0	0	148	688	1,021	1,333	1,810	746	1,170	1,566	1,042	177	9,701	21,300
Article 56(c) extended carryover	0	0	781	0	0	0	0	0	0	0	0	0	781	
2002 Summer Allocation Carryover	421	565	79	0	0	0	0	0	0	0	0	0	1,065	
Agency Total	421	565	1,008	688	1,021	1,333	1,810	746	1,170	1,566	1,042	177	11,547	
San Bernardino Valley Municipal Water District														
Approved Table A water	0	0	0	959	865	1,096	1,986	2,384	3,266	3,579	2,541	3,695	20,371	102,600
Article 21 water	0	0	120	80	0	0	0	0	0	0	0	0	200	
2002 Summer Allocation Carryover	1,177	597	70	0	0	0	0	0	0	0	0	0	1,844	
Table A transfer to Metropolitan[a]	0	0	0	0	0	0	0	0	0	0	0	5,000	5,000	
Agency Total	1,177	597	190	1,039	865	1,096	1,986	2,384	3,266	3,579	2,541	3,695	22,415	
San Gabriel Valley Municipal Water District														
Approved Table A water	0	0	0	746	2,713	2,613	2,686	1,936	0	0	0	2,340	13,034	28,800
Article 21 water	0	0	136	64	0	0	0	0	0	0	0	0	200	
Exchange approved water from Dudley	0	0	0	0	0	0	0	754	2,555	2,889	2,502	0	8,700	
Agency Total	0	0	136	810	2,713	2,613	2,686	2,690	2,555	2,889	2,502	2,340	21,934	
San Gorgonio Pass Water Agency														
Approved Table A water	0	0	0	0	0	0	2	14	13	22	26	39	116	4,000
Agency Total	0	0	0	0	0	0	2	14	13	22	26	39	116	
Ventura County Watershed Protection District														
Approved Table A water	154	154	154	154	484	1,186	572	1,501	177	154	154	156	5,000	20,000
Local water from the Department to United Conservation District	0	0	0	0	768	2,000	2,737	1,263	0	0	0	0	6,768	
Pool A water sale[a]	6,750	0	0	0	0	0	0	0	0	0	0	0	6,750	
Pool B water sale[a]	750	0	0	0	0	0	0	0	0	0	0	0	750	
Agency Total	154	154	154	154	1,252	3,186	3,309	2,764	177	154	154	156	11,768	
Recreation/Fish and Wildlife														
Castaic Lake	13	0	16	17	30	34	50	46	50	45	23	32	356	
Castaic Lake to Lagoon	256	0	0	0	0	0	168	182	292	297	0	225	1,420	
Silverwood Lake	2	2	2	2	6	13	18	15	15	14	3	3	95	
Lake Perris	0	0	3	3	2	39	49	47	44	30	18	25	260	
Agency Total	271	2	21	22	38	86	285	290	401	386	44	285	2,131	
Recreation/Fish and Wildlife														
USFWS recreation/fish and wildlife water (Pyramid Lake)	1	1	1	1	1	3	2	2	2	2	0	0	16	
SWP	99,210	100,128	142,042	148,662	156,838	150,401	184,626	188,318	170,481	172,365	134,479	144,553	1,792,103	
Non-SWP	1	99	123	111	882	2,031	2,739	1,265	2	2	0	102	7,357	
Southern California Area Total	99,211	100,227	142,165	148,773	157,720	152,432	187,365	189,583	170,483	172,367	134,479	144,655	1,799,460	2,558,200
SWP Water														
SWP Approved Table A Water														
Agricultural and M&I approved water	2,155	8,801	113,876	148,557	241,225	362,310	453,892	407,954	261,304	245,734	195,795	186,579	2,628,182	

[a]Excluded water from Agency Total

[b]EWA water is not included in the Grand Total to prevent double counting.

Table 9-5. Water Delivered in 2003, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2003 Total Deliveries	2003 Contract Table A
Agricultural and M&I approved water for EWA[a]	0	0	0	0	29,596	36,000	36,000	36,000	17,000	0	0	0	154,596	
Article 21 water	0	0	29,126	3,445	1,210	1,070	0	0	0	0	0	0	34,851	
Article 21 water for EWA	0	0	7,180	0	0	0	0	0	0	0	0	0	7,180	
Article 56(c) extended carryover	15,286	28,921	40,577	0	0	0	0	0	0	0	0	0	84,784	
2002 Summer Allocation Carryover	45,586	33,251	10,367	0	0	0	0	0	0	0	0	0	89,204	
Carryover 12(e) carryover	0	18	122	0	0	0	0	0	0	0	0	0	140	
Carryover (wet)	187	0	0	0	0	0	0	0	0	0	0	0	187	
Exchange approved water	0	0	0	0	11,103	3,000	0	754	2,555	2,889	7,185	20,191	47,677	
Exchange approved water for banked water[a]	0	0	350	8,867	1,133	0	0	0	0	0	0	0	10,350	
Exchange approved water for nonproject water supplied[a]	0	0	0	0	0	0	0	0	11,838	5,283	2,141	953	20,215	
Exchange banked water in behalf of EWA	12,287	15,309	2,000	0	0	0	0	0	0	0	0	0	29,596	
Flexible storage replacement with Article 21 water (Lake Perris)	0	0	1,139	0	0	0	0	0	0	0	0	0	1,139	
Flexible storage replacement with Article 21 water (Castaic Lake)	0	0	12,000	4,483	0	0	0	0	0	0	0	0	16,483	
Flexible storage replacement with carryover water (Lake Perris)[a]	0	1,100	0	0	0	0	0	0	0	0	0	0	1,100	
Flexible storage replacement with carryover water (Castaic Lake)[a]	0	6,000	38,500	0	0	0	0	0	0	0	0	0	44,500	
Flexible storage replacement (Lake Perris)[a]	0	0	0	15,754	0	0	0	0	0	0	0	0	15,754	
Flexible storage replacement (Castaic Lake)[a]	0	0	0	16,821	0	0	0	0	0	0	0	0	16,821	
Flexible storage withdrawal (Lake Perris)	9,712	8,281	0	0	0	0	0	0	0	0	0	0	17,993	
Flexible storage withdrawal (Castaic Lake)	36,059	41,745	0	0	0	0	0	0	0	0	0	0	77,804	
Flow capacity test[a]	27	0	0	0	0	0	0	0	0	0	0	0	27	
Pool A water	0	0	0	15,909	0	2,097	8,294	45	0	0	0	0	26,345	
Pool B water	0	0	0	97	0	2,276	1,045	7	0	0	0	0	3,425	
Pool A water sale[a]	26,345	0	0	0	0	0	0	0	0	0	0	0	26,345	
Pool B water sale[a]	3,425	0	0	0	0	0	0	0	0	0	0	0	3,425	
Pump-in recoveries	0	0	678	19,808	0	0	0	0	0	0	0	0	20,486	
Transfer approved water	0	0	0	0	250	3,450	250	0	5,300	3,800	250	5,700	19,000	
Unscheduled water	0	0	171	4	0	0	0	0	0	0	0	0	175	
Water Bank water recoveries	5,795	5,688	1,247	8,867	1,133	0	0	0	0	0	0	0	22,730	
Agency Total	127,067	142,014	218,483	201,170	254,921	374,203	463,481	408,760	269,159	252,423	203,230	212,470	3,127,381	
SWP Table A-related water														
Recreation/fish and wildlife water	299	18	64	34	113	179	422	352	468	444	112	341	2,846	
Subtotal (SWP water)	127,366	142,032	218,547	201,204	255,034	374,382	463,903	409,112	269,627	252,867	203,342	212,811	3,130,227	
Non-SWP Water														
Other water														
Dry Year Purchase Program	0	0	0	0	0	0	0	0	0	1,249	6,139	0	7,388	
Conveyance of nonproject water to O'Neill Forebay	0	0	0	0	0	0	0	0	6,000	0	0	0	6,000	
Local	35,497	486	1,744	7,833	104,482	175,648	195,495	162,314	88,824	78,289	105,241	76,871	1,032,724	
Solano settlement water	0	0	0	0	0	0	0	0	0	860	0	0	860	
Vallejo permit water	0	0	0	0	0	0	0	0	26	1,338	941	1,435	3,740	
Subtotal	35,497	486	1,744	7,833	104,482	175,648	195,495	162,314	94,850	81,437	112,321	78,306	1,049,235	
CVP Water														
Conveying water to CVP contractor	0	0	0	242	2,114	0	0	0	0	0	0	0	2,356	
Conveying CVP water annual contract	45	55	65	68	70	80	86	88	89	94	59	5	804	
Conveying CVP water (Kern National Wildlife Refuge–the Bureau)	1,136	2,139	1,291	220	236	145	0	1,008	3,497	0	1,255	4,009	14,936	
Conveying CVP water recreation/fish and wildlife water (San Luis/Pyramid)	19	14	35	6	54	63	90	37	40	39	52	43	492	
Delivery of CVP water from CVP/CVC to SWP contractor	0	13,012	5,265	151	0	0	0	0	0	0	0	0	18,428	
Transfer of CVP water to SWP contractor	0	0	0	0	0	0	0	0	500	3,600	0	0	4,100	
Transfer of CVP/CVC water to CVP contractor	0	0	0	0	0	0	0	0	0	1,200	0	0	1,200	
Subtotal (CVP water)	1,200	15,220	6,656	687	2,474	288	176	1,133	4,126	4,933	1,366	4,057	42,316	
Total (Non-SWP water)	36,697	15,706	8,400	8,520	106,956	175,936	195,671	163,447	98,976	86,669	113,687	82,363	1,093,028	
Grand Total	164,063	157,738	226,947	209,724	361,990	550,318	659,574	572,559	368,603	339,536	317,029	295,174	4,223,255	4,126,926

[a]Excluded water from Agency Total

Table 9-6. Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962-03 (Acre-feet)

Year	Annual Table A Water According to Long-Term Water Supply Contract							Water Conveyed								
								Deliveries								
	Upper Feather River Area (1)	*North Bay Area (2)*	*South Bay Area (3)*	*San Joaquin Valley Area (4)*	*Central Coastal Area (5)*	*Southern California Area (6)*	*Total (7)*	*Annual Table A Water (8)*	*Article 21 Surplus and Unscheduled Water[a] (9)*	*Other Water[b] (10)*	*Feather River Diversions[c] (11)*	*Wildlife/ Recreation Water (12)*	*Subtotal (13)*	**Initial Fill Water (14)**	**Operational Losses and Storage Changes[d] (15)**	**Total (16)**
1962	0	0	0	0	0	0	0	0	0	18,289	0	0	18,289	9	272	18,570
1963	0	0	0	0	0	0	0	0	0	22,456	0	0	22,456	71	185	22,712
1964	0	0	0	0	0	0	0	0	0	32,507	0	0	32,507	171	152	32,830
1965	0	0	0	0	0	0	0	0	0	44,105	0	0	44,105	93	729	44,927
1966	0	0	0	0	0	0	0	0	0	67,928	0	0	67,928	0	1,746	69,674
1967	0	0	11,538	0	0	0	11,538	11,538	0	53,605	0	0	65,143	8,328	4,212	77,683
1968	550	0	109,900	77,350	0	3,700	191,500	171,709	121,534	14,777	866,926	0	1,174,946	498,926	117,906	1,791,778
1969	620	0	98,700	163,075	0	5,000	267,395	193,020	72,397	18,829	794,374	0	1,078,620	510,614	72,196	1,661,430
1970	700	0	114,200	202,000	0	5,700	322,600	233,993	133,024	38,080	759,759	0	1,164,856	23,947	2,435	1,191,238
1971	890	0	116,200	251,800	0	6,700	375,590	357,340	296,019	44,119	778,362	8	1,475,848	7,853	5,812	1,489,513
1972	970	0	118,300	413,066	0	209,423	741,759	611,801	423,964	66,638	817,398	6,489	1,926,290	100,274	53,062	2,079,626
1973	1,100	0	120,400	383,652	0	481,100	986,252	694,388	296,416	42,511	800,743	1,155	1,835,213	204,638	53,798	2,093,649
1974	1,230	0	122,400	460,650	0	597,920	1,182,200	874,077	417,676	46,224	911,613	2,118	2,251,708	237,554	10,657	2,499,919
1975	1,610	0	124,500	545,809	0	714,950	1,386,869	1,223,990	622,902	63,793	862,218	3,377	2,776,280	103,352	(94,606)	2,785,026
1976	1,990	0	126,500	543,417	0	836,480	1,508,387	1,373,002	580,110	115,217	946,440	1,745	3,016,514	61,122	(681,025)	2,396,611
1977	2,420	0	128,600	581,400	0	954,901	1,667,321	574,155	0	389,065	581,994	1,111	1,546,325	0	(131,151)	1,415,174
1978	1,850	0	130,700	635,900	0	1,049,584	1,818,034	1,452,699	16,914	121,225	786,517	1,691	2,379,046	64,443	717,370	3,160,859
1979	2,130	0	132,700	702,685	0	1,190,573	2,028,088	1,659,896	648,389	187,630	882,549	1,766	3,380,230	12,302	(83,430)	3,309,102
1980	1,810	500	134,800	758,100	1,946	1,317,614	2,214,770	1,529,749	404,557	46,459	875,045	2,131	2,857,941	0	(26,606)	2,831,335
1981	1,940	650	137,000	818,000	2,813	1,432,065	2,392,468	1,909,562	908,428	279,161	838,557	4,688	3,940,396	0	(802,263)	3,138,133
1982	1,970	800	139,200	876,500	5,626	1,550,449	2,574,545	1,750,024	215,873	154,882	776,330	4,646	2,901,755	0	480,752	3,382,507
1983	2,000	950	141,400	867,118	8,439	1,681,257	2,701,164	1,184,869	13,019	181,453	602,905	7,849	1,990,095	0	(90,997)	1,899,098
1984	3,630	1,100	143,600	979,211	12,698	1,744,098	2,884,337	1,588,619	262,917	381,024	832,332	7,040	3,071,932	0	(140,182)	2,931,750
1985	3,760	1,250	145,800	1,019,049	21,138	1,864,849	3,055,846	1,995,453	307,672	404,842	870,008	4,033	3,582,008	0	92,885	3,674,893
1986	4,190	1,400	148,100	1,091,946	28,210	1,983,890	3,257,736	1,995,636	36,620	193,606	791,737	3,865	3,021,464	0	284,380	3,305,844
1987	4,620	1,550	150,300	1,188,500	35,204	2,103,941	3,484,115	2,130,086	114,907	377,592	831,947	7,672	3,462,204	0	(390,413)	3,071,791
1988	5,060	15,471	152,500	1,246,100	43,722	2,225,482	3,688,335	2,385,122	0	507,076	794,834	4,889	3,691,921	0	(92,850)	3,599,071
1989	5,500	24,615	156,700	1,290,400	56,342	2,424,633	3,958,190	2,853,747	0	474,559	830,500	8,135	4,166,941	0	447,917	4,614,858
1990	6,040	28,190	160,900	1,313,450	70,486	2,500,600	4,079,666	2,582,151	90	424,697	875,099	9,262	3,891,299	0	(528,869)	3,362,430
1991	11,880	29,590	166,400	1,338,011	70,486	2,510,200	4,126,567	549,113	3,521	551,051	565,395	4,879	1,673,959	0	167,435	1,841,394
1992	11,920	32,010	171,900	1,342,300	70,486	2,510,200	4,138,816	1,471,454	1,156	144,789	613,978	2,605	2,233,982	0	(63,541)	2,170,441
1993	11,960	34,620	177,400	1,342,300	70,486	2,510,200	4,146,966	2,315,235	0	254,854	822,589	2,609	3,395,287	0	726,123	4,121,410
1994	12,000	37,215	182,000	1,342,300	70,486	2,510,200	4,154,201	1,749,351	112,625	236,739	874,018	8,200	2,980,933	0	(295,405)	2,685,528
1995	12,050	44,030	184,000	1,342,300	70,486	2,510,200	4,163,066	1,967,093	64,330	78,425	860,077	2,575	2,972,500	0	69,536	3,042,036
1996	12,100	48,225	186,000	1,301,630	70,486	2,492,900	4,111,341	2,514,825	28,647	251,391	934,997	3,907	3,733,767	86	491,550	4,225,403
1997	12,150	49,315	188,000	1,297,300	45,201	2,492,900	4,084,866	2,325,775	21,432	322,000	993,211	4,146	3,666,564	527	(11,806)	3,655,285
1998	12,200	50,420	188,000	1,272,300	45,201	2,517,900	4,086,021	1,725,519	20,288	134,682	872,738	2,108	2,755,335	0	(132,491)	2,622,844
1999	12,250	51,500	188,000	1,272,300	70,486	2,519,900	4,114,436	2,738,891	158,070	85,312	1,108,672	4,324	4,095,269	0	(189,525)	3,905,744
2000	14,000	55,945	210,000	1,205,300	70,486	2,565,900	4,121,631	3,200,677	308,785	322,655	1,085,886	4,030	4,932,032	0	(20,103)	4,911,929
2001	14,670	66,561	220,000	1,185,519	70,486	2,566,900	4,124,136	1,690,926	43,435	477,835	1,078,656	2,929	3,293,781	0	159,983	3,453,764
2002	14,730	67,396	220,000	1,195,219	70,486	2,557,200	4,125,031	2,573,030	37,165	307,162	1,132,938	3,694	4,053,989	0	80,709	4,134,698
2003	14,790	68,231	220,400	1,194,819	70,486	2,558,200	4,126,926	2,901,041	59,828	251,447	1,008,093	2,846	4,223,255	0	459,377	4,682,632
Total	**223,280**	**711,534**	**5,567,038**	**33,040,776**	**1,152,372**	**59,707,709**	**100,402,709**	**59,059,556**	**6,752,710**	**8,240,690**	**30,659,435**	**132,522**	**104,844,913**	**1,834,310**	**725,916**	**107,405,139**

[a] Values include amounts of deliveries to short-term contractors (Mustang Water District, 1970-72; Tracy Golf and Country Club, 1974, 1979, and 1980; Green Valley Water District, 1974, 1975, 1978, 1979, 1980, and 1985; Granite Construction Company, 1980).
[b] Includes amounts of SWP non-Table A water and non-SWP water conveyed for SWP and non-SWP water contractors.
[c] Includes amounts of water diverted under various water rights agreements.
[d] Amounts reflect net effect of (1) operational losses from SWP transportation facilities; (2) changes in reservoir storage south of Delta; (3) storable local inflows to SWP reservoirs; (4) side inflow to San Luis Canal; and (5) inflow into California Aqueduct from Kern River Intertie.

Information for this chapter was provided by the State Water Project Analysis Office.

MANAGEMENT OF THE CALIFORNIA STATE WATER PROJECT

BULLETIN 132-03

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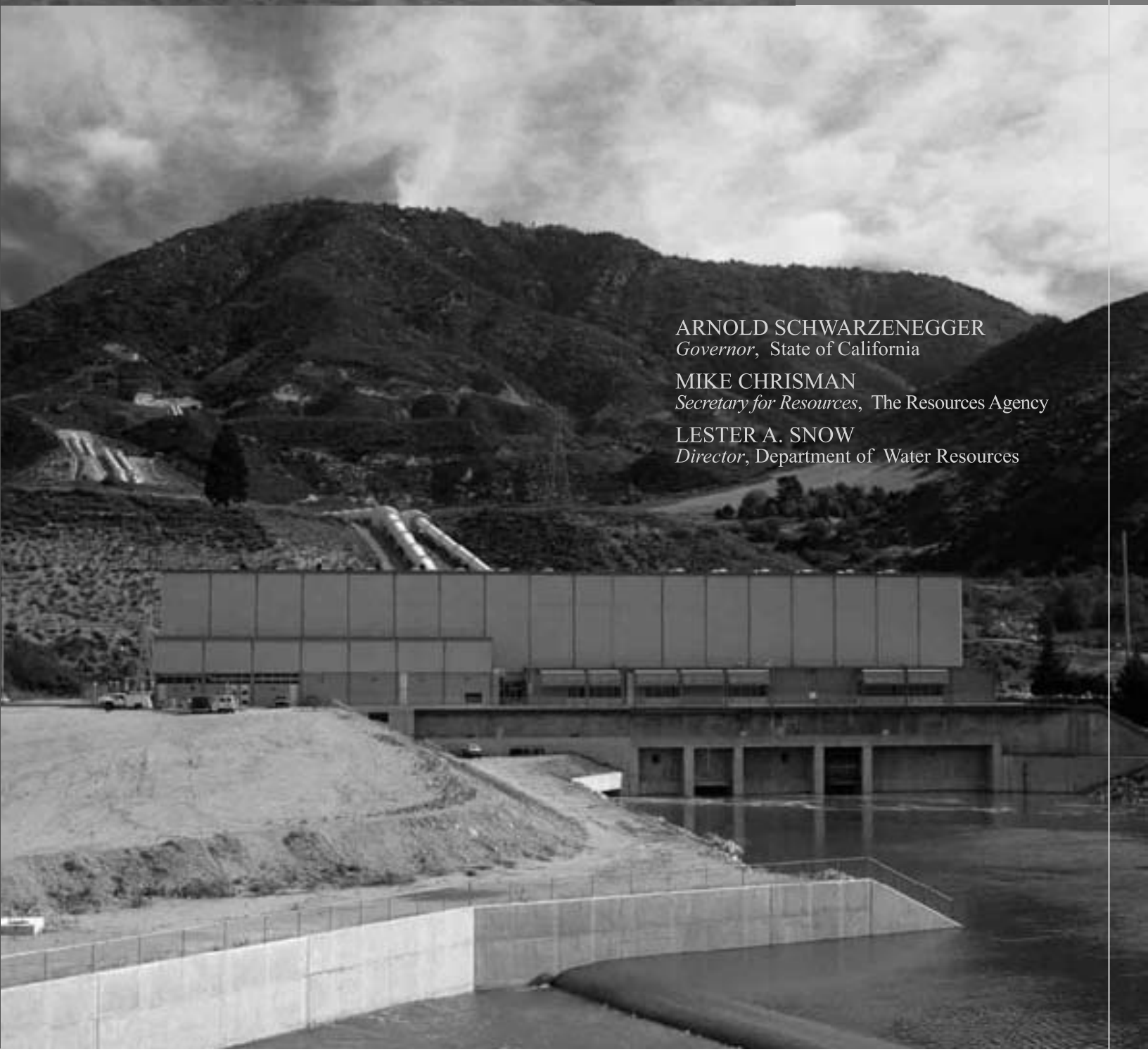


ARNOLD SCHWARZENEGGER
Governor, State of California

MIKE CHRISMAN
Secretary for Resources, The Resources Agency

LESTER A. SNOW
Director, Department of Water Resources

Chapter 9
Water Contracts and Deliveries

Napa Terminal Tank, end of the North Bay Aqueduct

Significant Events in 2002

- The Department executed 5 water conveyance/exchange agreements, 4 turnout agreements, 32 Turnback Water Pool Program agreements, 2 storage agreements, 14 Article 21 Water Program agreements, and 1 unscheduled water program agreement with State Water Project contractors. Pending execution are 14 water conveyance/exchange agreements and 4 storage agreements.
- The State Water Project approved delivery of 70 percent of SWP contractor's Table A amounts in 2002. The SWP conveyed 4,053,989 acre-feet to 26 long-term contractors and 24 other agencies.
- The parties in *Planning and Conservation League, et al. v. Department of Water Resources* commenced mediation on March 26, 2002. On July 18, 2002, the parties reached agreement on principles for settling the lawsuit. The Department began preparing a new EIR and the interested parties continued mediation to convert the settlement principles into a legal agreement.
- The Dry Year Water Purchase Program was initiated to reduce the possibilities of adverse economic impacts and hardship associated with water shortages.
- EWA is a cooperatively managed program intended to provide protection to the fish of the Bay-Delta Estuary through environmentally beneficial changes and increased flexibility in the operations of the SWP and CVP. During EWA's second year of operation, fish protection was achieved by periodically curtailing project water delivery from the Bay-Delta and replacing it later in the year.

The long-term water supply contracts for water service from the State Water Project between the Department and 29 local agencies are basic to the project's construction and operation. In return for State financing, constructing, operating, and maintaining facilities needed to provide water service, the agencies contractually agreed to repay all associated SWP capital and operating costs.

The Department delivers water to SWP contractors according to their long-term water supply contracts.

These contracts set forth Table A amounts, which determine how much water a contractor may request each year from the Department.

Annual Table A represents the total amount of project water that an SWP contractor may request each year, according to that contractor's long-term water supply contract.

Approved Table A represents the amount of annual Table A requested by the contractors and approved for delivery by the Department, based on hydrologic conditions, current reservoir storage, and total requests by the SWP water contractors. The Department is not always able to deliver the quantity of water requested by the

Long-Term SWP Water Supply Contracts

The first water supply contract was signed with the Metropolitan Water District of Southern California on November 4, 1960. The contract was negotiated by the Department and Metropolitan according to terms of the contracting principles for water service contracts announced by Governor Edmund G. Brown on January 20, 1960.

The Metropolitan contract became the prototype for all water contracts; by the end of 1967, 31 agencies had contracted for water. In addition, a water supply contract was executed with the City of West Covina in December 1963, but was terminated in August 1965; the city's Table A amount was transferred to Metropolitan through an amendment to the district's long-term contract with the Department. Long-term contracts with Hacienda Water District and Devil's Den Water District were also terminated when those districts transferred their Table A amounts, through contract amendments, to Tulare Lake Basin Water Storage District (1981) and Castaic Lake Water Agency (1992), respectively. Today the SWP has long-term water supply contracts with 29 agencies. Those contracts have been amended periodically to incorporate mutually desired modifications.

All water contracts signed in the 1960s included an estimate of the date water would first be delivered and a schedule of the amount of water the agency could expect to be delivered annually (annual Table A amounts). That amount was designed to increase gradually until the maximum amount of annual Table A was reached. The total combined maximum annual Table A amount for all water contracting agencies was initially 4,230,000 acre-feet, assuming full development of the SWP.

The contracts were initially designed to be valid for 75 years or until all bonds sold as part of the California Water Resources Development Bond Act were repaid, whichever period was longer. As a result of amendments to contracts in the 1990s, the current combined maximum annual Table A amount totals 4,172,786 acre-feet, and the contracts are in effect for the longest of the following periods: (1) the project repayment period, which extends to the year 2035; (2) 75 years from the date of the contract; or (3) the period ending with the latest maturity date of any bond used to finance the construction costs of project facilities.

contractors; under certain conditions, a lesser amount, allocated according to the long-term water supply contracts and the process noted above, is made available for delivery.

Approved Table A amounts may also be referred to in this chapter as *approved amounts* or *approved water.*

The long-term water supply contracts are amended as needed. During 2002, no amendments were executed.

The Department also enters into miscellaneous agreements with SWP contractors and other agencies—which may be amended periodically—to convey SWP and non-SWP water through the California Aqueduct and approve the construction, operation, and maintenance of turnouts along SWP facilities. During 2002, the Department executed 6 water conveyance/exchange agreements (including one unscheduled water program agreement), 4 turnout agreements, 32 Turnback Water Pool Program agreements, 2 storage agreements, and 14 Article 21 Water Program agreements, with SWP contractors. During 2002, the Department delivered water pursuant to 6 agreements previously executed with the contractors. Pending execution are 14 water conveyance/exchange agreement and 4 storage agreements.

The State Water Project Analysis Office has developed a numbering system for contracts, amendments, and agreements executed by the Department. These numbers, designated as SWPAO #XXXXX, are located in parentheses after each contract, amendment, or agreement.

Detailed information about amendments and agreements follows.

Amendments to Long-Term SWP Water Supply Contracts

All the original contracts signed by the Department and local agencies have been previously amended to incorporate mutually desired changes. Most amendments fall under the following five general categories:

(1) revision of annual Table A amounts in the water supply contracts;
(2) allocation of costs and benefits for the enlargement or extension of the East Branch and extension of the Coastal Branch of the California Aqueduct;
(3) purchase of excess capacity in the California Aqueduct;
(4) provisions to allow contractors, under certain conditions, to carry over undelivered SWP approved Table A water from one year for delivery in the next year; and
(5) implementation of Monterey Agreement principles.

None of the long-term SWP Water Supply Contracts were amended during 2002.

Monterey Amendments

The Monterey Amendments increase the reliability of existing water supplies; provide stronger financial management for the SWP; and increase water management flexibility, providing more tools for local water agencies to maximize use of existing facilities.

Changes to SWP operations incorporated in the Monterey Amendments include changes in determination of approved Table A water, the transfer of Table A amounts and land, financial restructuring, and increased operational flexibility. The Monterey Amendments are discussed in detail in Chapter 1, *Summary of Significant Events*, of Bulletin 132-95.

No Monterey Amendments were executed during 2002. Plumas County Flood Control and Water Conservation District and Empire West Side Irrigation District remain the only long-term SWP contractors who have not signed the Monterey Amendment.

The Planning and Conservation League filed a lawsuit on December 27, 1995, challenging the California Environmental Quality Act

compliance for the Monterey Amendment. A Sacramento County Superior Court judge later dismissed the lawsuit. PCL appealed the decision and on September 15, 2000, the Third District Court of Appeal reversed the Superior Court ruling. On December 13, 2000, the California Supreme Court denied review. The parties commenced mediation on March 26, 2002, and proceedings in Superior Court were stayed pending completion of mediation. On July 18, 2002, the parties reached agreement on principles for settling the lawsuit. The Department began preparing a new EIR and the interested parties continued mediation to convert the settlement principles into a legal agreement. Additional information can be found in Chapter 6, *Legislation and Litigation*.

Miscellaneous Agreements with Long-Term SWP Contractors

2002 Water Conveyance/Exchange Agreements

During 2002, water conveyance/exchange agreements were executed or pending execution with long-term SWP contractors as described below.

Antelope Valley-East Kern Water Agency. A temporary diversion agreement, executed on June 25, 2002, and subsequently amended on August 5, 2002, (Amendment No. 1) and on December 23, 2002, (Amendment No. 2) between the Department and AVEK, provided for the delivery of AVEK's approved 2002 SWP water supplies to Reach 22B of the California Aqueduct. Amendment No. 3, pending execution, allows AVEK to be billed for a use-of-facility charge for Reach 22B. During 2002, a total of 497 acre-feet was delivered to AVEK at Reach 22B. (SWPAO #02034)

County of Kings. A long-term agreement, pending execution among the Department, County of Kings, Tulare Lake Basin Water Storage District, and Westlands Water District, will provide for a change in point of delivery of up to 200 acre-feet of Kings' annual approved Table A amounts and other SWP water supplies to Westlands' turnouts at Reaches 6 and 7 of the California Aqueduct. The water is conveyed to GWF Energy, LLP for use within Kings' service area. No water was delivered in 2002. (SWPAO #02031)

Dudley Ridge Water District. A long-term agreement, pending execution among the Department, Dudley Ridge Water District, and Tulare, will provide for a change in point of delivery of a portion of Dudley Ridge's annual approved SWP water and other water supplies to Tulare's turnout at Reach 8D of the California Aqueduct. Two long-term water supply contract amendments with Tulare (Amendment No. 26) and Dudley Ridge (Amendment No. 24), were executed in December 2001 for the permanent transfer of 3,973 acre-feet of Tulare's Table A amounts to Dudley Ridge to accommodate the needs of Sandridge Partners, who farms in both Tulare and Dudley Ridge. This is a subsequent agreement to provide delivery of water to Sandridge Partners in Dudley Ridge's service area through Tulare's turnout at Reach 8D. A total of 543 acre-feet was delivered to Tulare's turnout at Reach 8D during 2002. (SWPAO #02005)

Empire West Side Irrigation District. An agreement executed April 11, 2002, between the Department and Empire, approved the delivery of unscheduled water to Empire in 2002 at times when project water was not needed for fulfilling approved Table A deliveries or for meeting project operational commitments. A total of 26 acre-feet of unscheduled water was delivered to Empire in 2002. (SWPAO #02006)

Kern County Water Agency. A letter agreement dated September 27, 2002, and executed October 8, 2002, between the Department and Kern, approved the delivery of up to 20,000 acre-feet of 2001 Central Valley Project water from the Bureau of Reclamation on behalf of four CVP contractors. In exchange, Kern returned a like amount of its approved Table A amounts to the CVP contractors by December 31, 2001. The Department petitioned the State Water Resources Control Board in May 2001 for approval for delivery of the return

water. A total of 11,487 acre-feet was delivered to CVP contractors at O'Neill Forebay and 11,487 acre-feet of water was returned from O'Neill Forebay to Kern in 2001. (SWPAO #01010)

Kern County Water Agency. A letter agreement, pending execution between the Department and Kern, will provide for the delivery of up to 13,000 acre-feet of 2001 CVP water from two CVP contractors to Kern. In exchange, Kern would return a like amount of its 2002 approved Table A amounts to the CVP contractors by December 31, 2002. The Department petitioned SWRCB on June 21, 2002, and received approval on August 16, 2002, for a temporary change of place of use for delivery of the return water. A total of 7,400 acre-feet was delivered to Kern from O'Neill Forebay and a total of 7,400 acre-feet of water was returned to the CVP contractors at O'Neill Forebay in 2002. (SWPAO #02014)

Kern County Water Agency. A letter agreement, pending execution among the Department, Kern, and Dudley Ridge, will provide for the delivery of up to 6,400 acre-feet of Kern's 2002 approved Table A amounts to Dudley Ridge. The agreement facilitates the water transfer from Kern to Dudley Ridge on behalf of four landowners—C. J. Ritchie Farms, Sandridge Farms, C.R. Shannon, and the Ritchie Sandridge Partnership—who farm in both Kern and Dudley Ridge service areas. During 2002, a total of 6,133 acre-feet was delivered to Dudley Ridge. (SWPAO #02016)

Kern County Water Agency. A letter agreement, pending execution between the Department and Kern, will provide for the delivery of up to 53,300 acre-feet of CVP water to Kern. Kern acquired this water from CVP (Del Puerto Water District and San Luis Water District) and Cross Valley Canal contractors (Kern-Tulare Water District and Rag Gulch Water District) and requested delivery of the water pursuant to Article 55 of its long-term water supply contract. During 2002, a total of 45,443 acre-feet was delivered to Kern. (SWPAO #02024)

San Bernardino Valley Municipal Water District. San Bernardino Valley Municipal Water District and Metropolitan Water District of Southern California entered Attachment 2, *Coordinated Use Agreement for Conveyance Facilities and State Water Project Water Supplies* on May 14, 2001. The Department responded on February 27, 2002, concurring with the Agreement and acknowledging the coordinated use of local facilities currently existing within San Bernardino Valley's jurisdictional boundaries. This coordinated use involves delivery of San Bernardino Valley's SWP water to Metropolitan's facilities within San Bernardino's service area. This action is permitted under Article 10 of the long-term water supply contract. During 2002, a total of 35,000 acre-feet of San Bernardino Valley's approved Table A amounts was delivered to Metropolitan at Reaches 26A and 30. (SWPAO #02035)

Santa Barbara County Flood Control and Water Conservation District. A letter agreement dated September 13, 2002, and executed October 30, 2002, among the Department, Santa Barbara, and Dudley Ridge, approved the delivery of up to 745 acre-feet of Santa Barbara's 2002 SWP water to Dudley Ridge at Reach 8D. In exchange, Dudley Ridge will return a like amount of its future SWP water to Santa Barbara at Reaches 35, 37, and 38 by December 31, 2012. During 2002, a total of 745 acre-feet was delivered to Dudley Ridge at Reach 8D of the California Aqueduct. (SWPAO #02013)

Tulare Lake Basin Water Storage District. A letter agreement dated May 22, 2002, and executed June 3, 2002, between the Department and Tulare, approved the transfer of up to 5,000 acre-feet of Tulare's 2002 Table A amounts to Westlands at Reaches 5 and 7 of the California Aqueduct, on behalf of two landowners, Hansen Ranches and Newton Brothers, who farm in both the Tulare and Westlands (Vista Verde Farm and Venture Farms Trust) service areas. The Department petitioned SWRCB on May 21, 2002, and received approval on July 25, 2002, for a temporary change of place of use. During 2002, a total of 3,000 acre-feet was delivered to Westlands. (SWPAO #02011)

Tulare Lake Basin Water Storage District. A letter agreement, pending execution between the Department and Tulare, will provide for the delivery of up to 10,000 acre-feet of nonproject water to Tulare at Reaches 8C and 8D (SWPAO #02025). Lower Tule River Irrigation District requested this water be delivered to Tulare and, in exchange, will receive a like amount of Tulare's Tule River water. Tulare requested the water be delivered pursuant to Article 55 of its long-term water supply contract. The water was made available at Banks Pumping Plant. A subsequent Amendment (SWPAO #04022), pending execution between the Department and Tulare, will amend the delivered amounts up to 10,956 acre-feet of nonproject water. During 2002, a total of 10,956 acre-feet of nonproject water was delivered to Tulare. (SWPAO #02025/ #04022)

Water Conveyance/Exchange Agreements Prior to 2002

During 2002, water was delivered pursuant to agreements with SWP contractors executed prior to 2002, as described below.

Alameda County Flood Control and Water Conservation District-Zone 7. A conveyance agreement dated July 28, 1995, between Alameda-Zone 7 and the Department, provides for the transfer of up to 5,000 acre-feet of Byron-Bethany Irrigation District's local water annually to Alameda-Zone 7 through SWP facilities. An amendment to extend the agreement to December 31, 2001, was executed January 17, 2001. Byron-Bethany may only transfer water that has been made available by conservation and crop idling. In 2002, 2,000 acre-feet of Byron Bethany's local water was pumped at Banks Pumping Plant and delivered to Alameda-Zone 7's turnouts in the South Bay Aqueduct. (SWPAO #02325)

Kern County Water Agency. An agreement executed on June 8, 2000, among the Department, Kern, and Western Hills Water District, approved delivery of 8,000 acre-feet of pre-1914 Lower Kern River Rights water banked in Kern's share of the Pioneer Groundwater Banking Project. A portion of Kern's annual Table A amounts will be delivered annually to Western Hills from Reach 2A of the California Aqueduct; in exchange, Kern will take a like amount of banked local water from the Pioneer Groundwater Bank. The Department petitioned SWRCB and by SWRCB Order dated April 21, 2000, Western Hills' service area was included within the authorized SWP place of use. During 2002, a total of 773 acre-feet of Kern's Table A amounts was delivered to Western Hills at Reach 2A. (SWPAO #01001)

Mojave Water Agency. An agreement executed November 13, 1997, among AVEK, Mojave, and the Department approved a change in point of delivery through 2019 of up to 2,250 acre-feet annually of Mojave's approved Table A amount to AVEK's Fairmont Turnout in Reach 19 of the California Aqueduct. Mojave does not have conveyance facilities to provide service to a solar energy generating station located within its service area. AVEK has conveyance capability and has agreed to provide service. During 2002, the Department delivered 1,370 acre-feet of Mojave's 2002 approved Table A amounts through AVEK's turnout at Reach 19. (SWPAO #97003)

Tulare Lake Basin Water Storage District. A letter agreement, dated June 15, 2001, and executed July 26, 2001, between the Department and Tulare, approved the delivery of up to 50,000 acre-feet of nonproject water from Westlands to Tulare between December 2000 and April 15, 2001, in exchange for a like amount of Tulare's Table A amounts during 2001 through 2003. The delivery of SWP exchange water to Westlands will be from the Delta to Reach 7 of the California Aqueduct, for use within the Kings County portion of Westlands' service area. A combined total of 28,145 acre-feet was delivered to Tulare during 2000 and 2001. During 2001, 1,975 acre-feet were returned to Westlands. During 2002, a total of 12,067 acre-feet was delivered to Westlands, leaving a balance of 14,103 acre-feet to be returned to Westlands. (SWPAO #01009)

EWA 2:1 Exchange Agreements

During 2002, seven SWP contractors had agreements with the Department for the in lieu exchange of a portion of their 2002 Table A amounts for stored Environmental Water Account water. A portion of the EWA water subject to "spilling" in San Luis Reservoir was made available for exchange as of midnight March 29, 2002. For every two units of EWA water delivered to each contractor noted below, the contractor returned one unit of its 2002 approved Table A amounts to EWA by August 31, 2002. The following agreements include provisions concerning the exchanges.

Alameda County Flood Control and Water Conservation District, Zone 7. A letter agreement, pending execution between the Department and Alameda-Zone 7, will provide for an in lieu exchange of a portion of Alameda-Zone 7's 2002 approved Table A amounts for up to 2,000 acre-feet of stored EWA water. During 2002, a total of 803 acre-feet of EWA water was delivered to Semitropic in April in accordance with the *Alameda County Flood Control and Water Conservation District, Zone 7 and Semitropic Water Storage District Banking Program Agreement*, pursuant to a change in point of delivery agreement among the Department, Alameda-Zone 7, and Kern (SWPAO #02010), and a total of 402 acre-feet of Alameda-Zone 7's 2002 Table A amounts was returned to EWA in July and August. (SWPAO #02017)

Alameda County Water District. A letter agreement, pending execution between the Department and Alameda County, will provide for an in lieu exchange of a portion of Alameda County's 2002 approved Table A amounts for up to 2,000 acre-feet of stored EWA water. During 2002, a total of 571 acre-feet of EWA water was delivered to Alameda County in March and April, and a total of 286 acre-feet of Alameda County's 2002 Table A amount was returned to EWA in July and August. (SWPAO #02018)

Dudley Ridge Water District. A letter agreement, pending execution between the Department and Dudley Ridge, will provide for an in lieu exchange of a portion of Dudley Ridge's 2002 approved Table A amount for up to 4,000 acre-feet of stored EWA water. During 2002, the Department delivered a total of 2,140 acre-feet of EWA water to Dudley Ridge, of which 1,597 acre-feet were delivered to Dudley Ridge's turnout and 543 acre-feet were delivered to Tulare's turnout in March and April pursuant to a long-term change in point of delivery agreement among the Department, Dudley Ridge, and Tulare (SWPAO #02005). A total of 1,070 acre-feet of Dudley Ridge's 2002 Table A amounts was returned to EWA in July and August. (SWPAO #02020)

Kern County Water Agency. A letter agreement, pending execution between the Department and Kern, will provide for an in lieu exchange of a portion of Kern's 2002 approved Table A amounts for stored EWA water. During 2002, a total of 6,744 acre-feet of EWA water was delivered to Kern in March and April, and a total of 3,372 acre-feet of Kern's 2002 Table A amounts was returned to EWA in July and August. (SWPAO #02021)

Metropolitan Water District of Southern California. A letter agreement, pending execution between the Department and Metropolitan, will provide for an in lieu exchange of a portion of Metropolitan's 2002 approved Table A amounts for up to 57,000 acre-feet of stored EWA water. During 2002, a total of 27,630 acre-feet of EWA water was delivered to Metropolitan in March and April, and a total of 13,815 acre-feet of Metropolitan's 2002 Table A amounts was returned to EWA in July and August. (SWPAO #02022)

Santa Clara Valley Water District. A letter agreement, pending execution between the Department and Santa Clara, will provide for an in lieu exchange of a portion of Santa Clara's 2002 approved Table A amounts for up to 2,176 acre-feet of stored EWA water. During 2002, a total of 1,448 acre-feet of EWA water was delivered to Santa Clara in March and April, and a total of 724 acre-feet of Santa Clara's 2002 Table A amounts was returned to EWA in July and August. (SWPAO #02019)

Tulare Lake Basin Water Storage District. A letter agreement, pending execution between the Department and Tulare, will provide for an in lieu exchange of a portion of Tulare's 2002 approved Table A amounts for up to 800 acre-feet of stored EWA water. During 2002, a total of 675 acre-feet of EWA water was delivered to Tulare in March and April, and a total of 337 acre-feet of Tulare's 2002 Table A amounts was returned to EWA in July and August. (SWPAO #02023)

Turn-in Agreements

During 2002, a total of 36,799 acre-feet of Kern local water was introduced into the California Aqueduct and recovered by Kern through their existing turnouts. Negotiations continue on an agreement to cover Kern's pump-in recoveries.

Turnout Agreements

Alameda County Flood Control and Water Conservation District, Zone 7. An agreement dated January 23, 2002, between the Department and Alameda-Zone 7, allowed the construction, operation, and maintenance of the Corbett-Ising Turnout at Milepost 14.2, Reach 4 of the South Bay Aqueduct. The turnout has a design capacity of 6.7 cfs. Construction was essentially completed in 2002, but was not formally accepted in 2002.

Antelope Valley-East Kern Water Agency. An agreement dated March 28, 2000, between the Department and AVEK, allowed the construction, operation, and maintenance of the Rancho Vista Turnout at Milepost 339.68, Reach 20B of the California Aqueduct. The turnout has a design capacity of 5 cfs. Construction was completed in March 2000, but was not formally accepted in 2002.

Kern County Water Agency and Belridge Water Storage District. An agreement dated October 29, 2001, among the Department, Kern, and Belridge Water Storage District, allowed the modification, operation, and maintenance of the existing Belridge Turnout No. 1A at Milepost 209.71, Reach 10A of the California Aqueduct. The turnout has a design capacity of 100 cfs. Modification work was completed in 2002, but not formally accepted.

Kern County Water Agency and Western Hills Water District. An agreement dated June 8, 2000, among the Department, Kern, and Western Hills, allowed the construction, operation, and maintenance of the Western Hills Turnout at Milepost 42.90, Reach 2A, on the west side of the California Aqueduct. The turnout has a design capacity of 30 cfs. The turnout was formally accepted in October 2002.

Agreements and Activities Related to the Monterey Amendments

Turnback Water Pool Program. Under Article 56(d) of the Monterey Amendments, the seventh year of the Turnback Water Pool Program was initiated through Notice to State Water Project Contractors No. 02-04, dated February 8, 2002. All SWP contractors who signed Monterey Amendments were permitted to participate in the program. The program allowed SWP contractors to offer a portion of their approved 2002 Table A water for sale in a turnback pool for use by interested SWP contractors. Based on Table A supply and demand, the turnback water was allocated among the selling and purchasing contractors. In 2002, 45,252 acre-feet of water were purchased under the Turnback Water Pool Program.

Transactions for Pool A and Pool B of the Turnback Water Pool Program occurred in February and March 2002, respectively. Turnback water sold for $12.16 per acre-foot—50 percent of the Delta Water Rate—through Pool A, and for $6.08 per acre-foot—25 percent of the Delta Water Rate—through Pool B. All money collected through the Turnback Water Pool Program was paid to the selling contractors. The 2002 Turnback Water Pool Program closed April 1, 2002.

Table 9-1 lists contractors who participated in Pool A and Pool B of the Turnback Water Pool Program.

Table 9-1. 2002 Turnback Water Pool Program (Acre-feet)

Contractor	Sold	Purchased
	Pool A	
Mojave	19,110	
San Gorgonio	300	
Ventura	6,750	
Alameda-Zone 7		556
Alameda County		299
Santa Clara		713
Dudley Ridge		409
Kern		7,133
Tulare		795
Santa Barbara		324
AVEK		1,008
Coachella Valley		165
Desert		271
Metropolitan		14,335
Palmdale		152
Total	*26,160*	*26,160*
	Pool B	
Butte	900	
Yuba	3,261	
San Luis Obispo	100	
Mojave	11,379	
San Gorgonio	1,200	
Ventura	2,252	
Napa		283
Alameda County		563
Santa Clara		1,340
Oak Flat		76
Kings		54
Dudley Ridge		768
Kern		13,410
Tulare		1,494
Coachella Valley		309
Desert		510
Palmdale		285
Total	*19,092*	*19,092*

Storage of Water Outside Service Area. Pursuant to Article 56 of the Monterey Amendments, five SWP contractors have agreements with the Department to deliver and store SWP water outside their service area for later use within their service area. The following agreements include provisions concerning the points of delivery and method for transporting such water.

Alameda County Flood Control and Water Conservation District, Zone 7. A change in point of delivery agreement pending execution, among the Department, Alameda-Zone 7, and Kern, will provide for the delivery of Alameda-Zone 7's approved 2001 carryover water and a portion of Alameda-Zone 7's approved 2002 SWP water supplies for storage in and later recovery from Semitropic, in accordance with the *Alameda County Flood Control and Water Conservation District, Zone 7 and Semitropic Water Storage District Banking Program Agreement*. Alameda-Zone 7 signed similar delivery agreements annually since 1998. All return water is to be delivered to Alameda-Zone 7 by December 31, 2012. During 2002, the Department delivered a total of 14,287 acre-feet of Alameda-Zone 7's approved SWP water to Reach 10A for storage in Semitropic, of which 4,000 acre-feet were 2002 Table A amounts, 8,000 acre-feet were 2001 extended carryover water, 1,484 acre-feet were Article 21 water, and 803 acre-feet were EWA exchange water. (SWPAO #02010)

Alameda County Water District. A change in point of delivery agreement, pending execution among the Department, Alameda County, and Kern, will provide for the delivery of a portion of Alameda County's approved 2002 SWP water supplies for storage and later recovery from Semitropic, in accordance with the Alameda County and Semitropic Banking Program Agreement. Alameda County has signed similar delivery agreements annually since 1996. All return water is to be delivered to Alameda County by December 31, 2012. During 2002, the Department delivered a total of 2,000 acre-feet of Alameda County's 2002 Table A amounts and 83 acre-feet of Article 21 water to Reach 10A for storage in Semitropic. (SWPAO #02009)

Castaic Lake Water Agency. A change in point of delivery agreement executed on December 19, 2002, among the Department, Castaic Lake, and Kern, approved the delivery of up to 24,000 acre-feet of Castaic Lake's 2002 approved Table A amounts for storage in and later recovery from Semitropic, in accordance with the *Castaic Lake and Semitropic Banking Program Agreement.* All return water is to be delivered to Castaic Lake by December 31, 2012. During

2002, the Department delivered 24,000 acre-feet of Castaic Lake's 2002 approved Table A amounts to Reach 10A for storage in Semitropic. (SWPAO #02015)

Dudley Ridge Water District. A change in point of delivery agreement executed on September 13, 2002, among the Department, Dudley Ridge, and Kern, approved the delivery of Dudley Ridge's 2001 carryover water, 2002 Article 21 water, and a portion of Dudley Ridge's 2002 SWP water supplies for storage in and later recovery from KWB. Dudley Ridge has signed similar delivery agreements annually since 1996. All return water is to be delivered to Dudley Ridge by December 31, 2012. During 2002, the Department delivered 140 acre-feet of Dudley Ridge's 2001 carryover water and 596 acre-feet of Article 21 water for storage in KWB. (SWPAO #02007)

Dudley Ridge Water District. A change in point of delivery agreement pending execution, among the Department, Dudley Ridge, and San Gabriel Valley Municipal Water District, will provide for the delivery of up to 1,800 acre-feet of Dudley Ridge's 2002 Table A amounts for storage in and later recovery from groundwater basins within San Gabriel. All return water is to be delivered to Dudley Ridge by December 31, 2012. During 2002, the Department delivered 1,800 acre-feet of Dudley Ridge's 2002 approved Table A amounts to Reach 26A for storage in San Gabriel Valley. (SWPAO #02032)

Dudley Ridge Water District. A letter agreement, executed November 19, 1996, among the Department, Dudley Ridge, and Kern, approved the delivery of up to 5,000 acre-feet of Dudley Ridge's 1996 Article 21 water and up to 1,000 acre-feet of Dudley Ridge's Table A amounts to KWB for storage and later recovery. The transfer was part of an exchange with Kern that allowed three landowners in Dudley Ridge to receive a like amount of water from Kern in future years when they could utilize the water more beneficially. The water is to be returned to Dudley Ridge by December 31, 2006. During 1996, a total of 4,131 acre-feet was delivered to Kern. According to the *Memorandum of Understanding Regarding Operation and Monitoring of Kern Water Bank Groundwater Banking Program*, executed on October 26, 1995, among Kern Water Bank participants, 94 percent of the water stored (3,883 acre-feet with 6 percent loss) will be returned to Dudley Ridge. During 2001, a total of 3,215 acre-feet was recovered and delivered to Dudley Ridge at Reach 8D. During 2002, a total of 668 acre-feet was recovered and delivered to Dudley Ridge at Reach 8D, completing this agreement. (SWPAO #96019)

Dudley Ridge Water District. A letter agreement, executed November 10, 1997, among the Department, Dudley Ridge, and Kern, approved the delivery of up to 5,000 acre-feet of Dudley Ridge's 1997 Article 21 water and up to 2,000 acre-feet of Dudley Ridge's Table A amounts to KWB for storage and later recovery. A like amount of water is to be returned to Dudley Ridge by December 31, 2007. During 1997, a total of 5,342 acre-feet was delivered to Kern. During 2002, a total of 721 acre-feet was recovered and delivered to Dudley Ridge at Reach 8D. (SWPAO #97021)

Santa Clara Valley Water District. A change in point of delivery agreement pending execution, among the Department, Santa Clara, and Kern, will provide for the delivery of a portion of Santa Clara's approved 2002 SWP water supplies for storage in and later recovery from Semitropic, in accordance with the *Santa Clara and Semitropic Banking Program Agreement*. Santa Clara has signed similar delivery agreements annually since 1996. All return water is to be delivered to Santa Clara by December 31, 2012. During 2002, the Department delivered 3,311 acre-feet of Santa Clara's 2001 carryover water to Semitropic. (SWPAO #02008)

Article 21 Water Program

Pursuant to Article 21 of the Monterey Amendments, Article 21 water replaces surplus, wet weather, and Article 12(d) water. The Article 21 water program allows a contractor to take delivery of water over the approved and scheduled Table A amounts for the current year. Article 21 water is available for delivery on a

short-term basis as determined by the Department when water is still available after operational requirements for project water deliveries, water quality, and other requirements are being met.

The conditions for the Article 21 Water Program for 2002 were described in the January 30, 2002, Notice to State Water Project Contractors No. 02-02. Fourteen participants signed the notice, which indicated acceptance of the criteria, procedures, and charges for the program, and collectively received a total of 37,139 acre-feet of Article 21 water.

Since Empire has not signed the Monterey Amendment, it may still receive unscheduled water for agricultural purposes. Empire received 26 acre-feet of unscheduled water in 2002.

Flexible Storage Program

Pursuant to Article 54 of the Monterey Amendments, the Flexible Storage Program provides SWP contractors participating in the repayment of the capital costs of Castaic Lake and Lake Perris the option to withdraw water in excess of approved deliveries. The objective of this program is to provide additional flexibility and water management benefits to local participating agencies.

Available "flexible storage" is approximately 50 percent of active storage, providing for 160,000 acre-feet at Castaic Lake and 65,000 acre-feet at Lake Perris. Participating contractors of the Castaic Lake program include Metropolitan, Ventura, and Castaic Lake. Each can withdraw a maximum amount of 153,940 acre-feet, 1,377 acre-feet, and 4,683 acre-feet, respectively. At Lake Perris, Metropolitan can withdraw a maximum amount of 65,000 acre-feet. Any participating contractor is given 5 years to replace the water with Table A amounts, purchased water, exchange water, or local water.

Two SWP contractors participated in the Flexible Storage Program in 2001. Metropolitan had a negative balance of 10,692 acre-feet in Lake Perris at the end of 2001 and replaced 10,692 acre-feet in 2002, resulting in a zero water balance at the end of 2002. Metropolitan had a negative balance of 64,300 acre-feet in Castaic Lake at the end of 2001 and replaced 64,300 acre-feet in 2002, resulting in a zero water balance at the end of 2002. Castaic Lake Water Agency withdrew 395 acre-feet from Castaic Lake in 2002, leaving a negative balance of 395 acre-feet at the end of 2002.

Extended Carryover Program

Pursuant to Article 56 of the Monterey Amendments, contractors can elect to store project water outside of their service area for later use within their service area. Qualified contractors can request carryover Table A amounts for delivery in the following year to the extent that such deliveries do not adversely affect current or future project operations. Factors that influence how much extended carryover water can be delivered include operational constraints of project facilities, filling of SWP conservation storage facilities, flood control releases, and water quality restrictions. If storage requests exceed the available storage capacity, the amount available is allocated among the contractors requesting storage in proportion to their annual Table A amounts for that year. Four SWP contractors took delivery of 125,476 acre-feet of 2001 approved Table A amounts carried over into 2002 as extended carryover. One SWP contractor had 8,000 acre-feet of its extended carryover delivered to storage outside its service area.

2001 Carryover Program

To help contractors prepare for potentially limited water supplies in 2002, the Department provided a 2001 Carryover Program on January 2, 2002. Under this program, long-term SWP contractors were allowed to carry over a portion of their undelivered 2001 approved Table A amounts for storage in San Luis Reservoir during the first 3 months of 2002. This program is separate from other carryover programs afforded by Articles 12(e), 14(b), and 56 of the

long-term water supply contracts. Eleven SWP contractors took a total delivery of 34,695 acre-feet of 2001 approved Table A amounts carried over into 2002. Two SWP contractors had a combined total of 3,451 acre-feet of their carryover water delivered to storage outside their service areas.

Dry Year Water Purchase Program

In 2002, significant areas of California experienced water deficiencies. To reduce the possibility of adverse economic impacts and hardship associated with water shortages, the Department initiated the Dry Year Water Purchase Program. Four SWP contractors participated in the program by signing a Memorandum of Understanding with the Department. The participating agencies requested 22,050 acre-feet of dry year water. The Department obtained the water from Yuba County Water Agency, who made the water available through groundwater substitution and reservoir releases.

The four SWP contractors that participated in the dry year program and the amount of water they purchased are as follows:

- Kern—1,875 acre-feet
- Dudley Ridge—6,675 acre-feet
- Palmdale Water District—12,500 acre-feet
- Oak Flat—1,000 acre-feet

The participating agencies also entered into conveyance agreements with the Department to convey the dry year water across the Delta and through SWP facilities. Actual dry year water received by these agencies was less than the amount purchased at the source due to deductions for Delta carriage water losses (20 percent) and conveyance losses (2-3 percent). The total amount of dry year water delivered to the participating agencies was 17,119 acre-feet after deducting those losses.

Environmental Water Account

EWA is a cooperatively managed program intended to provide protection to the fish of the Bay-Delta Estuary through environmentally beneficial changes and increased flexibility in the operations of the SWP and CVP, at no uncompensated water cost to the projects' water users. Responsibility for implementing EWA rests with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the Department of Fish and Game (management agencies), as well as with the Bureau of Reclamation and the Department (project agencies).

Under EWA, fish protection is achieved by periodically curtailing project water delivery from the Bay-Delta to project water users south of the Delta and replacing it at a later date within the same calendar year. This necessitates the acquisition of alternative sources of water, called *EWA assets*, which are used to replace the water supply lost during project curtailments. EWA assets consist of *variable assets*, which are acquired through changes in operations; *purchase assets*, which are acquired through purchases from willing water sellers; and *source shifting*, which involves deferral of scheduled delivery of water allocations by willing participants. EWA is considered operational for any year when these assets are in place and Endangered Species Act commitments are provided by the management agencies.

EWA's second operational year was 2002. The first fish actions occurred in January and continued throughout the year. Management agencies required 280,353 acre-feet of curtailments at Banks and Tracy Pumping Plants in the Delta for fish protection. All purchase asset acquisitions in 2002 were made by the Department and the Bureau as single-year transactions and studies were carried out to ensure that the transactions complied with CEQA.

In 2002, 38,147 acre-feet of EWA's purchased water were converted to project water, since San Luis Reservoir was filled to capacity. To minimize spillage of EWA water from San Luis Reservoir, the Department implemented a *2 for 1 exchange* with the State Water Contractors. A total of 40,012 acre-feet of water was transferred to the contractors in return for 20,006 acre-feet of water transferred back by the contractors in July

and August. Thus, a total of 20,006 acre-feet of water was saved for use later in the year. Twenty thousand acre-feet of purchased water were backed into Oroville Reservoir in anticipation of San Luis Reservoir filling and to reduce possible spillage of EWA assets.

The Department was able to compensate the SWP and CVP for pumping reductions by acquiring 75,952 acre-feet in variable assets and 206,158 acre-feet of purchase assets through contract agreements. A source shift was not implemented because there was not a risk of low-point problems at San Luis Reservoir. The initial year of EWA operation ended with 83,710 acre-feet of water for use during 2002. The second year of EWA operation ended with 23,357 acre-feet of water for use during 2003.

The following SWP contractors and non-SWP contractors participated in the EWA Program.

Purchase Assets

The purchase asset water amounts below represent the total amounts of water acquired for EWA from various sources. These amounts have not been adjusted to reflect conveyance losses. Table 9-3 provides the actual amounts of water delivered.

Kern County Water Agency. An agreement executed on June 28, 2002, between the Department, the Bureau, and Kern approved the purchase of up to 97,400 acre-feet of water stored in KWB through the exchange of approved Table A water for support of EWA under the CALFED Program. A total of 60,624 acre-feet of Kern's water was purchased. (SWPAO #02700)

Yuba County Water Agency. An agreement executed on February 1, 2002, between the Department and Yuba approved the transfer of up to 185,000 acre-feet of water from storage in New Bullards Bar Reservoir and groundwater substitution for support of EWA under the CALFED Program. A total of 135,000 acre-feet of Yuba's water was transferred. (SWPAO #02701)

The Sacramento Groundwater Authority. An agreement executed on June 7, 2002, between the Bureau and the Sacramento Groundwater Authority approved the transfer of up to 10,000 acre-feet of surface water for support of EWA under the CALFED Program. A total of 8,143 acre-feet of Sacramento Groundwater Authority's water was transferred, of which 7,143 acre-feet was used for instream flow purposes and the remaining 1,000 acre-feet was used as an EWA Purchase Asset. (SWPAO #02702)

Variable Assets

Relaxation of the Export/Import Ratio. The Department has the opportunity to gain water credits if the EWA managing agencies decide that the E/I ratio can be relaxed, thus allowing the SWP to pump any extra water that the fisheries do not need. A total of 75,952 acre-feet of water was credited to EWA. (SWPAO #02730)

2 for 1 Exchange. In March and April, San Luis Reservoir was at capacity and EWA was at risk of spilling assets. To minimize spillage, EWA transferred 40,012 acre-feet of water in San Luis Reservoir to the SWP contractors in return for 20,006 acre-feet of water in July and August. (See Table 9-2, EWA 2:1 Exchange.) Detailed information on the 2 for 1 exchange agreements, and the actual transfer operations, are provided in the *EWA 2:1 Exchange Agreements* section earlier in this chapter.

Table 9-2. EWA 2:1 Exchange (Acre-feet)

Contractor	Transferred	Returned
Alameda-Zone 7	803	402
Alameda County	571	286
Dudley Ridge	2,141	1,070
Kern	6,744	3,372
Metropolitan	27,630	13,815
Santa Clara	1,448	724
Tulare	675	337
Total	**40,012**	**20,006**

For additional information on EWA, see Chapter 7, *Water Supply Development and Reliability.*

Miscellaneous Agreements with Other Agencies

In addition to negotiating agreements with SWP contractors to provide for specified water deliveries, the Department also entered into several agreements with other agencies for water conveyance, or exchange, between January 1, 2002, and December 31, 2002.

Water Conveyance Agreements–CVP Water

The Department regularly enters into agreements to convey CVP water such as agreements with contractors receiving water from the Bureau through the Cross Valley Canal, a water conveyance facility that connects with the Aqueduct near Tupman in Kern County. Other agencies or corporations receive CVP water through agreements between the Department and the Bureau, including the U.S. Department of Veterans Affairs, USFWS, and Musco Olive Products, Inc. Occasionally, the Department also enters into agreements with the Bureau to convey CVP or SWP water from the Delta to O'Neill Forebay through CVP or SWP facilities. Some of these agreements allow the Bureau to make up for curtailed water exports from Tracy Pumping Plant associated with improving conditions for fish in the Delta. Other agreements allow replacing water exports foregone during maintenance and repair of Tracy and Banks Pumping Plants and CVP and SWP conveyance facilities between the Delta and O'Neill Forebay.

Cross Valley Canal. Eight CVP water contractors use CVC to obtain water from the California Aqueduct either by exchange with other agencies or by direct delivery. The eight water contractors are: County of Fresno, County of Tulare, Hills Valley Irrigation District, Kern-Tulare Water District, Lower Tule River Irrigation District, Pixley Irrigation District, Rag Gulch Water District, and Tri-Valley Water District. These agencies have had water conveyance service by the Department since 1976 through

- long-term 3-party contracts with the Department and the Bureau, executed in 1976, and amendments extending the contracts through February 29, 1996; and
- interim renewal contracts: the first from March 1, 1996, through February 28, 1998; the second from March 1, 1998, through February 28, 2000; the third from March 1, 2000, through November 30, 2000; the fourth from December 1, 2000, through February 28, 2001; the fifth from March 1, 2001, through February 28, 2002; and the sixth from March 1, 2002 through February 28, 2003.

Between January 1, 2002, and December 31, 2002, the Department delivered CVP water to the CVC contractors as follows:

- In February 2002, four CVC contractors received the last portion of their 2001-02 renewal agreement's approved CVP water through Reach 12E. The Department conveyed 97 acre-feet of water for the County of Fresno, 100 acre-feet of water for Hills Valley Irrigation District, 35 acre-feet of water for Tri-Valley Water District, and 163 acre-feet of water for the County of Tulare. The total amount of water delivered in February 2002 to Reach 12E totaled 395 acre-feet. (SWPAO #s 01303, 01304, 01309, and 01310)
- From July through October 2002, six CVC contractors received their 2002-03 approved CVP water. County of Tulare, Tri-Valley Water District, Pixley Irrigation District, Lower Tule River Irrigation District, Hills Valley Irrigation District, and Fresno County Public Works received 3,981, 857, 3,110, 3,110, 2,510, and 1,950 acre-feet of water, respectively. The 2002-03 CVP water delivered to the CVC contractors totalled 15,518 acre-feet. (SWPAO #s 02300, 02301, 02303, 02304, 02306, and 02307)
- In April 2002, the Department conveyed a total of 6,148 acre-feet of surplus water (Section 215) from O'Neill Forebay to Reach 12E for five CVC contractors. Rag Gulch, Kern-Tulare, Tri-Valley, Hills Valley, and County of Tulare received 228, 572, 624, 1,826, and 2,898 acre-feet of surplus water, respectively. Conveyance agreements are expected to be executed in 2003.

- On June 6, 2002, Pixley requested the Department to convey up to 20,216 acre-feet of its CVP water to Westlands during the 2002 contract year. From July through August 2002, the Department delivered a total of 20,212 acre-feet of Pixley's CVP water to Westlands' turnouts in Reaches 4 through 7 of the California Aqueduct. The conveyance agreement is expected to be executed in February 2003.
- On June 6, 2002, Lower Tule River requested the Department to convey up to 10,984 acre-feet of its CVP water to Westlands. From July through August 2002, the Department conveyed a total of 10,984 acre-feet of the District's CVP water to Westlands' turnouts in Reaches 4 through 7 of the California Aqueduct. The conveyance agreement is expected to be signed in January 2003.
- On June 6, 2002, Kern-Tulare Water District requested the Department change the point of delivery for up to 2,000 acre-feet of the District's 2001 CVP water from the CVC turnout in Reach 12E to O'Neill Forebay for delivery to San Luis Water District. Under the agreement executed on September 27, 2002, the Department conveyed 1,932 acre-feet of water in August and September 2002 (SWPAO #02315).

Madera Irrigation District. On August 5, 2002, Madera Irrigation District requested that the Department convey 1,134 acre-feet of CVP water from the San Joaquin River Exchange Contractor Authority to Madera through SWP facilities. Under an agreement executed on October 25, 2002, the Department delivered 1,100 (1,134 minus 3 percent conveyance loss) acre-feet of water in September 2002. (SWPAO #02319)

Westlands Water District. On March 12, 2002, Westlands requested that the Department convey up to 15,000 acre-feet of Contra Costa Water District's CVP water to Westlands through SWP facilities. The Bureau approved the proposed transfer in a letter agreement to Westlands dated March 22, 2002. Westlands, as the lead agency, filed a Notice of Exemption for the project on May 20, 2002. Between October and December 2002, the Department conveyed 7,760 acre-feet (8,000 acre-feet minus 3 percent loss) of water to Westlands under an agreement that is expected to be executed in January 2003.

U.S. Bureau of Reclamation. In a letter dated July 19, 2002, the Bureau requested that the Department convey up to 60,000 acre-feet of CVP water from Banks Pumping Plant to O'Neill Forebay pursuant to SWRCB Water Right Decision 1641, Joint Point of Diversion provisions. Included within the 60,000 acre-feet were 9,050 acre-feet of CVP water for Level 4 refuge water supplies. In September 2002, the Department conveyed 56,095 acre-feet (57,240 acre-feet minus 2 percent conveyance losses) of water to O'Neill Forebay under an agreement executed in September 18, 2002. (SWPAO #02318)

Musco Olive Products, Incorporated. An agreement dated October 22, 2001, among Musco Olive Products, Inc., the Department, and the Bureau, provides for the conveyance of up to 800 acre-feet of CVP water to Reach 2A of the California Aqueduct for use by Musco Olive Products, Inc. A total of 626 acre-feet was delivered in 2002 under this agreement (SWPAO #02320).

A second agreement dated November 13, 2002, among Musco Olive Products, Inc., the Department, and the Bureau, provides for the conveyance of up to 800 acre-feet of CVP water to Reach 2A of the California Aqueduct for use by Musco Olive Products, Inc. A total of 175 acre-feet was delivered in 2002 under this agreement. (SWPAO #02320)

U.S. Department of Veterans Affairs. A letter agreement dated March 3, 2002, among the U.S. Department of Veterans Affairs, the Department, and the Bureau, provided for the conveyance of up to 450 acre-feet of CVP approved water to Reach 2B of the California Aqueduct to the U.S. Department of Veterans Affairs' San Joaquin Valley National Cemetery. A total of 51 acre-feet was delivered to the National Cem-

etery in Reach 2B of the California Aqueduct in 2002 under this agreement. (SWPAO #01327)

A total of 16 acre-feet was delivered to the National Cemetery in Reach 2B of the California Aqueduct in 2002 under a pending letter agreement. (SWPAO #02321)

U.S. Fish and Wildlife Service Cooperative Agreement. The Bureau initiated a cooperative agreement with the Department to deliver CVP water to the Kern National Wildlife Refuge for USFWS. Under the terms of this cooperative agreement, dated September 9, 1994, up to 26,530 acre-feet of CVP water would be delivered from Check 21 to the Buena Vista Water Storage District Turnout BV-1B, on Reach 10A of the California Aqueduct, from October 1, 1993, through April 10, 1995. Since the cooperative agreement was signed, twelve modifications to the agreement have been executed. Under Modification No. 001, dated October 31, 1994, additional funding was provided. Similar funding adjustments through modifications were made each year to the agreement. Modification No. 012, executed February 3, 2002, extended the agreement through April 30, 2002, and defined the water delivery rates for 2001 and 2002. The Department conveyed 14,726 acre-feet of CVP water to Kern National Wildlife Refuge in 2002. A new 5-year agreement with the Bureau for Kern National Wildlife Refuge is currently pending.

Other Turnout Agreements. In 2002, there were no new turnout agreements with non-SWP contractor agencies.

Water Deliveries

Approved Table A Deliveries

Each year, by October 1, the SWP long-term water contractors submit initial requests for approved Table A deliveries allocated to contractors for use in the subsequent calendar year. Initial approved Table A amounts for the coming year are made by the Department in December and are based on operations studies that assume 90 percent exceedence of historic water supply (where exceedence refers to the possibility that water supply in the coming year will be exceeded by the historic water supply), current reservoir storage, and total requests by the SWP water contractors. Forecasts for the year are updated as hydrological conditions change. Approved Table A amounts are increased or decreased depending on both actual and projected hydrologic conditions.

The Department approved deliveries of 824,000 acre-feet on November 30, 2001, resulting in initial approved Table A amounts of 20 percent of most SWP contractor requests. Above average precipitation occurred in Northern California during December, causing the Department to increase the 2002 approved Table A amounts to 1.86 million acre-feet, or 45 percent, on January 11, 2002. As water conditions improved, approved Table A amounts were increased to 2.3 million acre-feet (55 percent) on March 22; 2.5 million acre-feet (60 percent) on March 28; 2.68 million acre-feet (65 percent) on May 15; and finally to 2.89 million acre-feet (70 percent) on August 26.

SWP Deliveries

The SWP delivers water for a variety of beneficial uses. In addition to delivering approved Table A water to long-term water supply contractors, the SWP

- conveys water to, and stores water for, other public agencies through special contracts and agreements;
- provides water for wildlife and recreational uses; and
- stores, releases, and delivers local runoff water from SWP facilities to agencies that hold local water rights.

In 2002, 4,053,989 acre-feet of water were conveyed to 26 long-term contractors and 24 other agencies. That amount includes

- 2,573,030 acre-feet of approved Table A water;

- 37,139 acre-feet of Article 21 water and 26 acre-feet of unscheduled water;
- 3,694 acre-feet of SWP water for recreation, fish and wildlife; and
- 1,141,622 acre-feet of water delivered to satisfy water rights settlement agreements and agreements with SWP contractors for local water supplies.

Figure 9-1 shows amounts of water delivered to various locations during 2002.

Specific information about water deliveries made to long-term contractors and other agencies during 2002 and historical deliveries from 1962 through 2002 are presented in the following three sections, each with a corresponding table:

- Water Delivered to Long-term Water Supply Contractors in 2002, by Service Area (Table 9-3);
- Water Delivered in 2002, by Month (Table 9-4); and
- Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962-02 (Table 9-5).

Water Deliveries and Credits to Long-Term SWP Contractors

Table 9-3 shows amounts of water delivered in 2002. The following information about specific columns in Table 9-3 is arranged by column number.

2002 Approved Table A Water Delivered. Columns 1 through 6 show a detailed breakdown of approved Table A water delivered to long-term water supply contractors in 2002.

Turnback Pool Water. Column 5 shows 45,252 acre-feet of turnback pool water was delivered to long-term water supply contractors in 2002.

2001 Carryover Approved Table A Water Delivered During 2002. For several years, the Department has offered contractors the opportunity to carry over a portion of their approved Table A water for delivery in the current year to be delivered during the next year.

The carryover program was designed to encourage the most effective and beneficial use of water and to avoid obligating the contractors to use or lose the water by December 31 of each year. The SWP contractors' long-term contracts and amendments state the criteria for carrying over approved Table A water from one year to the next. Column 7 shows 160,171 acre-feet of water was carried over from 2001 for delivery in 2002.

Total Table A Water Delivered. Column 8 shows all approved Table A water delivered in 2002—a total of 2,573,030 acre-feet.

2002 Water Bank Recoveries. Column 9 shows 38,188 acre-feet of water bank recoveries in 2002.

2002 Article 21 Water. Column 10 shows 37,165 acre-feet of 2002 Article 21 water delivered to long-term water supply contractors in 2002 (includes 37,139 acre-feet of Article 21 water and 26 acre-feet of unscheduled water). Long-term water supply contractors who have not signed the Monterey Amendment receive unscheduled water.

Dry Year Water Purchase Program. Column 11 shows 17,119 acre-feet of Dry Year Water Purchase Program water delivered in 2002.

2002 Article 54 Flexible Storage Withdrawal Recoveries. Column 12 shows 395 acre-feet of Article 54, Flexible Storage Withdrawal in 2002.

Total SWP Water Delivered. Column 13 shows 2,665,897 acre-feet of total SWP water delivered in 2002. This includes total approved Table A water, water bank recoveries, Dry Year Water Purchase Program, Flexible Storage Withdrawal, and Article 21 and unscheduled water.

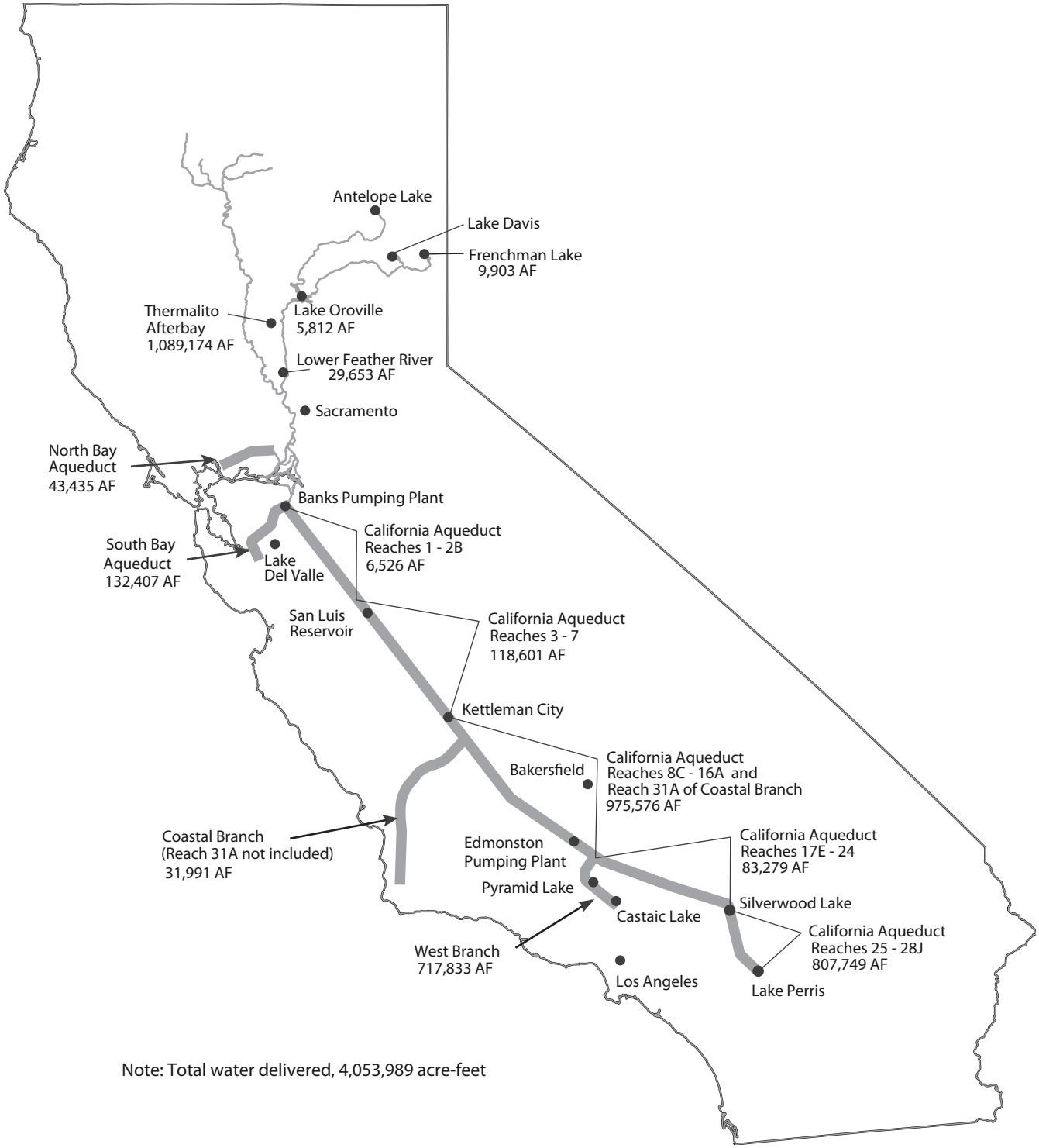


Figure 9-1. Water Delivered in 2002 and Delivery Locations of Long-Term Water Supply Contractors and Feather River Area Districts with Water Right Agreements with the Department

Table 9-3. Water Delivered to Long-Term Contractors through 2002, by Service Area (Acre-Feet)

Water Contractor or Agency	Approved Table A Water Deliveries														
	2002 Table A without Transfers, Exchanges, and Storage (1)	2002 Table A Supplied (Not a Delivery) (2)	2002 Table A Delivered through Transfers and Exchanges (3)	2002 Table A Delivered to Storage (4)	Pool Water (5)	Total 2002 Table A Delivered (6)	2001 Carryover Table A Delivered during 2002 (7)	Total Table A Deliveries (8)	Water Bank Recoveries (9)	2002 Article 21 Water (10)	2002 Dry Year Water Purchase (11)	2002 Article 54 Flexible Withdrawal (12)	Total SWP Water Delivered (13)	Non-SWP Water Deliveries (14)	Total Deliveries (15)
Feather River Area															
County of Butte	419	0	0	0	0	419	0	419	0	0	0	0	419	0	419
Plumas County Flood Control and Water Conservation District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Yuba City	1,181	0	0	0	0	1,181	0	1,181	0	0	0	0	1,181	0	1,181
North Bay Area															
Napa County Flood Control and Water Conservation District	2,022	0	0	0	283	2,305	3,743	6,048	0	827	0	0	6,875	0	6,875
Solano County Water Agency	28,223	0	0	0	0	28,223	0	28,223	0	2,242	0	0	30,465	8,095[a]	38,560
South Bay Area															
Alameda County Flood Control and Water Conservation District-Zone 7	36,305	402[b]	0	4,000[c]	556	40,861	8,113[c]	48,974	0	1,484[c]	0	0	50,458	9,243[d]	59,701
Alameda County Water District	21,964	286[b]	0	2,000[c]	862	24,826	2,331	27,157	0	83[c]	0	0	27,240	2,815[e]	30,055
Santa Clara Valley Water District	55,172	724[b]	0	0	2,053	57,225	3,311[c]	60,536	0	202	0	0	60,738	1,448[f]	62,186
San Joaquin Valley Area															
Castaic Lake Water Agency	2,737	0	0	0	0	2,737	0	2,737	0	0	0	0	2,737	0	2,737
County of Kings	2,800	0	0	0	54	2,854	0	2,854	0	0	0	0	2,854	0	2,854
Dudley Ridge Water District	35,818	1,070[b]	1,800[g]	0	1,177	38,795	1,994[h]	40,789	1,389	1,861[h]	5,180	0	49,219	2,140[f]	51,359
Empire West Side Irrigation District	1,278	0	0	0	0	1,278	101	1,379	0	26[i]	0	0	1,405	0	1,405
Kern County Water Agency	599,366	65,385[j]	13,533[k]	0	20,543	633,442	15,680	649,122	36,799	21,951	1,455	0	709,327	54,119[l]	763,446
Oak Flat Water District	3,841	0	0	0	76	3,917	134	4,051	0	50	784	0	4,885	0	4,885
Tulare Lake Basin Water Storage District	58,381	337[b]	15,067[m]	0	2,289	75,737	5,385	81,122	0	3,749	0	0	84,871	11,631[n]	96,502
Central Coastal Area															
San Luis Obispo County Flood Control and Water Conservation District	4,355	0	0	0	0	4,355	0	4,355	0	0	0	0	4,355	0	4,355
Santa Barbara County Flood Control and Water Conservation District	23,421	0	745[o]	0	324	24,490	3,455	27,945	0	436	0	0	28,381	0	28,381
Southern California															
Antelope Valley-East Kern Water Agency	54,335	0	0	0	1,008	55,343	2,828	58,171	0	0	0	0	58,171	0	58,171
Castaic Lake Water Agency	35,143	0	0	24,000[c]	0	59,143	6,657	65,800	0	280	0	395	66,475	0	66,475
Coachella Valley Water District	16,170	0	0	0	474	16,644	0	16,644	0	111	0	0	16,755	0	16,755
Crestline-Lake Arrowhead Water Agency	2,189	0	0	0	0	2,189	0	2,189	0	0	0	0	2,189	0	2,189
Desert Water Agency	26,670	0	0	0	781	27,451	0	27,451	0	189	0	0	27,640	0	27,640
Littlerock Creek Irrigation District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Metropolitan Water District of Southern California	1,190,348	82,857[p]	0	0	14,335	1,204,683	97,940	1,302,623	0	9,624[q]	0	0	1,306,297	27,630[f]	1,333,927
Mojave Water Agency	4,346		0	0	0	4,346	0	4,346	0	0	0	0	4,346	0	4,346
Palmdale Water District	8,359		0	0	437	8,796	0	8,796	0	0	9,700	0	18,496	0	18,496
San Bernardino Valley Municipal Water District	33,268		35,000[r]	0	0	68,268	3,801	72,069	0	0	0	0	72,069	0	72,069
San Gabriel Valley Municipal Water District	18,353		0	0	0	18,353	4,698	23,051	0	0	0	0	23,051	0	23,051
San Gorgonio Pass Water Agency	0		0	0	0	0	0	0	0	0	0	0	0	0	0
Ventura County Flood Control District	4,998		0	0	0	4,998	0	4,998	0	0	0	0	4,998	0	4,998
Total	**2,271,462**	**151,061**	**66,145**	**30,000**	**45,252**	**2,412,859**	**160,171**	**2,573,030**	**38,188**	**37,165**	**17,119**	**395**	**2,665,897**	**117,121**	**2,783,018**

[a] Solano's permit water.
[b] Supplied to EWA (not counted in total delivery).
[c] 8,000 acre-feet delivered to Semitropic Water Bank.
[d] Alameda-Zone 7's 6,440 acre-feet of local water; 2,000 acre-feet of Byron-Bethany water; and 803 acre-feet of EWA 2:1 water.
[e] Alameda's 2,244 acre-feet of local water; 571 acre-feet of EWA 2:1 water.
[f] EWA 2:1 water.
[g] Dudley Ridge exchange to San Gabriel.
[h] Delivered to Kern Water Bank.
[i] Empire's unscheduled water
[j] Kern supplied 63,996 acre-feet to EWA; exchange of 1,389 acre-feet to Dudley Ridge for Kern Water Bank water.
[k] Kern transferred 6,133 acre-feet to Dudley Ridge; exchanged 6,500 acre-feet to Del Puerto Water District, and exchanged 900 acre-feet to San Luis Water District.
[l] Kern's 6,744 acre-feet of EWA 2:1 water; 7,400 acre-feet exchanged from Del Puerto Water District and San Luis Water District; 1,932 acre-feet transferred from San Luis Water District; and 38,043 acre-feet of Article 55 water from Kern-Tulare and Rag Gulch.
[m] Tulare transferred 3,000 acre-feet to Westlands; exchanged 12,067 acre-feet to Westlands.
[n] Tulare's 7,500 acre-feet of Article 55 water transferred from Lower Tule; 3,456 acre-feet of Article 215 exchange water from Lower Tule; and 675 acre-feet of EWA 2:1 water
[o] Santa Barbara exchanged with Dudley Ridge.
[p] Metropolitan supplied 13,815 acre-feet to EWA; used 69,042 acre-feet for Flexible Water Payback.
[q] Metropolitan's Article 21 includes 5,950 acre-feet for Flexible Water Payback. As a transaction and not a delivery, this number is not included in the total.
[r] San Bernardino transferred to Metropolitan.

Table 9-4. Water Delivered in 2002, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2002 Total Deliveries	2002 Contract Table A
Feather River Area														
City of Yuba City														
Approved Table A water	0	0	0	0	0	0	617	553	0	0	11	0	1,181	9,600
Pool B water sale[a]	3,261	0	0	0	0	0	0	0	0	0	0	0	3,261	
Agency total	0	0	0	0	0	0	617	553	0	0	11	0	1,181	
County of Butte														
Approved Table A water	67	15	1	15	39	41	48	58	59	7	23	46	419	3,500
Pool B water sale[a]	900	0	0	0	0	0	0	0	0	0	0	0	900	
Agency total	67	15	1	15	39	41	48	58	59	7	23	46	419	
Plumas County Flood Control and Water Conservation District														
Approved Table A water	0	0	0	0	0	0	0	0	0	0	0	0	0	1,630
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water	0	0	0	0	0	0	1	1	1	1	0	0	4	
Last Chance Creek Water District														
Regulated delivery of local supply	0	0	0	30	2,985	2,815	1,702	1,714	498	127	32	0	9.903	
Thermalito Irrigation District														
Regulated delivery of local supply	0	0	33	180	261	378	448	390	313	248	138	0	2,389	
Oroville-Wyandotte Irrigation District														
Regulated delivery of local supply	14	0	0	215	813	835	979	985	995	942	34	0	5,812	
Western Canal Water District														
Regulated delivery of local supply	297	0	0	16,292	53,589	56,454	62,360	37,895	5,992	21,855	30,182	14,296	299,212	
Joint Water Districts Board														
Regulated delivery of local supply	25,870	0	0	45,820	113,200	122,320	129,560	104,450	50,690	72,450	66,280	56,510	787,150	
Oswald Water District														
Regulated delivery of local supply	0	0	0	0	0	71	96	37	71	12	0	0	287	
Tudor Mutual Water Company														
Regulated delivery of local supply	0	0	0	38	862	904	867	308	529	6	0	0	3,514	
Garden Highway Mutual Water Company														
Regulated delivery of local supply	0	0	0	1,894	2,203	3,138	1,999	2,312	1,568	2,544	0	0	15,658	
Plumas Mutual Water Company														
Regulated delivery of local supply	0	0	0	627	1,534	1,730	1,775	784	1,461	44	0	0	7,955	
Dana Brothers														
Regulated delivery of local supply	0	0	0	130	206	357	230	134	1	0	0	0	1,058	
SWP	67	15	1	15	39	41	666	612	60	8	34	46	1,604	
Non-SWP	26,181	0	33	65,226	175,653	189,002	200,016	149,009	62,118	98,228	96,666	70,806	1,132,938	
Feather River Area Total	*26,248*	*15*	*34*	*65,241*	*175,692*	*189,043*	*200,682*	*149,621*	*62,178*	*98,236*	*96,700*	*70,852*	*1,134,542*	*14,730*
North Bay Area														
Napa County Flood Control and Water Conservation District														
Approved Table A water	0	0	0	0	0	0	0	0	445	350	868	359	2,022	21,100
Article 21 water	132	0	355	340	0	0	0	0	0	0	0	0	827	
Article 56(c) extended carryover	277	119	532	776	290	660	714	316	59	0	0	0	3,743	
Pool B water	0	0	0	0	0	0	0	283	0	0	0	0	283	
Agency Total	409	119	887	1,116	290	660	714	599	504	350	868	359	6,875	
Solano County Water Agency														
Approved Table A water	165	855	1,483	1,988	2,329	3,981	4,595	4,568	3,837	2,252	1,645	525	28,223	46,296
Article 21 water	400	46	0	0	1,796	0	0	0	0	0	0	0	2,242	
Vallejo Permit water	0	0	0	263	467	977	907	792	1,074	1,782	1,281	552	8,095	
Agency Total	565	901	1,483	2,251	4,592	4,958	5,502	5,360	4,911	4,034	2,926	1,077	38,560	
SWP	974	1,020	2,370	3,104	4,415	4,641	5,309	5,167	4,341	2,602	2,513	884	37,340	
Non-SWP	0	0	0	263	467	977	907	792	1,074	1,782	1,281	552	8,095	
North Bay Area Total	*974*	*1,020*	*2,370*	*3,367*	*4,882*	*5,618*	*6,216*	*5,959*	*5,415*	*4,384*	*3,794*	*1,436*	*45,435*	*67,396*
South Bay Area														
Alameda County Flood Control and Water Conservation District, Zone 7														
Approved Table A water	0	585	1,568	1,466	5,083	5,256	4,740	4,271	5,352	5,667	2,317	0	36,305	78,000
Approved Table A water stored in Semitropic[a]	0	0	0	0	0	0	0	1,000	3,000	0	0	0	4,000	
Approved Table A water to EWA[a]	0	0	0	0	0	0	200	202	0	0	0	0	402	
Article 21 water stored in Semitropic[a]	0	0	397	1,087	0	0	0	0	0	0	0	0	1,484	
Article 56(c) extended carryover	96	17	0	0	0	0	0	0	0	0	0	0	113	
Article 56(c) extended carryover stored in Semitropic[a]	1,081	6,919	0	0	0	0	0	0	0	0	0	0	8,000	
EWA water (2:1) stored in Semitropic[a]	0	0	0	803	0	0	0	0	0	0	0	0	803	
Transfer water from Byron-Bethany	0	0	0	0	0	0	0	1,000	1,000	0	0	0	2,000	
Local water	1,008	457	681	2,704	88	24	90	29	123	106	167	963	6,440	
Pool A water	0	0	0	0	0	0	556	0	0	0	0	0	556	
Agency Total	1,104	1,059	2,249	4,170	5,171	5,280	5,386	5,300	6,475	5,773	2,484	963	45,414	
Alameda County Water District														
Approved Table A water	0	0	999	1,724	2,243	2,102	3,747	3,756	3,485	3,301	607	0	21,964	42,000
Approved Table A water stored in Semitropic[a]	0	0	0	0	0	0	0	0	2,000	0	0	0	2,000	
Approved Table A water to EWA[a]	0	0	0	0	0	0	100	186	0	0	0	0	286	

[a]Excluded water

Table 9-4. Water Delivered in 2002, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2002 Total Deliveries	2002 Contract Table A
Article 21 water stored in Semitropic[a]	0	0	0	83	0	0	0	0	0	0	0	0	83	
Carryover special (2001)	986	1,345	0	0	0	0	0	0	0	0	0	0	2,331	
EWA water received (2:1)	0	0	131	440	0	0	0	0	0	0	0	0	571	
Local water	973	208	411	0	0	0	53	29	123	106	0	341	2,244	
Pool A water	0	0	0	0	0	299	0	0	0	0	0	0	299	
Pool B water	0	0	0	0	0	563	0	0	0	0	0	0	563	
Agency Total	1,959	1,553	1,541	2,164	2,243	2,964	3,800	3,785	3,608	3,407	607	341	27,972	
Santa Clara Valley Water District														
Approved Table A water	0	0	1,612	2,255	5,130	7,513	10,292	11,112	9,362	2,819	3,415	1,662	55,172	100,000
Approved Table A water to EWA[a]	0	0	0	0	0	0	350	374	0	0	0	0	724	
Article 21 water	0	0	0	202	0	0	0	0	0	0	0	0	202	
Carryover special (2001) stored in Semitropic[a]	3,311	0	0		0	0	0	0	0	0	0	0	3,311	
EWA water received (2:1)	0	0	337	1,111	0	0	0	0	0	0	0	0	1,448	
Pool A water	0	0	0	0	0	713	0	0	0	0	0	0	713	
Pool B water	0	0	0	0	0	1,340	0	0	0	0	0	0	1,340	
Agency Total	0	0	1,949	3,568	5,130	9,566	10,292	11,112	9,362	2,819	3,415	1,662	58,875	
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water, Lake Del Valle	3	2	4	7	13	23	29	26	22	12	3	2	146	
SWP	1,085	1,949	4,183	5,654	12,469	17,809	19,364	19,165	18,221	11,799	6,342	1,664	119,704	
Non-SWP	1,981	665	1,560	4,255	88	24	143	1,058	1,246	212	167	1,304	12,703	
South Bay Area Total	*3,066*	*2,614*	*5,743*	*9,909*	*12,557*	*17,833*	*19,507*	*20,223*	*19,467*	*12,011*	*6,509*	*2,968*	*132,407*	*220,000*
San Joaquin Valley Area														
Castaic Lake Water Agency														
Approved Table A water	0	0	0	0	0	0	0	0	0	0	1,414	1,323	2,737	12,700
County of Kings														
Approved Table A water	0	0	0	0	400	400	500	500	400	0	0	600	2,800	4,000
Pool B water	0	0	0	0	0	54	0	0	0	0	0	0	54	
Agency Total	0	0	0	0	400	454	500	500	400	0	0	600	2,854	
Dudley Ridge Water District														
Approved Table A water	0	892	4,050	1,257	1,400	7,881	9,600	2,888	3,991	2,309	769	781	35,818	57,343
Approved Table A water delivered to EWA[a]	0	0	0	0	0	0	500	570	0	0	0	0	1,070	
Article 21 water	0	0	687	578	0	0	0	0	0	0	0	0	1,265	
Article 21 water stored in Kern Water Bank[a]		0	246	350	0	0	0	0	0	0	0	0	596	
Bank water recovery, Kern Water Bank	0	0	0	1,389	0	0	0	0	0	0	0	0	1,389	
Carryover special (2001)	1,185	669	0	0	0	0	0	0	0	0	0	0	1,854	
Carryover special (2001) stored in Kern Water Bank[a]	140	0	0	0	0	0	0	0	0	0	0	0	140	
Dudley Ridge's EWA 2:1 water delivered through Tulare[a]	0	0	170	373	0	0	0	0	0	0	0	0	543	
Dry Year Water Purchase Program	0	0	0	0	3,580	1,600	0	0	0	0	0	0	5,180	
EWA water received (2:1)	0	0	42	1,555	0	0	0	0	0	0	0	0	1,597	
Exchange approved Table A water to San Gabriel[a]	0	0	0	0	0	0	0	0	0	0	1,800	0	1,800	
Pool A water	0	0	0	0	409	0	0	0	0	0	0	0	409	
Pool B water	0	0	0	0	768	0	0	0	0	0	0	0	768	
Transfer approved Table A water from Kern	0	0	0	0	0	0	801	5,332	0	0	0	0	6,133	
Exchange of approved water from Santa Barbara	0	0	0	0	0	0	0	0	0	745	0	0	745	
Agency Total	1,185	1,561	4,779	4,779	6,157	9,481	10,401	8,220	3,991	3,054	769	781	55,158	
Empire West Side Irrigation District														
Approved Table A water	0	750	0	385	29	114	0	0	0	0	0	0	1,278	3,000
Carryover special (2001)	0	101	0	0	0	0	0	0	0	0	0	0	101	
Unscheduled water	0	0	0	26	0	0	0	0	0	0	0	0	26	
Agency Total	0	851	0	411	29	114	0	0	0	0	0	0	1,405	
Kern County Water Agency														
Approved Table A water	9,532	28,910	39,103	21,543	45,678	144,343	134,801	98,664	38,071	31,073	2,650	4,225	598,593	1,000,949
Approved Table A water delivered to EWA (2:1 return)[a]	0	0	0	0	0	0	1,500	1,872	0	0	0	0	3,372	
Approved Table A water delivered to EWA[a]	0	0	0	0	0	0	0	32,400	15,000	0	13,224	0	60,624	
Approved Table A water delivered to Western Hills	0	0	8	89	92	107	136	123	87	113	6	12	773	
Article 21 water	0	0	5,752	16,199	0	0	0	0	0	0	0	0	21,951	
Article 56(c) extended carryover	11,135	4,532	13	0	0	0	0	0	0	0	0	0	15,680	
Dry Year Water Purchase Program	0	0	0	0	0	0	0	1,455	0	0	0	0	1,455	
EWA water received (2:1)	0	0	1,349	5,395	0	0	0	0	0	0	0	0	6,744	
Exchange water from Del Puerto Water District	0	6,500	0	0	0	0	0	0	0	0	0	0	6,500	
Exchange water from San Luis Water District	0	900	0	0	0	0	0	0	0	0	0	0	900	
Exchange approved Table A water to Del Puerto[a]	0	0	0	0	0	0	0	0	5,050	1,450	0	0	6,500	
Exchange approved Table A water to San Luis[a]	0	0	0	0	0	0	0	0	900	0	0	0	900	
Exchange approved Table A water to Dudley Ridge for water bank water[a]	0	0	0	1,389	0	0	0	0	0	0	0	0	1,389	
Pool A water	0	0	0	0	0	0	6,875	258	0	0	0	0	7,133	
Pool B water	0	0	0	0	0	0	12,925	485	0	0	0	0	13,410	
Turn-in water recovered by Kern	0	0	0	13,734	12,549	571	0	0	0	0	5,645	4,300	36,799	
Transfer of approved Table A water to Dudley Ridge[a]	0	0	0	0	0	0	801	5,332	0	0	0	0	6,133	
Article 55 water from Kern-Tulare	0	0	0	0	0	0	0	14,291	0	4,466	265	0	19,022	

[a]Excluded water

Table 9-4. Water Delivered in 2002, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2002 Total Deliveries	2002 Contract Table A
Article 55 water from Rag Gulch	0	0	0	0	0	0	0	14,291	0	4,466	264	0	19,021	
Transfer water from San Luis Water District	0	1,932	0	0	0	0	0	0	0	0	0	0	1,932	
Agency Total	20,667	42,774	46,225	56,960	58,319	145,021	154,737	129,567	38,158	40,118	8,830	8,537	749,913	
Water Bank Deliveries														
Approved Table A water from Alameda-Zone 7 stored in Semitropic	0	0	0	0	0	0	0	1,000	3,000	0	0	0	4,000	
Article 21 water from Alameda-Zone 7 stored in Semitropic	0	0	397	1,087	0	0	0	0	0	0	0	0	1,484	
Article 56(c) extended carryover water from Alameda-Zone 7 stored in Semitropic	1,081	6,919	0	0	0	0	0	0	0	0	0	0	8,000	
EWA 2:1 water from Alameda-Zone 7 stored in Semitropic	0	0	0	803	0	0	0	0	0	0	0	0	803	
Approved Table A water from Alameda County stored in Semitropic	0	0	0	0	0	0	0	0	2,000	0	0	0	2,000	
Article 21 water from Alameda County stored in Semitropic	0	0	0	83	0	0	0	0	0	0	0	0	83	
Carryover special (2001) water from Santa Clara stored in Semitropic	3,311	0	0	0	0	0	0	0	0	0	0	0	3,311	
Approved Table A water from Castaic stored in Semitropic	0	0	0	0	0	0	0	0	3,332	12,819	3,408	4,441	24,000	
Article 21 water from Dudley Ridge stored in Kern Water Bank	0	0	246	350	0	0	0	0	0	0	0	0	596	
Carryover special (2001) water from Dudley Ridge stored in Kern Water Bank	140	0	0	0	0	0	0	0	0	0	0	0	140	
Agency Total	25,199	48,793	46,868	59,283	58,319	145,021	154,737	130,567	46,490	52,937	12,238	12,978	793,430	
Oak Flat Water District														
Approved Table A water	0	0	231	566	1,012	875	712	149	234	40	17	5	3,841	5,700
Article 21 water	0	0	0	50	0	0	0	0	0	0	0	0	50	
Carryover special (2001)	18	84	32	0	0	0	0	0	0	0	0	0	134	
Dry Year Water Purchase Program	0	0	0	0	0	200	200	384	0	0	0	0	784	
Pool B water	0	0	0	0	0	0	76	0	0	0	0	0	76	
Agency Total	18	84	263	616	1,012	1,075	988	533	234	40	17	5	4,885	
Tulare Lake Basin Water Storage District														
Approved Table A water	0	644	3,900	5,726	6,580	30,019	5,872	969	950	1,758	0	1,963	58,381	111,527
Approved Table A water to EWA[a]	0	0	0	0	0	100	237	0	0	0	0	0	337	
Article 21 water	0	0	1,942	1,807	0	0	0	0	0	0	0	0	3,749	
Carryover special (2001)	5,058	327	0	0	0	0	0	0	0	0	0	0	5,385	
EWA water received (2:1)	0	0	278	397	0	0	0	0	0	0	0	0	675	
Exchange approved Table A water to Westlands[a]	0	0	0		5,250	5,250	0	0	1,567	0	0	0	12,067	
Article 55 water from Lower Tule to Tulare	0	0	0	0	0	0	0	7,500	0	0	0	0	7,500	
Section 215 water exchange from Lower Tule	0	0	0	3,456	0	0	0	0	0	0	0	0	3,456	
Pool A water	0	0	0	0	0	639	0	156	0	0	0	0	795	
Pool B water	0	0	0	0	0	1,015	0	479	0	0	0	0	1,494	
Transfer approved Table A water to Westlands[a]	0	0	0	0	0	0	0	3,000	0	0	0	0	3,000	
Dudley Ridge's EWA 2:1 water delivered through Tulare	0	0	170	373	0	0	0	0	0	0	0	0	543	
Agency Total	5,058	971	6,290	11,759	6,580	31,673	5,872	9,104	950	1,758	0	1,963	81,978	
Westlands Water District														
CVP water from Lower Tule	0	0	0	0	0	0	5,216	5,768	0	0	0	0	10,984	
CVP water from Pixley	0	0	0	0	0	0	7,935	12,277	0	0	0	0	20,212	
Transfer water from Contra Costa	0	0	0	0	0	0	0	0	0	4,229	2,634	897	7,760	
Exchange approved Table A water from Tulare	0	0	0	0	5,250	5,250	0	0	1,567	0	0	0	12,067	
Transfer approved Table A water from Tulare	0	0	0	0	0	0	0	3,000	0	0	0	0	3,000	
Agency Total	0	0	0	0	5,250	5,250	13,151	21,045	1,567	4,229	2,634	897	54,023	
Recreation/Fish and Wildlife														
Department of Fish and Game, O'Neill Forebay/Lateral 4	43	34	48	25	29	40	57	37	43	58	36	32	482	
Department of Parks and Recreation, O'Neill Forebay/San Luis/Cattle	2	0	4	8	11	13	19	11	9	7	0	2	86	
Total	45	34	52	33	40	53	76	48	52	65	36	34	568	
EWA Program														
EWA 2:1 water to Alameda-Zone7[a]	0	0	0	803	0	0	0	0	0	0	0	0	803	
EWA 2:1 water to Alameda County[a]	0	0	131	440	0	0	0	0	0	0	0	0	571	
EWA 2:1 water to Dudley Ridge[a]	0	0	42	1,556	0	0	0	0	0	0	0	0	1,597	
Dudley Ridge's EWA 2:1 water delivered through Tulare[a]	0	0	170	373	0	0	0	0	0	0	0	0	543	
EWA 2:1 water to Kern[a]	0	0	1,349	5,395	0	0	0	0	0	0	0	0	6,744	
EWA 2:1 water to Metropolitan[a]	0	0	6,347	21,283	0	0	0	0	0	0	0	0	27,630	
EWA 2:1 water to Santa Clara[a]	0	0	337	1,111	0	0	0	0	0	0	0	0	1,448	
EWA 2:1 water to Tulare[a]	0	0	278	397	0	0	0	0	0	0	0	0	675	
Approved Table A water from Alameda-Zone 7 to EWA	0	0	0	0	0	0	200	202	0	0	0	0	402	
Approved Table A water from Alameda County to EWA	0	0	0	0	0	0	100	186	0	0	0	0	286	
Approved Table A water from Dudley Ridge to EWA	0	0	0	0	0	0	500	570	0	0	0	0	1,070	
Approved Table A water from Kern to EWA for 2:1 exchange	0	0	0	0	0	0	1,500	1,872	0	0	0	0	3,372	
Approved Table A water from Kern to EWA (groundwater purchase)	0	0	0	0	0	32,400	15,000	0	13,224	0	0	0	60,624	
Approved Table A water from Metropolitan to EWA	0	0	0	0	0	0	7,000	6,815	0	0	0	0	13,815	
Approved Table A water from Santa Clara to EWA	0	0	0	0	0	0	350	374	0	0	0	0	724	
Approved Table A water from Tulare to EWA	0	0	0	0	0	100	237	0	0	0	0	0	337	
EWA relaxation	0	75,952	0	0	0	0	0	0	0	0	0	0	75,952	
EWA water purchased from a non-SWP contractor	0	0	0	0	0	13,448	43,824	0	5,502	0	0	0	62,774	
Total EWA water	0	75,952	0	0	0	45,948	68,711	10,019	18,726	0	0	0	219,356	
SWP	31,505	43,862	56,413	64,234	74,207	191,321	172,374	114,051	53,684	48,922	13,945	17,684	882,870	
Non-SWP	0	9,332	1,839	11,979	3,580	1,800	13,351	55,966	0	13,161	3,163	897	115,068	

[a]Excluded water

Table 9-4. Water Delivered in 2002, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2002 Total Deliveries	2002 Contract Table A
San Joaquin Valley Area subtotal	31,505	53,194	58,252	76,213	77,787	193,121	185,725	170,017	53,684	62,083	17,108	18,581	997,938	
CVP Water Conveyed–Annual Contracts														
Plain View Water District/ Musco Olive Products, Inc.	78	43	59	67	68	71	76	74	90	0	0	0	626	
Plain View Water District/ Musco Olive Products, Inc.	0	0	0	0	0	0	0	0	0	111	61	3	175	
U.S. Department of Veteran Affairs, S.J.V. National Cemetery	2	2	3	7	6	7	10	8	6	0	0	0	51	
U.S. Department of Veteran Affairs, S.J.V. National Cemetery	0	0	0	0	0	0	0	0	0	9	4	3	16	
Subtotal	80	45	62	74	74	78	86	82	96	120	65	6	868	
Cross Valley Canal Contracts														
CVP water to Tulare	0	163	0	0	0	0	0	0	0	0	0	0	163	
CVP water to County of Tulare	0	0	0	0	0	0	3,450	0	227	304	0	0	3,981	
CVP water to Fresno County Public Works	0	97	0	0	0	0	0	0	0	0	0	0	97	
CVP water to Fresno County Public Works	0	0	0	0	0	0	1,950	0	0	0	0	0	1,950	
CVP water to Hills Valley Irrigation District	0	100	0	0	0	0	0	0	0	0	0	0	100	
CVP water to Hills Valley Irrigation District	0	0	0	0	0	0	2,175	0	143	192	0	0	2,510	
CVP water to Lower Tule	0	0	0	0	0	0	0	0	1,320	1,790	0	0	3,110	
CVP water to Pixley	0	0	0	0	0	0	0	0	1,320	1,790	0	0	3,110	
CVP water to Tri-Valley Water District	0	35	0	0	0	0	0	0	0	0	0	0	35	
CVP water to Tri-Valley Water District	0	0	0	0	0	0	742	0	48	67	0	0	857	
Kern-Tulare water to San Luis Water District	0	0	0	0	0	0	0	1,418	514	0	0	0	1,932	
Lower Tule water to Westlands	0	0	0	0	0	0	5,216	5,768	0	0	0	0	10,984	
Pixley water to Westlands	0	0	0	0	0	0	7,935	12,277	0	0	0	0	20,212	
Lower Tule to Tulare[a]	0	0	0	3,456	0	0	0	0	0	0	0	0	3,456	
Article 55 from Rag Gulch to Kern[a]	0	0	0	0	0	0	0	14,291	0	4,466	264	0	19,021	
Article 55 from Kern-Tulare to Kern[a]	0	0	0	0	0	0	0	14,291	0	4,466	265	0	19,022	
Article 55 from Lower Tule to Tulare[a]	0	0	0	0	0	0	0	7,500	0	0	0	0	7,500	
Section 215 CVP water to County of Tulare	0	0	0	2,898	0	0	0	0	0	0	0	0	2,898	
Section 215 CVP water to Hills Valley Irrigation District	0	0	0	1,826	0	0	0	0	0	0	0	0	1,826	
Section 215 CVP water to Kern-Tulare	0	0	0	572	0	0	0	0	0	0	0	0	572	
Section 215 CVP water to Rag Gulch	0	0	0	228	0	0	0	0	0	0	0	0	228	
Section 215 CVP water to Tri-Valley Water District	0	0	0	624	0	0	0	0	0	0	0	0	624	
Agency Total	0	395	0	6,148	0	0	8,317	0	3,058	4,143	0	0	22,061	
Bureau of Reclamation														
Conveyance of CVP water to O'Neill Forebay	0	0	0	0	0	0	0	0	56,095		0	0	56,095	
Delivery of Kern-Tulare water to San Luis Water District[a]	0	0	0	0	0	0	0	1,418	514	0	0	0	1,932	
Exchange water to Del Puerto from Kern	0	0	0	0	0	0	0	0	5,050	1,450	0	0	6,500	
Exchange water to San Luis Water District from Kern	0	0	0	0	0	0	0	0	900	0	0	0	900	
Kern National Wildlife Refuge	808	690	0	0	89	280	60	1,096	3,865	1,613	4,656	1,569	14,726	
Recreation/fish and wildlife water	85	32	38	30	30	46	59	43	41	53	31	27	515	
Transfer of Contra Costa water to Westlands[a]	0	0	0	0	0	0	0	0	0	4,229	2,634	897	7,760	
Transfer of San Joaquin River Authority water to Madera Irrigation District	0	0	0	0	0	0	0	0	1,100	0	0	0	1,100	
Transfer of San Luis Water District water to Kern[a]	0	1,932	0	0	0	0	0	0	0	0	0	0	1,932	
Agency Total	893	722	38	30	119	326	119	2,557	66,665	7,345	7,321	2,493	88,628	
SWP	0	0	0	0	0	0	0	0	5,950	1,450	0	0	7,400	
Non-SWP	973	1,162	100	6,252	193	404	8,522	1,221	64,255	5,929	4,752	1,602	95,365	
San Joaquin Valley Area subtotal	973	1,162	100	6,252	193	404	8,522	1,221	70,205	7,379	4,752	1,602	102,765	
SWP (Total)	31,505	43,862	56,413	64,234	74,207	191,321	172,374	114,051	59,634	50,372	13,945	17,684	890,270	
Non-SWP (Total)	973	10,494	1,939	18,231	3,773	2,204	21,873	57,187	64,255	19,090	7,915	2,499	210,433	
San Joaquin Valley Area Total	*32,478*	*54,356*	*58,352*	*82,465*	*77,980*	*193,525*	*195,247*	*171,238*	*123,889*	*69,462*	*21,860*	*20,183*	*1,100,703*	*1,195,219*
Central Coastal Area														
San Luis Obispo County Flood Control and Water Conservation District														
Approved Table A water	197	411	338	347	399	431	469	451	421	367	225	299	4,355	25,000
Pool B water sale[a]	100	0	0	0	0	0	0	0	0	0	0	0	100	
Agency Total	197	411	338	347	399	431	469	451	421	367	225	299	4,355	
Santa Barbara County Flood Control and Water Conservation District														
Approved Table A water	0	123	796	1,882	2,887	2,401	2,576	3,288	3,210	2,452	1,851	1,955	23,421	45,486
Article 21 water	0	0	99	337	0	0	0	0	0	0	0	0	436	
Carryover special (2001)	1,404	1,073	978	0	0	0	0	0	0	0	0	0	3,455	
Pool A water	0	0	0	0	324	0	0	0	0	0	0	0	324	
Exchange of approved Table A water to Dudley Ridge[a]	0	0	0	0	0	0	0	0	0	745	0	0	745	
Agency Total	1,404	1,196	1,873	2,219	3,211	2,401	2,576	3,288	3,210	2,452	1,851	1,955	27,636	
SWP	1,601	1,607	2,211	2,566	3,610	2,832	3,045	3,739	3,631	2,819	2,076	2,254	31,991	
Non-SWP	0	0	0	0	0	0	0	0	0	0	0	0	0	
Central Coastal Area Total	1,601	1,607	2,211	2,566	3,610	2,832	3,045	3,739	3,631	2,819	2,076	2,254	31,991	70,486

[a]Excluded water

Table 9-4. Water Delivered in 2002, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2002 Total Deliveries	2002 Contract Table A
Southern California Area														
Antelope Valley-East Kern Water Agency														
Approved Table A water	428	779	3,176	4,304	5,516	7,384	7,663	8,129	6,771	4,775	2,826	2,087	53,838	141,400
AVEK's approved Table A water delivered through Littlerock[a]	0	0	0	0	0	22	146	165	91	51	22	0	497	
Mojave's approved Table A water delivered through AVEK	56	61	92	95	128	205	156	202	155	105	77	38	1,370	
Carryover special (2001)	1,649	1,179	0	0	0	0	0	0	0	0	0	0	2,828	
Pool A water	0	0	0	0	0	0	1,008	0	0	0	0	0	1,008	
Agency Total	2,133	2,019	3,268	4,399	5,644	7,589	8,827	8,331	6,926	4,880	2,903	2,125	59,044	
Castaic Lake Water Agency														
Approved Table A water	0	0	1,615	2,425	3,593	4,420	5,146	5,051	4,810	3,876	2,627	1,580	35,143	82,500
Approved Table A water stored in Semitropic	0	0	0	0	0	0	0	0	3,332	12,819	3,408	4,441	24,000	
Article 21 water	0	0	0	280	0	0	0	0	0	0	0	0	280	
Carryover special (2001)	2,869	2,517	1,271	0	0	0	0	0	0	0	0	0	6,657	
Flexible storage withdrawal	0	0	0	0	0	0	0	0	0	0	0	395	395	
Agency Total	2,869	2,517	2,886	2,705	3,593	4,420	5,146	5,051	4,810	3,876	2,627	1,975	42,475	
Coachella Valley Water District														
Approved Table A water	0	0	1,387	1,387	1,532	1,532	1,532	1,763	1,763	1,763	1,763	1,748	16,170	23,100
Article 21 water	0	0	16	95	0	0	0	0	0	0	0	0	111	
Pool A water	0	0	0	0	0	0	165	0	0	0	0	0	165	
Pool B water	0	0	0	0	0	0	309	0	0	0	0	0	309	
Agency Total	0	0	1,403	1,482	1,532	1,532	2,006	1,763	1,763	1,763	1,763	1,748	16,755	
Crestline-Lake Arrowhead Water Agency														
Approved Table A water	113	115	95	117	170	236	296	296	249	202	159	141	2,189	5,800
Agency Total	113	115	95	117	170	236	296	296	249	202	159	141	2,189	
Desert Water Agency														
Approved Table A water	0	0	2,287	2,287	2,524	2,524	2,524	2,905	2,905	2,905	2,905	2,904	26,670	38,100
Article 21 water	0	0	28	161	0	0	0	0	0	0	0	0	189	
Pool A water	0	0	0	0	0	0	271	0	0	0	0	0	271	
Pool B water	0	0	0	0	0	0	510	0	0	0	0	0	510	
Agency Total	0	0	2,315	2,448	2,524	2,524	3,305	2,905	2,905	2,905	2,905	2,904	27,640	
Littlerock Creek Irrigation District														
Approved Table A water	0	0	0	0	0	0	0	0	0	0	0	0	0	2,300
AVEK's approved Table A water delivered through Littlerock	0	0	0	0	0	22	146	165	91	51	22	0	497	
Agency Total	0	0	0	0	0	22	146	165	91	51	22	0	497	
Metropolitan Water District of Southern California														
Approved Table A water	393	94,519	97,874	98,098	114,098	113,477	132,193	113,000	123,811	129,632	107,845	65,408	1,190,348	2,011,500
Approved Table A water to EWA[a]	0	0	0	0	0	0	7,000	6,815	0	0	0	0	13,815	
Article 21 water	0	0	187	3,487	0	0	0	0	0	0	0	0	3,674	
Article 56(c) extended carryover	97,940	0	0	0	0	0	0	0	0	0	0	0	97,940	
EWA water received (2:1)	0	0	6,347	21,283	0	0	0	0	0	0	0	0	27,630	
Flexible storage replacement with Article 21 water (Castaic Lake)[a]	0	0	1,190	4,760	0	0	0	0	0	0	0	0	5,950	
Flexible storage replacement with Table A water (Lake Perris)[a]	0	0	0	0	1,336	1,336	1,336	0	0	0	3,342	3,342	10,692	
Flexible storage replacement with Table A water (Castaic Lake)[a]	0	0	0	0	7,294	7,294	7,294	0	0	16,468	10,000	10,000	58,350	
Pool A water	0	0	0	0	0	0	0	14,335	0	0	0	0	14,335	
Transfer approved water from San Bernardino	0	0	0	0	5,000	0	0	0	0	0	0	30,000	35,000	
Agency Total	98,333	94,519	104,408	122,868	119,098	113,477	132,193	127,335	123,811	129,632	107,845	95,408	1,368,927	
Mojave Water Agency														
Approved Table A water	320	145	143	139	360	173	96	350	361	430	251	208	2,976	75,800
Mojave's approved Table A water delivered through AVEK[a]	56	61	92	95	128	205	156	202	155	105	77	38	1,370	
Pool A water sale[a]	19,110	0	0	0	0	0	0	0	0	0	0	0	19,110	
Pool B water sale[a]	11,379	0	0	0	0	0	0	0	0	0	0	0	11,379	
Agency Total	320	145	143	139	360	173	96	350	361	430	251	208	2,976	
Palmdale Water District														
Approved Table A water	569	646	904	1,443	1,873	2,006	0	0	0	0	9	909	8,359	21,300
Dry Year Water Purchase	0	0	0	0	0	0	2,082	2,446	2,317	1,631	1,224	0	9,700	
Pool A water	0	0	0	71	81	0	0	0	0	0	0	0	152	
Pool B water	0	0	0	0	0	0	285	0	0	0	0	0	285	
Agency Total	569	646	904	1,514	1,954	2,006	2,367	2,446	2,317	1,631	1,233	909	18,496	
San Bernardino Valley Municipal Water District														
Approved Table A water	0	0	0	1,107	1,614	2,786	2,954	3,338	7,099	7,466	5,359	1,545	33,268	102,600
Carryover special (2001)	1,895	880	1,026	0	0	0	0	0	0	0	0	0	3,801	
Table A transfer to Metropolitan[a]	0	0	0	0	5,000	0	0	0	0	0	0	30,000	35,000	
Agency Total	1,895	880	1,026	1,107	1,614	2,786	2,954	3,338	7,099	7,466	5,359	1,545	37,069	
San Gabriel Valley Municipal Water District														
Approved Table A water	0	56	0	704	3,015	2,555	2,318	2,486	2,398	2,497	614	1,710	18,353	28,800
Carryover special (2001)	3,278	1,420	0	0	0	0	0	0	0	0	0	0	4,698	
Exchange approved Table A water from Dudley Ridge	0	0	0	0	0	0	0	0	0	1,800	0	0	1,800	
Agency Total	3,278	1,476	0	704	3,015	2,555	2,318	2,486	2,398	4,297	614	1,710	24,851	
San Gorgonio Pass Water Agency														
Pool A water sale[a]	300	0	0	0	0	0	0	0	0	0	0	0	300	4,000
Pool B water sale[a]	1,200	0	0	0	0	0	0	0	0	0	0	0	1,200	
Agency Total	0	0	0	0	0	0	0	0	0	0	0	0	0	

[a]Excluded water

Table 9-4. Water Delivered in 2002, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2002 Total Deliveries	2002 Contract Table A
Ventura County Flood Control District														
Approved Table A water	154	154	154	154	154	154	303	772	1,202	1,418	223	156	4,998	20,000
Pool A water sale[a]	6,750	0	0	0	0	0	0	0	0	0	0	0	6,750	
Pool B water sale[a]	2,252	0	0	0	0	0	0	0	0	0	0	0	2,252	
Agency Total	154	154	154	154	154	154	303	772	1,202	1,418	223	156	4,998	
Recreation/Fish and Wildlife														
Castaic Lake	15	3	19	32	35	45	45	31	30	25	9	16	305	
Castaic Lake to Lagoon	0	0	0	0	582	410	501	291	0	0	397	0	2,181	
Silverwood Lake	2	1	2	5	8	9	12	12	11	9	4	2	77	
Lake Perris	23	23	25	34	41	40	50	52	47	35	23	20	413	
Agency Total	40	27	46	71	666	504	608	386	88	69	433	38	2,976	
Recreation/Fish and Wildlife														
USFWS recreation/fish and wildlife water (Pyramid Lake)	1	1	1	2	2	2	3	2	2	1	1	0	18	
SWP	109,704	102,498	110,301	116,425	140,324	137,978	158,483	153,178	151,703	156,989	125,113	108,867	1,571,563	
Non-SWP	1	1	6,348	21,285	2	2	2,085	2,448	2,319	1,632	1,225	0	37,348	
Southern California Area Total	*109,705*	*102,499*	*116,649*	*137,710*	*140,326*	*137,980*	*160,568*	*155,626*	*154,022*	*158,621*	*126,338*	*108,867*	*1,608,911*	*2,557,200*
SWP Water														
SWP Approved Table A Water														
Agricultural and M&I approved Table A water	11,994	129,660	161,816	151,503	207,878	342,938	334,032	270,807	229,851	220,447	143,906	96,630	2,301,462	
Agricultural and M&I approved Table A water for EWA[a]	0	0	0	0	0	100	9,887	42,419	15,000	0	13,224	0	80,630	
Article 21 water	532	46	9,709	25,056	1,796	0	0	0	0	0	0	0	37,139	
Article 56(c) extended carryover	110,529	11,587	545	776	290	660	714	316	59	0	0	0	125,476	
Carryover special (2001)	21,793	9,595	3,307	0	0	0	0	0	0	0	0	0	34,695	
Flexible storage replacement with Article 21 water (Castaic Lake)[a]	0	0	1,190	4,760	0	0	0	0	0	0	0	0	5,950	
Flexible storage replacement (Lake Perris)[a]	0	0	0	0	1,336	1,336	1,336	0	0	0	3,342	3,342	10,692	
Flexible storage replacement (Castaic Lake)[a]	0	0	0	0	7,294	7,294	7,294	0	0	16,468	10,000	10,000	58,350	
Flexible storage withdrawal (Castaic Lake)	0	0	0	0	0	0	0	0	0	0	0	395	395	
Unscheduled water	0	0	0	26	0	0	0	0	0	0	0	0	26	
Transfer approved water	0	0	0	0	5,000	0	801	8,332	0	0	0	30,000	44,133	
Exchange approved water	0	0	0	0	5,250	5,250	0	0	7,517	2,195	1,800	0	22,012	
Exchange approved water for banked water[a]	0	0	0	1,389	0	0	0	0	0	0	0	0	1,389	
Pool A water	0	0	0	71	814	1,651	8,875	14,749	0	0	0	0	26,160	
Pool B water	0	0	0	0	768	2,972	14,105	1,247	0	0	0	0	19,092	
Pool A water sale[a]	26,160	0	0	0	0	0	0	0	0	0	0	0	26,160	
Pool B water sale[a]	19,092	0	0	0	0	0	0	0	0	0	0	0	19,092	
Pump-in recoveries	0	0	0	13,734	12,549	571	0	0	0	0	5,645	4,300	36,799	
Water Bank water recoveries	0	0	0	1,389	0	0	0	0	0	0	0	0	1,389	
Total	144,848	150,888	175,377	192,555	234,345	354,042	358,527	295,451	237,427	222,642	151,351	131,325	2,648,778	
SWP Table A-related water														
Recreation/fish and wildlife water	88	63	102	111	719	580	714	461	163	147	472	74	3,694	
Subtotal (SWP water)	144,936	150,951	175,479	192,666	235,064	354,622	359,241	295,912	237,590	222,789	151,823	131,399	2,652,472	
Non-SWP Water														
Other water														
Dry Year Purchase Program	0	0	0	0	3,580	1,800	2,282	4,285	2,317	1,631	1,224	0	17,119	
Conveyance of nonproject water to O'Neill Forebay	0	0	0	0	0	0	0	0	56,095	0	0	0	56,095	
EWA water received (2:1)	0	0	8,654	31,357	0	0	0	0	0	0	0	0	40,011	
Local	28,162	665	1,125	67,930	175,741	189,026	200,159	149,067	62,364	98,440	96,833	72,110	1,141,622	
Vallejo permit water	0	0	0	263	467	977	907	792	1,074	1,782	1,281	552	8,095	
Subtotal	28,162	665	9,779	99,550	179,788	191,803	203,348	154,144	121,850	101,853	99,338	72,662	1,262,942	
CVP Water														
Conveying water to CVP contractor	0	395	0	6,148	0	0	8,317	0	3,058	4,143	0	0	22,061	
Conveying CVP water annual contract	80	45	62	74	74	78	86	82	96	120	65	6	868	
Conveying CVP water (Kern National Wildlife Refuge–the Bureau)	808	690	0	0	89	280	60	1,096	3,865	1,613	4,656	1,569	14,726	
Conveying CVP water recreation/fish and wildlife water (San Luis/Pyramid)	86	33	39	32	32	48	62	45	43	54	32	27	533	
Delivery of CVP water from CVP/CVC to SWP contractor	0	7,400	0	3,456	0	0	0	36,082	8,932	529	0	0	56,399	
Transfer of CVP water to SWP contractor	0	1,932	0	0	0	0	0	1,000	1,000	0	0	0	3,932	
Transfer of CVP/CVC water to CVP contractor	0	0	0	0	0	0	13,151	18,045	1,100	4,229	2,634	897	40,056	
Transfer of CVC water to CVP contractor at San Luis Reservoir[a]	0	0	0	0	0	0	0	1,418	514	0	0	0	1,932	
Subtotal (CVP water)	974	10,495	101	9,710	195	406	21,676	56,350	18,094	10,688	7,387	2,499	138,575	
Total (Non-SWP water)	*29,136*	*11,160*	*9,880*	*109,260*	*179,983*	*192,209*	*225,024*	*210,494*	*139,944*	*112,541*	*106,725*	*75,161*	*1,401,517*	
Grand Total	174,072	162,111	185,359	301,926	415,047	546,831	584,265	506,406	377,534	335,330	258,548	206,560	4,053,989	4,125,031

[a]Excluded water

Table 9-5. Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962-02 (Acre-feet)

Year	Annual Table A Water According to Long-Term Water Supply Contract							Water Conveyed								Total
								Deliveries								
	Upper Feather River Area (1)	*North Bay Area (2)*	*South Bay Area (3)*	*San Joaquin Valley Area (4)*	*Central Coastal Area (5)*	*Southern California Area (6)*	*Total (7)*	*Annual Table A Water (8)*	*Article 21 Surplus and Unscheduled Water[a] (9)*	*Other Water[b] (10)*	*Feather River Diversions[c] (11)*	*Wildlife/ Recreation Water (12)*	*Subtotal (13)*	**Initial Fill Water (14)**	**Operational Losses and Storage Changes[d] (15)**	**(16)**
1962	0	0	0	0	0	0	0	0	0	18,289	0	0	18,289	9	272	18,570
1963	0	0	0	0	0	0	0	0	0	22,456	0	0	22,456	71	185	22,712
1964	0	0	0	0	0	0	0	0	0	32,507	0	0	32,507	171	152	32,830
1965	0	0	0	0	0	0	0	0	0	44,105	0	0	44,105	93	729	44,927
1966	0	0	0	0	0	0	0	0	0	67,928	0	0	67,928	0	1,746	69,674
1967	0	0	11,538	0	0	0	11,538	11,538	0	53,605	0	0	65,143	8,328	4,212	77,683
1968	550	0	109,900	77,350	0	3,700	191,500	171,709	121,534	14,777	866,926	0	1,174,946	498,926	117,906	1,791,778
1969	620	0	98,700	163,075	0	5,000	267,395	193,020	72,397	18,829	794,374	0	1,078,620	510,614	72,196	1,661,430
1970	700	0	114,200	202,000	0	5,700	322,600	233,993	133,024	38,080	759,759	0	1,164,856	23,947	2,435	1,191,238
1971	890	0	116,200	251,800	0	6,700	375,590	357,340	296,019	44,119	778,362	8	1,475,848	7,853	5,812	1,489,513
1972	970	0	118,300	413,066	0	209,423	741,759	611,801	423,964	66,638	817,398	6,489	1,926,290	100,274	53,062	2,079,626
1973	1,100	0	120,400	383,652	0	481,100	986,252	694,388	296,416	42,511	800,743	1,155	1,835,213	204,638	53,798	2,093,649
1974	1,230	0	122,400	460,650	0	597,920	1,182,200	874,077	417,676	46,224	911,613	2,118	2,251,708	237,554	10,657	2,499,919
1975	1,610	0	124,500	545,809	0	714,950	1,386,869	1,223,990	622,902	63,793	862,218	3,377	2,776,280	103,352	(94,606)	2,785,026
1976	1,990	0	126,500	543,417	0	836,480	1,508,387	1,373,002	580,110	115,217	946,440	1,745	3,016,514	61,122	(681,025)	2,396,611
1977	2,420	0	128,600	581,400	0	954,901	1,667,321	574,155	0	389,065	581,994	1,111	1,546,325	0	(131,151)	1,415,174
1978	1,850	0	130,700	635,900	0	1,049,584	1,818,034	1,452,699	16,914	121,225	786,517	1,691	2,379,046	64,443	717,370	3,160,859
1979	2,130	0	132,700	702,685	0	1,190,573	2,028,088	1,659,896	648,389	187,630	882,549	1,766	3,380,230	12,302	(83,430)	3,309,102
1980	1,810	500	134,800	758,100	1,946	1,317,614	2,214,770	1,529,749	404,557	46,459	875,045	2,131	2,857,941	0	(26,606)	2,831,335
1981	1,940	650	137,000	818,000	2,813	1,432,065	2,392,468	1,909,562	908,428	279,161	838,557	4,688	3,940,396	0	(802,263)	3,138,133
1982	1,970	800	139,200	876,500	5,626	1,550,449	2,574,545	1,750,024	215,873	154,882	776,330	4,646	2,901,755	0	480,752	3,382,507
1983	2,000	950	141,400	867,118	8,439	1,681,257	2,701,164	1,184,869	13,019	181,453	602,905	7,849	1,990,095	0	(90,997)	1,899,098
1984	3,630	1,100	143,600	979,211	12,698	1,744,098	2,884,337	1,588,619	262,917	381,024	832,332	7,040	3,071,932	0	(140,182)	2,931,750
1985	3,760	1,250	145,800	1,019,049	21,138	1,864,849	3,055,846	1,995,453	307,672	404,842	870,008	4,033	3,582,008	0	92,885	3,674,893
1986	4,190	1,400	148,100	1,091,946	28,210	1,983,890	3,257,736	1,995,636	36,620	193,606	791,737	3,865	3,021,464	0	284,380	3,305,844
1987	4,620	1,550	150,300	1,188,500	35,204	2,103,941	3,484,115	2,130,086	114,907	377,592	831,947	7,672	3,462,204	0	(390,413)	3,071,791
1988	5,060	15,471	152,500	1,246,100	43,722	2,225,482	3,688,335	2,385,122	0	507,076	794,834	4,889	3,691,921	0	(92,850)	3,599,071
1989	5,500	24,615	156,700	1,290,400	56,342	2,424,633	3,958,190	2,853,747	0	474,559	830,500	8,135	4,166,941	0	447,917	4,614,858
1990	6,040	28,190	160,900	1,313,450	70,486	2,500,600	4,079,666	2,582,151	90	424,697	875,099	9,262	3,891,299	0	(528,869)	3,362,430
1991	11,880	29,590	166,400	1,338,011	70,486	2,510,200	4,126,567	549,113	3,521	551,051	565,395	4,879	1,673,959	0	167,435	1,841,394
1992	11,920	32,010	171,900	1,342,300	70,486	2,510,200	4,138,816	1,471,454	1,156	144,789	613,978	2,605	2,233,982	0	(63,541)	2,170,441
1993	11,960	34,620	177,400	1,342,300	70,486	2,510,200	4,146,966	2,315,235	0	254,854	822,589	2,609	3,395,287	0	726,123	4,121,410
1994	12,000	37,215	182,000	1,342,300	70,486	2,510,200	4,154,201	1,749,351	112,625	236,739	874,018	8,200	2,980,933	0	(295,405)	2,685,528
1995	12,050	44,030	184,000	1,342,300	70,486	2,510,200	4,163,066	1,967,093	64,330	78,425	860,077	2,575	2,972,500	0	69,536	3,042,036
1996	12,100	48,225	186,000	1,301,630	70,486	2,492,900	4,111,341	2,514,825	28,647	251,391	934,997	3,907	3,733,767	86	491,550	4,225,403
1997	12,150	49,315	188,000	1,297,300	45,201	2,492,900	4,084,866	2,325,775	21,432	322,000	993,211	4,146	3,666,564	527	(11,806)	3,655,285
1998	12,200	50,420	188,000	1,272,300	45,201	2,517,900	4,086,021	1,725,519	20,288	134,682	872,738	2,108	2,755,335	0	(132,491)	2,622,844
1999	12,250	51,500	188,000	1,272,300	70,486	2,519,900	4,114,436	2,738,891	158,070	85,312	1,108,672	4,324	4,095,269	0	(189,525)	3,905,744
2000	14,000	55,945	210,000	1,205,300	70,486	2,565,900	4,121,631	3,200,677	308,785	322,655	1,085,886	4,030	4,932,032	0	(20,103)	4,911,929
2001	14,670	66,561	220,000	1,185,519	70,486	2,566,900	4,124,136	1,690,926	43,435	477,835	1,078,656	2,929	3,293,781	0	159,983	3,453,764
2002	14,730	67,396	220,000	1,195,219	70,486	2,557,200	4,125,031	2,573,030	37,165	307,162	1,132,938	3,694	4,053,989	0	80,709	4,129,673
Total	**208,490**	**643,303**	**5,346,638**	**31,845,957**	**1,081,886**	**57,149,509**	**96,275,783**	**56,158,515**	**6,692,882**	**7,989,243**	**29,651,342**	**129,676**	**100,621,658**	**1,834,310**	**266,539**	**102,717,482**

[a] Values include amounts of deliveries to short-term contractors (Mustang Water District, 1970-72; Tracy Golf and Country Club, 1974, 1979, and 1980; Green Valley Water District, 1974, 1975, 1978, 1979, 1980, and 1985; Granite Construction Company, 1980).
[b] Includes amounts of SWP non-Table A water and non-SWP water conveyed for SWP and non-SWP water contractors.
[c] Includes amounts of water diverted under various water rights agreements.
[d] Amounts reflect net effect of (1) operational losses from SWP transportation facilities; (2) changes in reservoir storage south of Delta; (3) storable local inflows to SWP reservoirs; (4) side inflow to San Luis Canal; and (5) inflow into California Aqueduct from Kern River Intertie.

Non-SWP Water Deliveries. Column 14 includes deliveries of nonproject water to long-term water contractors. Nonproject water is generally local and permit water that a SWP contractor has a water right to, or water purchased from, exchanged with, or transferred from non-SWP agencies. In 2002, nonproject water deliveries totaled 117,121 acre-feet.

Total Deliveries. Column 15 shows total amounts of water delivered to long-term contractors. In 2002, the SWP delivered 2,783,018 acre-feet to 26 long-term contractors. This amount included 2,573,030 acre-feet of approved Table A water, 37,165 acre-feet of Article 21 and unscheduled water, and 117,121 acre-feet of nonproject water.

Water Delivered in 2002 by Month

During 2002, the SWP provided water service to 51 agencies, including 26 long-term water contractors. Those agencies and the amounts of water delivered to them by month are listed in Table 9-4.

This section and the accompanying table summarize water deliveries for 2002. Information about those deliveries is categorized as SWP water and nonproject water.

SWP Water

SWP water delivered in 2002 is categorized as follows:

Long-term water supply contracts

Article 21

carryover approved Table A water

current year approved Table A amounts

flexible storage

transfer and exchange of approved Table A water

turnback pools A and B

Related water

operational flood release

recreation and fish and wildlife

In 2002, SWP water was delivered in the following classifications and amounts.

Approved Table A Water. A total of 2,412,859 acre-feet of 2002 approved Table A water was delivered to 26 long-term contractors. Also, 160,171 acre-feet of carryover water, and 395 acre-feet of flexible storage withdrawal water were delivered in 2002.

Exchanges and Transfers of Approved Table A Water. During 2002, a total of 66,145 acre-feet of approved Table A water was exchanged or transferred to SWP long-term contractors and non-SWP water agencies as follows:

- Santa Barbara transferred 745 acre-feet to Dudley Ridge;
- Kern transferred 6,133 acre-feet to Dudley Ridge;
- Tulare Lake transferred 3,000 acre-feet of water to Westlands and exchanged 12,067 acre-feet with Westlands;
- Del Puerto Water District received 6,500 acre-feet of exchange water from Kern, and San Luis Water District received 900 acre-feet of exchange water from Kern;
- San Bernardino transferred 35,000 acre-feet to Metropolitan; and
- San Gabriel received 1,800 acre-feet of exchange water from Dudley Ridge.

2001 Carryover Approved Table A Water. In 2002, 160,171 acre-feet of 2001 approved Table A water were delivered that had been stored in SWP storage facilities in 2001.

Article 21 Water. The Article 21 water program allows a contractor to take delivery of

water over the approved and scheduled Table A amounts for the current year. In 2002, 14 contractors participated in the program. A total of 37,165 acre-feet of Article 21 water was delivered, including 37,139 acre-feet delivered to Napa, Solano, Alameda-Zone 7, Alameda County, Dudley Ridge, Santa Clara, Kern, Tulare, Oak Flat, Santa Barbara, Castaic Lake, Coachella, Desert, and Metropolitan. Empire took delivery of 26 acre-feet of unscheduled water.

Water for Recreation and Fish and Wildlife. A total of 3,694 acre-feet of SWP water was conveyed for recreational use and enhancement of fish and wildlife.

Recreational Use. The SWP delivered 726 acre-feet of water for facilities at Lake Oroville, Lake Del Valle, O'Neill Forebay, Silverwood Lake, and Lake Perris. In addition, 2,486 acre-feet were delivered to Castaic Lake and Castaic Lagoon, an impoundment downstream from Castaic Lake devoted entirely to recreation.

Wildlife Management. The SWP delivered 482 acre-feet of water to use in managing wildlife in the Pilibos Wildlife Area, located on about 770 acres of land near O'Neill Forebay, 40 miles south of Los Banos.

Operational Flood Release Water

There was no operational flood water released in 2002.

Non-SWP Water

In 2002, the Department used SWP facilities to convey non-SWP water for various agencies according to the terms of water rights and water transfer and exchange agreements. Detailed information concerning those conveyances is found under the *Miscellaneous Agreements with Other Agencies* section in this chapter.

Floodwater. Occasionally, during wet years, the Department accepts floodwater from the Kern River into the California Aqueduct through the Kern River-California Aqueduct Intertie under an agreement entitled *Agreement among the State of California, Kern County Water Agency, and the Kern River Interests for Diversions of Floodwaters through the Kern River-California Aqueduct Intertie*, dated November 18, 1975. In 2002, the Department did not accept any floodwater into the California Aqueduct.

Water Rights Water. Water in this category is transported through SWP facilities to long-term SWP contractors and other agencies according to terms of various local water rights agreements. Some water simply passes through SWP transportation facilities; a portion is stored in SWP reservoirs for release at a later time. In 2002, 1,141,622 acre-feet of water in this category were delivered to the Feather River and South Bay.

Feather River Area. Ten nonproject agencies in the Feather River area received 1,132,938 acre-feet. Those agencies are

- Last Chance Creek Water District, 9,903 acre-feet
- Thermalito Irrigation District, 2,389 acre-feet
- Oroville-Wyandotte Irrigation District, 5,812 acre-feet
- Western Canal Water District, 299,212 acre-feet
- Joint Water Districts Board, 787,150 acre-feet
- Oswald Water District, 287 acre-feet
- Tudor Mutual Water Company, 3,514 acre-feet
- Garden Highway Mutual Water Company, 15,658 acre-feet
- Plumas Mutual Water Company, 7,955 acre-feet
- Dana Brothers, 1,058 acre-feet

South Bay Area. In the South Bay area, 8,684 acre-feet of local water were delivered to Alameda-Zone 7 and Alameda County. These two South Bay Aqueduct contractors hold water rights to runoff from Lake Del Valle watershed.

Annual Table A Water and Water Delivered Since 1962

Information about annual Table A water and water conveyed for the past 40 years is contained in Table 9-5. The following discussion of conveyed Table A water is arranged according to column numbers.

Annual Table A. Columns 1 through 7 of Table 9-4 show the amount of long-term contractor's annual Table A water by area for years 1962 through 2002 as specified in the Table A schedules of the long-term water supply contracts.

In some instances Table A schedules—projections of each contractor's need for water to 2035—have been amended to meet the needs of individual contractors. The amounts of annual Table A water each contractor may request for years 1962 through 2035 can be found in Table B-4 in Appendix B.

Water Delivered. Columns 8 through 16 show water delivered or conveyed, including initial fill water and operational losses and storage changes.

Approved Table A Water. Column 8 shows amounts of approved Table A water delivered each year from 1962 through 2002.

Article 21 and Unscheduled Water. Article 21 and unscheduled water is water in excess of that required to meet all demands for the year's approved Table A water and water to be stored in SWP reservoirs.

Column 9 shows amounts of Article 21 water, as defined under *SWP Deliveries*, and unscheduled water delivered from 1962 through 2002.

Other Water. Column 10 includes amounts of water classified as other water delivered, including nonproject water conveyed through SWP facilities and regulated delivery of local supply.

In 2002, a total of 307,162 acre-feet of other water was delivered.

Feather River Diversions. Column 11 includes amounts of water from the Feather River delivered according to agreements for water rights water. In 2002, a total of 1,132,938 acre-feet in this category was delivered to agencies in the Feather River area.

Recreation Water. Column 12 shows water conveyed for recreational use or to provide water to improve water quality for fish and wildlife. In 2002, a total of 3,694 acre-feet of SWP water was conveyed for this purpose.

Initial Fill Water. The quantities listed in Column 14 represent the amounts used to initially fill the aqueducts and reservoirs south of the Delta to maximum operating capacities. Initial filling began in 1962 with the filling of the South Bay Aqueduct and was completed in 1979 when Lake Perris reached its maximum operating capacity of 127,000 acre-feet. In 1996 and 1997, the Coastal Aqueduct was initially filled.

Operational Losses. Column 15 includes the total amounts of water lost through evaporation and seepage, net storage changes in reservoirs south of the Delta, and amounts of inflow from local drainage areas, including inflows into San Luis Canal and from the Kern River Intertie.

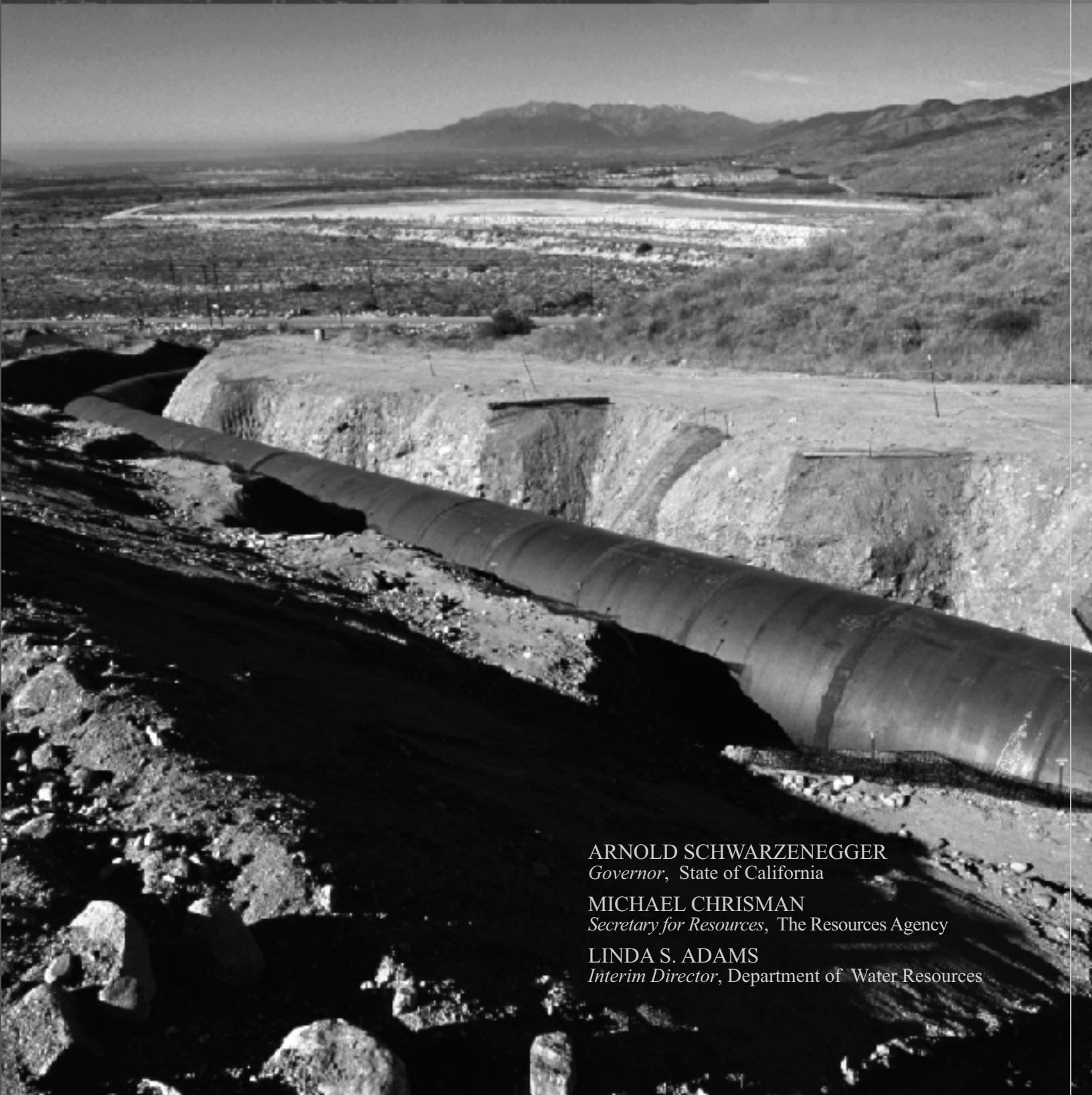
Negative values are indicated for years when withdrawals and evaporation from reservoirs south of the Delta exceed the amounts of water added to the reservoirs.

Information for this chapter was contributed by the State Water Project Analysis Office.

MANAGEMENT OF THE CALIFORNIA STATE WATER PROJECT

BULLETIN 132-02

JANUARY 2004



ARNOLD SCHWARZENEGGER
Governor, State of California

MICHAEL CHRISMAN
Secretary for Resources, The Resources Agency

LINDA S. ADAMS
Interim Director, Department of Water Resources

Chapter 9
Water Contracts and Deliveries

South Bay Pumping Plant

Significant Events in 2001

- On October 1, 2000, SWP long-term contractors submitted initial requests for 2001 approved Table A deliveries totaling 4.12 million acre-feet. The Department approved deliveries of 1.65 million acre-feet on December 1, 2000, resulting in initial approved Table A amounts of 40 percent for most SWP contractor requests. Unusually dry conditions caused the Department to decrease the 2001 approved Table A amounts to 824,000 acre-feet (20 percent) on January 31, 2001. As a result of improvements in water conditions, approved Table A amounts were increased to 1.03 million acre-feet (25 percent) on March 6, 2001; 1.24 million acre-feet (30 percent) on March 15, 2001; 1.38 million acre-feet (33 percent) on May 4, 2001; 1.44 million acre-feet (35 percent) on May 17, 2001; and finally to 1.61 million acre-feet (39 percent) on August 16, 2001.
- In 2001, 3,206,922 acre-feet of water were conveyed to 26 long-term contractors and 18 other agencies. That amount includes 1,546,742 acre-feet of approved Table A water; 43,182 acre-feet of Article 21 water and 253 acre-feet of unscheduled water; 2,929 acre-feet of SWP water for recreation, fish and wildlife; and 1,613,816 acre-feet of water delivered to satisfy water rights settlement agreements and agreements with SWP contractors and other agencies, including the Bureau of Reclamation.
- The Department executed five amendments to long-term water supply contracts.
- The Department executed 7 water conveyance / exchange agreements, 4 turnout agreements, 24 Turnback Water Pool Program agreements, 3 storage agreements, 9 Article 21 Water Program agreements, and one unscheduled water program agreement with SWP contractors.
- The Department conveyed 248,086 acre-feet of Central Valley Project water through SWP facilities.
- Ten Feather River water right settlement agencies received a total of 1,078,656 acre-feet.

The long-term water supply contracts for water service from the State Water Project between the Department and 29 local agencies are basic to the project's construction and operation. In return for State financing, constructing, operating, and maintaining facilities needed to provide water service, the agencies contractually agreed to repay all associated SWP capital and operating costs.

The Department delivers water to SWP contractors according to their long-term water supply contracts.

These contracts set forth Table A amounts, which determine how much water a contractor may request each year from the Department.

Annual Table A represents the total amount of project water that an SWP contractor may request each year, according to that contractor's long-term water supply contract.

Approved Table A represents the amount of annual Table A requested by the contractors and approved for delivery by the Department, based on hydrologic conditions, current reservoir storage, and total requests by the SWP water

Long-Term SWP Water Supply Contracts

The first water supply contract was signed with the Metropolitan Water District of Southern California on November 4, 1960. The contract was negotiated by the Department and Metropolitan according to terms of the contracting principles for water service contracts announced by Governor Edmund G. Brown on January 20, 1960.

The Metropolitan contract became the prototype for all water contracts; by the end of 1967, 31 agencies had contracted for water. In addition, a water supply contract was executed with the City of West Covina in December 1963, but was terminated in August 1965; the city's Table A amount was transferred to Metropolitan through an amendment to the district's long-term contract with the Department. Long-term contracts with Hacienda Water District and Devil's Den Water District were also terminated when those districts transferred their Table A amounts, through contract amendments, to Tulare Lake Basin Water Storage District (1981) and Castaic Lake Water Agency (1992), respectively. Today the SWP has long-term water supply contracts with 29 agencies. Those contracts have been amended periodically to incorporate mutually desired modifications.

All water contracts signed in the 1960s included an estimate of the date water would first be delivered and a schedule of the amount of water the agency could expect to be delivered annually (annual Table A amounts). That amount was designed to increase gradually until the maximum amount of annual Table A was reached. The total combined maximum annual Table A amount for all water contracting agencies was initially 4,230,000 acre-feet, assuming full development of the SWP.

The contracts were initially designed to be valid for 75 years or until all bonds sold as part of the California Water Resources Development Bond Act were repaid, whichever period was longer. As a result of amendments to contracts in the 1990s, the current combined maximum annual Table A amount totals 4,172,786 acre-feet, and the contracts are in effect for the longest of the following periods: (1) the project repayment period, which extends to the year 2035; (2) 75 years from the date of the contract; or (3) the period ending with the latest maturity date of any bond used to finance the construction costs of project facilities.

contractors. The Department is not always able to deliver the quantity of water requested by the contractors; under certain conditions, a lesser amount, allocated according to the long-term water supply contracts and the process noted above, is made available for delivery.

Approved Table A amounts may also be referred to in this chapter as *approved amounts* or *approved water.*

The long-term water supply contracts are amended as needed. During 2001, the Department executed five amendments to these contracts.

The Department also enters into miscellaneous agreements with SWP contractors and other agencies—which may be amended periodically—to convey SWP and non-SWP water through the California Aqueduct and approve the construction, operation, and maintenance of turnouts along SWP facilities. During 2001, the Department executed 7 water conveyance/exchange agreements, 4 turnout agreements, 24 Turnback Water Pool Program agreements, 3 storage agreements, 9 Article 21 Water Program agreements, and one unscheduled water program agreement with SWP contractors. Pending execution are one water conveyance/exchange agreement, four turn-in agreements, and two storage agreements.

The State Water Project Analysis Office has developed a numbering system for contracts, amendments, and agreements executed by the Department. These numbers, designated as SWPAO #XXXXX, are located in parentheses after each contract, amendment, or agreement.

Detailed information about amendments and agreements follows.

Amendments to Long-Term SWP Water Supply Contracts

All the original contracts signed by the Department and local agencies have been previously amended to incorporate mutually desired changes. Most amendments fall under the following five general categories:

(1) revision of Table A amounts in the water supply contracts;
(2) allocation of costs and benefits for the enlargement or extension of the East Branch and extension of the Coastal Branch of the California Aqueduct;
(3) purchase of excess capacity in the California Aqueduct;
(4) provisions to allow contractors, during certain conditions, to carry over undelivered SWP approved Table A water from one year for delivery in the next year; and
(5) implementation of Monterey Agreement principles.

The following long-term SWP Water Supply Contracts were amended during 2001.

Antelope Valley-East Kern Water Agency. The Department executed Amendment No. 20 to the Water Supply Contract between AVEK and the Department on December 31, 2001. The Amendment provided for the permanent transfer of 3,000 acre-feet of SWP Table A amounts from Tulare Lake Basin Water Storage District to AVEK, and set forth conditions for the transfer. The transfer is effective January 1, 2002. (SWPAO #02004)

County of Butte. The Department executed Amendment No. 16 to the Water Supply Contract between Butte and the Department on December 26, 2001. The Amendment provided for reduction of Butte's Table A amounts from 27,500 acre-feet to 3,500 acre-feet for 2002, 2003, and 2004. In 2005, Butte's Table A amounts will revert to the maximum of 27,500 acre-feet. (SWPAO #01030)

Dudley Ridge Water District. The Department executed Amendment No. 24 to the Water Supply Contract between Dudley Ridge and the Department on December 31, 2001. The Amendment provided for the permanent transfer of 3,973 acre-feet of SWP Table A amounts from Tulare to Dudley Ridge, and set forth conditions

for the transfer. The transfer is effective January 1, 2002. (SWPAO #02002)

Tulare Lake Basin Water Storage District. The Department executed Amendment No. 26 to the Water Supply Contract between Tulare and the Department on December 31, 2001. The Amendment provided for the permanent transfer of 3,973 acre-feet of SWP Table A amounts from Tulare to Dudley Ridge, and set forth conditions for the transfer. The transfer is effective January 1, 2002. (SWPAO #02001)

Tulare Lake Basin Water Storage District. The Department executed Amendment No. 27 to the Water Supply Contract between Tulare and the Department on December 31, 2001. The Amendment provided for the permanent transfer of 3,000 acre-feet of SWP Table A amounts from Tulare to AVEK, and set forth conditions for the transfer. The transfer is effective January 1, 2002. (SWPAO #02003)

Monterey Amendments

The Monterey Amendments restructure and clarify procedures for SWP water allocation during times of shortage; increase the use of water management practices that improve the reliability of water supplies; adjust the financial rate structure of the SWP to more closely match revenue needs; and provide accurate information on SWP capabilities. The Monterey Amendments are discussed in detail in Chapter 1, *Summary of Significant Events*, of Bulletin 132-95.

No Monterey Amendments were executed during 2001. Plumas County Flood Control and Water Conservation District and Empire West Side Irrigation District remain the only long-term SWP contractors who have not signed the Monterey Amendment.

The Planning and Conservation League filed a lawsuit on December 27, 1995, challenging the California Environmental Quality Act compliance for the Monterey Amendment. A Sacramento County Superior Court judge later dismissed the lawsuit. PCL appealed the decision and on September 15, 2000, the Third District Court of Appeal reversed the Superior Court ruling. On December 13, 2000, the California Supreme Court denied review. The parties commenced mediation, and proceedings in Superior Court are stayed pending completion of mediation. Proposals and counterproposals have been exchanged without success, and mediation is continuing. The stay of litigation in Superior Court has been extended to June 2002. Additional information can be found in Chapter 6, *Legislation and Litigation*.

Monterey Settlement Agreement Guidelines

Although the Monterey Settlement Agreement, dated May 5, 2003, falls outside the reporting period for Bulletin 132-02, the transfer guidelines prepared in connection with the agreement are reported here in order to meet the requirement of Item 5 of the guidelines, which specifies that they be published in the next edition of Bulletin 132.

The Settlement Agreement was reached in *Planning and Conservation League et al. v. Department of Water Resources*. In accordance with this Settlement Agreement, the *Guidelines for Review of Proposed Permanent Transfers of State Water Project Annual Table A Amounts* are given below. The guidelines are also available online at www.swpao.water.ca.gov/pdfs/03-09.pdf.

(1) *Purpose*: The purpose of these guidelines is to describe the process for DWR's review of proposed permanent transfers of State Water Project Annual Table A Amounts and, by so doing, provide disclosure to SWP contractors and to the public of DWR's process and policy for approving permanent transfer of SWP Annual Table A Amounts. Such disclosure should assist contractors in developing their transfer proposals and obtaining DWR review expeditiously, and assist the public in participating in that review.

(2) *Coverage*: These guidelines will apply to DWR's approval of proposed permanent transfers of water among existing SWP contractors and, if and when appropriate, to proposed permanent transfers of water

from an existing SWP contractor to a new SWP contractor.

(3) *Interpretation*: These guidelines are in furtherance of the State policy in favor of voluntary water transfers and shall be interpreted consistent with the law, including but not limited to Water Code Section 109, the Burns-Porter Act, the Central Valley Project Act, the California Environmental Quality Act, area of origin laws, the public trust doctrine, and with existing contracts and bond covenants. These guidelines are not intended to change or augment existing law.

(4) *Revisions*: Revisions may be made to these guidelines as necessary to meet changed circumstances, changes in the law or long-term water supply contracts, or to address conditions unanticipated when the guidelines are adopted. Revisions shall be in accordance with the Settlement Agreement.

(5) *Distribution*: The transfer guidelines shall be published by DWR in the next available edition of Bulletin 132, and also as part of the biennial disclosure of SWP reliability as described in the Settlement Agreement.

(6) *Contract Amendment*: Permanent transfers of SWP water are accomplished by amendment of each participating contractor's long-term water supply contract. The amendment consists of amending the Table A upwards for a buying contractor and downwards for a selling contractor. The amendment shall be in conformity with all provisions of the long-term water supply contracts, applicable laws, and bond covenants. Other issues to be addressed in the contract amendment will be subject to negotiation among DWR and the two participating contractors. The negotiations will be conducted in public, pursuant to the Settlement Agreement and Notice to State Water Project Contractors Number 03-10.

(7) *Financial Issues*: The purchasing contractor must demonstrate to DWR's satisfaction that it has the financial ability to assume payments associated with the transferred water. If the purchasing entity was not a SWP contractor as of 2001, special financial requirements pertain as described below, as well as additional qualifications.

(8) *Compliance with CEQA*: Consistent with CEQA, the State's policy to preserve and enhance environmental quality will guide DWR's consideration of transfer proposals (Public Resources Code Section 21000). Identification of the appropriate lead agency will be based on CEQA, the CEQA Guidelines, and applicable case law, including *PCL v. DWR*. CEQA requires the lead agency at a minimum to address the feasible alternatives to the proposed transfer and its potentially significant environmental impacts (1) in the selling contractor's service area; (2) in the buying contractor's service area; (3) on SWP facilities and operations; and (4) on the Delta and areas of origin and other regions as appropriate. Impacts that may occur outside of the transferring SWP contractors' service areas and on fish and wildlife shall be included in the environmental analysis. DWR will not approve a transfer proposal until CEQA compliance is completed. The lead agency shall consult with responsible and trustee agencies and affected cities and counties and, when DWR is not the lead agency, shall provide an administrative draft of the draft EIR or Initial Study/Negative Declaration to DWR prior to the public review period. A descriptive narrative must accompany a checklist, if a checklist is used. The lead agency shall conduct a public hearing on the EIR during the public comment period and notify DWR's State Water Project Analysis Office of the time and place of such hearing in addition to other notice required by law.

(9) *Place of Use*: The purchasing contractor must identify the place and purpose of use of the purchased water, including the reasonable and beneficial use of the water. Typically, this information would be included in the environmental documentation. If a specific transfer proposal does not fit precisely into any of the alternatives listed below, DWR will use the principles described in these Guidelines to define the

process to be followed. The information to be provided under this paragraph is in addition to the CEQA information described in Paragraph 8 of these guidelines.

a. If the place of use is within the contractor's service area, the contractor should disclose the purpose of the transferred water, such as whether the water is being acquired for a specific development project, to enhance overall water supply reliability in the contractor's service area, or some other purpose. If the transferred water is for a municipal purpose, the contractor should state whether the transfer is consistent with its own Urban Water Management Plan or that of its member unit(s) receiving the water.

b. If the place of use is outside the contractor's service area, but within the SWP authorized place of use, and service is to be provided by an existing SWP contractor, then, in addition to *Paragraph 9(a)* above, the contractor should provide DWR with copies of LAFCO approval and consent of the water agency with authority to serve that area, if any. In some instances, DWR's separate consent is required for annexations in addition to the approval for the transfer.

c. If the place of use is outside the SWP authorized place of use and service is to be provided by an existing SWP contractor, the contractor should provide information in *Paragraph 9(a)* and *9(b)*. Prior to approving the transfer, DWR will consider project delivery capability, demands for water supply from the SWP, and the impact, if any, of the proposed transfer on such demand. If DWR approves the transfer, DWR will petition State Water Resources Control Board for approval of expansion of authorized place of use. Water will not be delivered until the place of use has been approved by the SWRCB and will be delivered in compliance with any terms imposed by the SWRCB.

d. If the place of use is outside the SWP authorized place of use and service is not to be provided by an existing SWP contractor, DWR will consider the transfer proposal as a proposal to become a new SWP contractor. Prior to adding a new SWP contractor, DWR will consider project delivery capability, demands for water supply from the SWP, and the impact, if any, of the proposed transfer on such demand. DWR will consult with existing SWP contractors regarding their water supply needs and the proposed transfer. In addition to the information in Paragraph 9(a), 9(b), and 9(c), the new contractor should provide information similar to that provided by the original SWP contractors in the 1960's Bulletin 119 feasibility report addressing hydrology, demand for water supply, population growth, financial feasibility, etc.

DWR will evaluate these issues independently and ordinarily will act as lead agency for CEQA purposes. In addition, issues such as area of origin claims, priorities, environmental impacts and use of water will be addressed. The selling contractor may not be released from financial obligations. The contract will be subject to a CCP 860 validation action initiated by the new contractor. If DWR approves the transfer, DWR will petition the SWRCB for approval of expansion of authorized place of use. Water will not be delivered until the place of use has been approved by the SWRCB and will be delivered in compliance with any terms imposed by the SWRCB.

(10) *DWR Discretion*: Consistent with the long-term water supply contract provisions, CEQA, and other provisions of law, DWR has discretion to approve or deny transfers. DWR's exercise of discretion will incorporate the following principles:

a. As required by CEQA, DWR as an agency with statewide authority will implement feasible mitigation measures for any significant environmental impacts resulting from a transfer if such impacts and their mitigation are not addressed by other public agencies and are within DWR's jurisdiction.

b. DWR will invoke "overriding considerations" in approving a transfer only as authorized by law, including but not limited to CEQA, and, to the extent applicable, the public trust doctrine and area of origin laws.

Miscellaneous Agreements with Long-Term SWP Contractors

Water Conveyance/Exchange Agreements

During 2001, water conveyance/exchange agreements were executed with long-term SWP contractors as described below.

Dudley Ridge Water District. An agreement executed on December 26, 2001, between the Department, Dudley Ridge, and Tulare, provided for the delivery of up to 3,000 acre-feet of Dudley Ridge's 2001 approved Table A amounts to Tulare's turnout at Reach 8D of the California Aqueduct. Dudley Ridge requested the delivery to Tulare's turnout in addition to Dudley Ridge's turnout due to the rapid filling of San Luis Reservoir, the need to deliver 2000 SWP carryover Table A prior to spilling, and the availability of 2001 Article 21 water. A total of 674 acre-feet of Dudley Ridge's Article 56 carryover water was delivered to Tulare's turnout at Reach 8D during 2001. (SWPAO #01025)

Empire West Side Irrigation District. An agreement executed October 18, 2001, between the Department and Empire, approved the delivery of unscheduled water to Empire in 2001 at times when project water was not needed for fulfilling approved Table A deliveries or for meeting project operational commitments. A total of 253 acre-feet of unscheduled water was delivered to Empire in 2001. (SWPAO #01026)

Kern County Water Agency. A letter agreement, pending execution between the Department and Kern, will provide for the delivery of up to 20,000 acre-feet of 2001 water year CVP water supply from the Bureau on behalf of four Central Valley Project contractors. In exchange, Kern would return a like amount of its approved Table A amounts to the CVP contractors by December 31, 2001. The Department petitioned the State Water Resources Control Board in May 2001 for approval for delivery of the return water. A total of 11,487 acre-feet was delivered to CVP contractors at O'Neill Forebay and 11,487 acre-feet of water was returned from O'Neill Forebay to Kern in 2001. (SWPAO #01010)

Kern County Water Agency. A letter agreement dated September 21, 2001, and executed October 5, 2001, between the Department, Kern, and Dudley Ridge, approved the transfer of up to 1,500 acre-feet of Kern's 2001 Table A amounts to Dudley Ridge. The agreement facilitated the water transfer from Kern to Dudley Ridge on behalf of two landowners, C. J. Richie Farms and Westfarmers, who farm in both Kern and Dudley Ridge service areas. During 2001, a total of 1,500 acre-feet was delivered to Dudley Ridge. (SWPAO #01032)

Tulare Lake Basin Water Storage District. A letter agreement dated May 24, 2001, and executed June 6, 2001, between the Department, Tulare, and Empire approved the transfer of up to 500 acre-feet of Tulare's 2001 Table A amounts to Empire, on behalf of the landowner Westlake Farms, Inc., who farms in both Tulare and Empire service areas. During 2001, a total of 500 acre-feet of Tulare's Article 56 carryover water was delivered to Empire. (SWPAO #01020)

Tulare Lake Basin Water Storage District. A letter agreement dated June 27, 2001, and executed July 6, 2001, between the Department and Tulare, approved the transfer of up to 1,000 acre-feet of Tulare's 2001 Table A amounts to Westlands, on behalf of landowner Newton Brothers, who farms in both the Tulare and Westlands (Venture Farms Trust) service areas. The Department petitioned SWRCB on June 26, 2001, for approval of a temporary change of place of use. During 2001, a total of 82 acre-feet was delivered to Westlands. (SWPAO #01021)

Tulare Lake Basin Water Storage District. A letter agreement, dated June 15, 2001, and executed July 26, 2001, between the Department, Tulare, and Westlands, provides for the delivery of up to 50,000 acre-feet of non-project water from Westlands to Tulare between December 2000 and April 15, 2001, in exchange for a like amount of Tulare's Table A amounts during the period 2001 through 2003. The delivery of SWP exchange water to Westlands will be from the Delta to Reach 7 of the California Aqueduct for use within the Kings County portion of Westlands' service area. During December 2000, a total of 2,981 acre-feet was delivered to Tulare. During January, March, and April, a total of 25,164 acre-feet was delivered to Tulare. A combined total of 28,145 acre-feet was delivered to Tulare during 2000 and 2001. During 2001, 1,975 acre-feet were returned to Westlands, leaving a balance of 26,170 acre-feet to be returned to Westlands. (SWPAO #01009)

Tulare Lake Basin Water Storage District. A letter agreement dated June 29, 2001, and executed July 6, 2001, between the Department and Tulare, approved the transfer of up to 3,000 acre-feet of Tulare's 2001 Table A amounts to Westlands. The agreement facilitated the water transfer from Tulare to Westlands, on behalf of landowner Hansen Ranches, who farms in both the Tulare and Westlands (Vista Verde Farms, Inc.) service areas. The Department petitioned SWRCB on June 26, 2001, for approval of a temporary change of place of use. The Department has approved similar transfers annually since 1996. During 2001, a total of 1,000 acre-feet was delivered to Westlands. (SWPAO #01022)

During 2001, water was delivered pursuant to agreements with SWP contractors executed prior to 2001, as described below.

Alameda County Flood Control and Water Conservation District-Zone 7. A conveyance agreement dated July 28, 1995, between Alameda-Zone 7 and the Department provides for the transfer of up to 5,000 acre-feet of Byron-Bethany Irrigation District's local water annually to Alameda-Zone 7 through SWP facilities. An amendment to extend the agreement to December 31, 2001, was executed January 17, 2001. Byron-Bethany may only transfer water that has been made available by conservation and crop idling. In 2001, 3,997 acre-feet of Byron Bethany's local water was pumped at Banks Pumping Plant and delivered to Alameda-Zone 7's turnouts in the South Bay Aqueduct. (SWPAO #00321)

Dudley Ridge Water District. An agreement executed May 22, 1998, among the Department, Dudley Ridge, and Tulare, provided for the change in point of delivery, through 2035, of up to 1,000 acre-feet annually of Dudley Ridge's approved Table A amounts through Tulare's turnout located at Milepost 172.66 of the California Aqueduct. Dudley Ridge's approved Table A amounts will be delivered to Westlake Farms, which is located within Dudley Ridge's service area but not near its conveyance facilities. Tulare has conveyance capability and has agreed to provide service to Westlake Farms. During 2001, the Department delivered 14 acre-feet of Dudley Ridge's 2000 approved Table A amounts through Tulare's turnout at Reach 8C. (SWPAO #98001)

Kern County Water Agency. An agreement executed on June 8, 2000, between the Department, Kern, and Western Hills Water District, approved the delivery of 8,000 acre-feet of pre-1914 Lower River Water banked in Kern's share of the Pioneer Groundwater Banking Project. A portion of Kern's annual Table A amounts will be delivered annually to Western Hills from Reach 2A of the California Aqueduct; in exchange, Kern will take a like amount of banked local water from the Pioneer Groundwater Bank. The Department petitioned SWRCB and by SWRCB Order dated April 21, 2000, Western Hills' service area was included within the authorized SWP place of use. A total of 638 acre-feet of Kern's Table A amounts was delivered to Western Hills at Reach 2A during 2001. (SWPAO #01001)

Mojave Water Agency. An agreement executed November 13, 1997, among AVEK, Mojave, and

the Department, approved a change in point of delivery through 2019 of up to 2,250 acre-feet annually of Mojave's approved Table A amount to AVEK's Fairmont Turnout in Reach 19 of the California Aqueduct. Mojave does not have conveyance facilities to provide service to a solar energy generating station located within its service area. AVEK has conveyance capability and has agreed to provide service. During 2001, the Department delivered 1,385 acre-feet of Mojave's 2001 approved Table A amounts through AVEK's turnout at Reach 19. (SWPAO #97003)

Turn-in Agreements

Antelope Valley-East Kern Water Agency. A turn-in agreement pending execution between the Department and AVEK will approve the introduction of local water into the California Aqueduct during 2001. The local water will be introduced from a temporary turn-in located at Reach 22B, and AVEK will take delivery of local water by exchange with project water delivered upstream in Reach 22A. During 2001, a total of 152 acre-feet of local water was introduced at Reach 22B and 152 acre-feet of SWP water were delivered to AVEK at Reach 22A. (SWPAO #01029)

Kern County Water Agency. A turn-in agreement is pending execution between the Department and Kern. In 2000, Kern, at the request of the Kern Water Bank Authority, constructed a turn-in facility at Milepost 238.19 at Reach 13B of the California Aqueduct. This agreement will approve the introduction of Kern's local water from Kern Water Bank into the California Aqueduct and remains in effect through December 31, 2001. During 2001, a total of 129,062 acre-feet of local water was introduced into the California Aqueduct under this agreement. (SWPAO #01023)

Kern County Water Agency. A turn-in agreement pending execution between the Department and Kern will approve the introduction of Kern's local water from Buena Vista Water Storage District into the California Aqueduct at Reach 13B (Buena Vista 7) at Milepost 242.65. This agreement remains in effect through December 31, 2001. During 2001, a total of 1,695 acre-feet of local water was introduced under this agreement. (SWPAO #01027)

Kern County Water Agency. A turn-in agreement pending execution between the Department and Kern approves the introduction of Kern's local water into the California Aqueduct at Reaches 14B, 14C, and 15. During 2001, a total of 396 acre-feet of local water was introduced into Reach 14B, and a total of 242 acre-feet was introduced into Reach 14C of the California Aqueduct. (SWPAO #01028)

During 2001, water was introduced into the Aqueduct pursuant to agreements with SWP contractors executed prior to 2001, as described below.

Kern County Water Agency. A turn-in agreement executed May 2, 1995, among Kern, Semitropic Water Storage District, and the Department, approved the introduction of Kern's local water into the California Aqueduct at Reach 10A (Semitropic No. 2 Turnout) at Milepost 209.80. During 2001, a total of 1,813 acre-feet of local water was introduced under this agreement.

Turnout Agreements

Antelope Valley-East Kern Water Agency. An agreement dated March 28, 2000, between the Department and AVEK, allowed the construction, operation, and maintenance of the Rancho Vista Turnout at Milepost 339.68, Reach 20B of the California Aqueduct. The turnout has a design capacity of 5 cfs. Construction was completed in March 2000, but was not formally accepted in 2001.

Kern County Water Agency and Belridge Water Storage District. An agreement dated October 29, 2001, among the Department, Kern, and Belridge Water Storage District, allowed the modification, operation, and maintenance of the existing Belridge Turnout No. 1A at Milepost 209.71, Reach 10A of the California Aqueduct. The turnout has a design capacity of

100 cfs. Modification work consists of removing the existing parshall flume measuring system and installing a new 54-inch diameter piped system with a venturi meter.

Kern County Water Agency and West Kern Water District. An agreement dated March 6, 2000, among the Department, Kern, and West Kern, allowed the construction, operation, and maintenance of the West Kern Turnout No. 3 at Milepost 224.07, Reach 12D of the California Aqueduct. The turnout has a design capacity of 15 cfs. Construction of the turnout was completed in April 2001.

Kern County Water Agency and Western Hills Water District. An agreement dated June 8, 2000, among the Department, Kern, and Western Hills, allowed the construction, operation, and maintenance of the Western Hills Turnout at Milepost 42.90, Reach 2A, on the west side of the California Aqueduct. The turn-out has a design capacity of 30 cfs. Construction of the turnout was completed in September 2001.

Agreements and Activities Related to the Monterey Amendments

Turnback Water Pool Program. Under Article 56(d) of the Monterey Amendments, the sixth year of the Turnback Water Pool Program was initiated through Notice to State Water Project Contractors No. 01-04, dated February 9, 2001. All SWP contractors who signed Monterey Amendments were permitted to participate in the program. The program allowed SWP contractors to offer a portion of their approved 2001 Table A water for sale in a turnback pool for use by interested SWP contractors. Based on Table A supply and demand, the turnback water was allocated among the selling and purchasing contractors. In 2001, 18,240 acre-feet of water were purchased under the Turnback Water Pool Program.

Transactions for Pool A and Pool B of the turnback Water Pool Program occurred in February and March 2001, respectively. Turnback water sold for $11.98 per acre-foot—50 percent of the Delta Water Rate—through Pool A, and for $5.99 per acre-foot—25 percent of the Delta Water Rate—through Pool B. All money collected through the Turnback Water Pool Program was paid to the selling contractors. The 2001 Turnback Water Pool Program closed April 1, 2001.

Table 9-1 lists contractors who participated in Pool A and Pool B of the Turnback Water Pool Program.

Table 9-1. 2001 Turnback Water Pool Program (Acre-feet)

Contractor	Sold	Purchased
	Pool A	
San Gorgonio	800	
Ventura	3,000	
Alameda County		107
Dudley Ridge		136
Kern		2,546
Tulare		301
Santa Barbara		116
AVEK		352
Castaic Lake		242
	Pool B	
Mojave	14,240	
San Gorgonio	200	
Napa		82
Alameda-Zone 7		308
Oak Flat		22
Dudley Ridge		211
Kern		3,956
Tulare		468
San Luis Obispo		99
Santa Barbara		180
AVEK		547
Castaic Lake		376
Coachella Valley		91
Desert		151
Metropolitan		7,949

Storage of Water Outside Service Area. Pursuant to Article 56 of the Monterey Amendments, five SWP contractors have agreements with the Department to deliver and store SWP water outside their service area for later use within their service area. The following agreements include provisions concerning the points of delivery and method for transporting such water.

Alameda County Flood Control and Water Conservation District, Zone 7. An agreement dated December 10, 1998, among the Department,

Alameda-Zone 7, and Kern, provided for the delivery of a portion of Alameda-Zone 7's 1998 approved Table A amounts, Article 21 water, and other water supplies for storage and later recovery from Semitropic Water Storage District in accordance with the Alameda-Zone 7 and Semitropic Water Storage District Banking Program Agreement. All return water is to be delivered to Alameda-Zone 7 by December 31, 2035. During 2001, a total of 1,807 acre-feet of water was recovered and delivered to Alameda-Zone 7's service area. (SWPAO #98020)

Alameda County Flood Control and Water Conservation District, Zone 7. An agreement pending execution among the Department, Alameda-Zone 7, and Kern, will provide for the delivery of a portion of Alameda-Zone 7's 2001 approved Table A amounts, Article 21 water, and other water supplies for storage and later recovery from Semitropic, in accordance with the Alameda-Zone 7 and Semitropic Water Storage District Banking Program Agreement. Alameda-Zone 7 signed similar delivery agreements for 1998, 1999, and 2000. All return water is to be delivered to Alameda-Zone 7 by December 31, 2011. During 2001, the Department delivered 5,000 acre-feet of Alameda-Zone 7's 2000 extended carryover water to Reach 10A for storage by Semitropic. (SWPAO #01035)

Alameda County Water District. A change of point of delivery agreement executed on October 22, 2001, among the Department, Alameda County, and Kern, approved the delivery of a portion of Alameda County's 2001 approved Table A amounts, Article 21 water, and other water supplies for storage and later recovery from the Semitropic Water Storage District Banking Program, in accordance with the Alameda County and Semitropic Banking Program Agreement. Alameda County has signed similar delivery agreements since 1996. All return water is to be delivered to Alameda County by December 31, 2035. No water was delivered in 2001 to Reach 10A for storage by Semitropic. (SWPAO #01018)

Dudley Ridge Water District. A change in point of delivery agreement executed on October 1, 2001, among the Department, Dudley Ridge, and Kern, approved the delivery of a portion of Dudley Ridge's 2001 approved Table A amounts, Article 21 water, and other water supplies for storage and later recovery from KWB. Dudley Ridge signed similar delivery agreements since 1996. All return water is to be delivered to Dudley Ridge by December 31, 2011. During 2001, the Department delivered 800 acre-feet of Dudley Ridge's 2000 extended carryover Table A amounts and 933 acre-feet of Article 21 water to Reach 13B for storage by Kern. (SWPAO #01024)

Dudley Ridge Water District. A letter agreement dated January 14, 2000, and executed February 2, 2000, among the Department, Dudley Ridge, and San Gabriel Valley Municipal Water District, provides for the delivery of a portion of Dudley Ridge's 1999 carryover Table A amounts for storage and later recovery from groundwater basins within San Gabriel. All return water is to be delivered to Dudley Ridge by December 31, 2010. A combined total of 4,394 acre-feet was delivered to San Gabriel during 1999 and 2000. According to the agreement, 95 percent of the water stored (4,174 acre-feet with 5 percent loss) will be returned to Dudley Ridge. During 2001, 4,174 acre-feet were returned to Dudley Ridge at Reach 8D, completing this agreement. (SWPAO #99002)

Dudley Ridge Water District. A letter agreement, executed November 19, 1996, among the Department, Dudley Ridge, and Kern, approved the delivery of up to 5,000 acre-feet of Dudley Ridge's 1996 Article 21 water and up to 1,000 acre-feet of Dudley Ridge's Table A amounts to KWB for storage and later recovery. The transfer was part of an exchange with Kern that allowed three landowners in Dudley Ridge to receive a like amount of water from Kern in future years when they could utilize the water more beneficially. During 1996, a total of 4,131 acre-feet was delivered to Kern. During 2001, a total of 3,215 acre-feet was recovered and delivered to Dudley Ridge at Reach 8D.

Dudley Ridge Water District. A letter agreement, executed in 1993, between Dudley Ridge and Kern, allowed the storage of 3,000 acre-feet of pre-1914 Kaweah River water to Rosedale-Rio Water Storage District, a member unit of Kern, for the benefit of Dudley Ridge. In exchange, Rosedale-Rio is to return 2,000 acre-feet of its portion of Kern's Table A water to Dudley Ridge within 10 years. During 1993, a total of 3,000 acre-feet was delivered to Rosedale-Rio for storage. During 1994, a total of 626 acre-feet was returned to Dudley Ridge. During 2001, a total of 1,374 acre-feet was returned to Dudley Ridge at Reach 8D, completing this agreement.

Metropolitan Water District of Southern California. A long-term agreement, pending execution among the Department, Metropolitan, and Kern, approved the delivery of a portion of Metropolitan's annual Table A and other water supplies for storage and later recovery from groundwater basins within Arvin-Edison Water Storage District, in accordance with the Metropolitan and Arvin-Edison water management program agreement. The return water is to be delivered to Metropolitan from Arvin-Edison and/or by exchange of Metropolitan's water for a like amount of Kern's SWP approved Table A amounts or other water deliverable from the California Aqueduct. The water is to be returned to Metropolitan by December 31, 2035.

Before this long-term agreement was prepared, three interim agreements dated December 29, 1997, September 17, 1998 (first amendment to December 29, 1997), and April 13, 1999 (second amendment to December 29, 1997), among the Department, Metropolitan, and Kern provided temporary authorization for Metropolitan to store water in Arvin-Edison. Water was delivered to Arvin-Edison for storage each year from 1997 to 2000 under these agreements. During 2001, no water was delivered for storage in Arvin-Edison, and 20,800 acre-feet were recovered and delivered to Metropolitan at Reach 30. (SWPAO #01013)

Metropolitan Water District of Southern California. A letter agreement executed April 21, 1993, among the Department, Metropolitan, and Kern, approved the delivery of Metropolitan's 1992 carryover water for storage in and later recovery from Semitropic. Water is to be returned by December 31, 2010. A subsequent long-term agreement, executed August 21, 1995, among the Department, Metropolitan, and Kern, approved the annual delivery of a portion of Metropolitan's annual Table A and other water supplies for storage in and later recovery from Semitropic, in accordance with the Metropolitan and Semitropic's Water Banking Program Agreement. This Agreement remains in effect until November 4, 2035. Water was delivered to Semitropic for storage in 1993, and each year from 1995 to 1999. During 2001, 31,500 acre-feet were recovered and delivered to Metropolitan at Reach 30.

Santa Clara Valley Water District. A 1996 agreement among the Department, Santa Clara, and Kern, approved for the delivery of a portion of Santa Clara's approved Table A amounts, Article 21 water, and other water supplies, for storage and later recovery from the Semitropic Water Storage District Banking Program, in accordance with the Santa Clara and Semitropic Banking Program Agreement. All return water is to be delivered to Santa Clara by December 31, 2035. During 1996, 45,000 acre-feet of Santa Clara's approved Table A amounts were delivered to Semitropic for storage. According to the Agreement, 90 percent of the water stored (40,500 acre-feet with 10 percent loss) will be returned to Santa Clara. During 2001, 30,000 acre-feet were returned to Santa Clara and subsequently sold to the Environmental Water Account, leaving a balance of 10,500 acre-feet of water stored in 1996 in Semitropic.

Santa Clara Valley Water District. An agreement, executed on December 27, 2001, among the Department, Santa Clara, and Kern, approved the delivery of a portion of Santa Clara's 2001 approved Table A amounts, Article 21 water, and other water supplies, for storage and later recovery from the Semitropic Water Storage District Banking Program, in accordance with the Santa Clara and Semitropic Banking Program Agreement. Santa Clara has signed similar

delivery agreements since 1996. All return water is to be delivered to Santa Clara by December 31, 2035. During 2001, the Department did not deliver any of Santa Clara's 2001 approved Table A amounts or Article 21 water to Semitropic. (SWPAO #01019)

Article 21 Water Program

Pursuant to Article 21 of the Monterey Amendments, Article 21 water replaces surplus, wet weather, and Article 12(d) water. The Article 21 water program allows a contractor to take delivery of water over the approved and scheduled Table A amounts for the current year. Article 21 water is available for delivery on a short-term basis as determined by the Department when water is still available after operational requirements for project water deliveries, water quality, and other requirements are being met.

The conditions for the Article 21 Water Program for 2001 were described in the February 20, 2001, Notice to State Water Project Contractors No. 01-05. Participants were required to sign the notice, which indicated acceptance of the criteria, procedures, and charges for the program. Nine SWP contractors participated and collectively received a total of 43,182 acre-feet of Article 21 water.

Since Empire has not signed the Monterey Amendment, it may still receive unscheduled water for agricultural purposes. Empire received 253 acre-feet of unscheduled water in 2001.

Flexible Storage Program

Pursuant to Article 54 of the Monterey Amendments, the flexible storage program provides SWP contractors participating in the repayment of the capital costs of Castaic Lake and Lake Perris the option to withdraw water in excess of approved deliveries. The objective of this program is to provide additional flexibility and water management benefits to local participating agencies.

Available "flexible storage" is approximately 50 percent of active storage, providing for 160,000 acre-feet at Castaic Lake and 65,000 acre-feet at Lake Perris. Participating contractors of the Castaic Lake flexible storage program include Metropolitan, Ventura, and Castaic Lake. Respectively, each can withdraw a maximum amount of 153,940 acre-feet, 1,377 acre-feet, and 4,683 acre-feet. At Lake Perris, Metropolitan can withdraw a maximum amount of 65,000 acre-feet. Any participating contractor is given 5 years to replace the water with Table A amounts, purchased water, exchange water, or local water.

Two SWP contractors participated in the Flexible Storage Program in 2001. Metropolitan withdrew 10,692 acre-feet from Lake Perris in the spring and replaced 4,710 acre-feet in the summer, leaving a balance of 10,692 acre-feet at the end of 2001. Metropolitan withdrew 64,300 acre-feet from Castaic Lake, leaving a balance of 64,300 acre-feet at the end of 2001. Castaic Lake Water Agency withdrew 2,589 acre-feet from Castaic Lake during the winter in 2000 and replaced 2,589 acre-feet in 2001, resulting in a zero water balance at the end of 2001.

Extended Carryover Program

Pursuant to Article 56 of the Monterey Amendments, contractors can elect to store project water outside of their service area for later use within their service area. Qualified contractors can request carryover Table A amounts for delivery in the following year to the extent that such deliveries do not adversely affect current or future project operations. Factors that influence how much extended carryover water can be delivered include operational constraints of project facilities, filling of SWP conservation storage facilities, flood control releases, and water quality restrictions. If storage requests exceed the available storage capacity, the amount available is allocated among the contractors requesting storage in proportion to their annual Table A amounts for that year. Eleven SWP contractors took delivery of 289,737 acre-feet of 2000 approved Table A amounts carried over into 2001 as extended carryover. Two SWP contractors had 5,800 acre-feet of their extended

carryover delivered to storage outside their service areas.

Dry Year Water Purchase Program

In 2001, significant areas of California experienced water deficiencies. To reduce the possibility of adverse economic impacts and hardship associated with water shortages, the Department created the Dry Year Water Purchase Program. Eight SWP contractors and Westlands participated in the program by signing a Memorandum of Understanding with the Department. Westlands later withdrew from the program. The remaining participating agencies (i.e., the eight SWP contractors) requested 138,806 acre-feet of dry year water. The Department obtained the water from Yuba County Water Agency and its member agencies, Browns Valley Irrigation District and Western Canal Water District, who made it available through land fallowing, groundwater substitution, and reservoir releases.

The eight SWP contractors that participated in the dry year program and the amount of water they purchased are as follows:

- Metropolitan—80,000 acre-feet
- AVEK—20,298 acre-feet
- Kern—14,125 acre-feet
- Dudley Ridge—13,113 acre-feet
- Santa Barbara—4,814 acre-feet
- Napa—3,200 acre-feet
- Oak Flat—1,656 acre-feet
- Tulare Lake—1,600 acre-feet

The participating agencies also entered into conveyance agreements with the Department to convey the dry year water across the Delta and through SWP facilities. Actual dry year water received by these agencies was less than the amount purchased at the source due to deductions for Delta carriage water losses (15 percent) and conveyance losses (2-3 percent). The total amount of dry year water delivered to the participating agencies was 114,073 acre-feet after deducting those losses.

Environmental Water Account

EWA is a cooperatively managed program intended to provide protection to the fish of the Bay-Delta Estuary through environmentally beneficial changes and increased flexibility in the operations of the SWP and CVP, at no uncompensated water cost to the projects' water users. Responsibility for implementing EWA rests with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the Department of Fish and Game (management agencies), as well as with the Bureau of Reclamation and the Department (project agencies).

Under EWA, fish protection is achieved by periodically curtailing project water delivery from the Bay-Delta to project water users south of the Delta and replacing it at a later date within the same calendar year. This necessitates the acquisition of alternative sources of project water, called *EWA assets*, which are used to replace the project water supply (i.e., the undelivered water). EWA assets consist of *variable assets*, which are acquired through changes in operations; *fixed assets*, which are acquired through purchases from willing water sellers; and *source shifting*, which involves deferral of scheduled delivery of water allocations by willing participants. EWA is considered operational for any year when these assets are in place and Endangered Species Act commitments are provided by the management agencies.

EWA's first operational year was 2001. The first fish actions occurred in January and continued into June. Management agencies required 290,395 acre-feet of curtailments for fish protection, which was achieved by reduction in pumping at Banks and Tracy Pumping Plants in the Delta. A source shift of 50,000 acre-feet was undertaken to reduce the risk of low-point problems at San Luis Reservoir. Also, EWA was responsible for stream augmentation by returning water on a fish-friendly schedule and paying for a facility bypass on the American River to improve water temperature during fish migration. All fixed asset acquisitions in 2001 were made by the Department as single-year transactions and studies were carried out to

ensure that the transactions complied with CEQA.

The Department was able to compensate the SWP for its pumping reductions by acquiring 54,572 acre-feet in variable assets and 247,253 acre-feet of fixed assets through contract agreements. In addition, 72,280 acre-feet of water were acquired through an agreement with the Bureau. The initial year of EWA operation ended with an 83,710 acre-foot credit of water for use during 2002 EWA actions.

The following SWP contractors and non-SWP contractors participated in the Environmental Water Account Program.

Fixed Assets

The fixed asset water amounts below represent the total amounts of water acquired for EWA from various sources. These amounts have not been adjusted to reflect conveyance losses. Table 9-3 provides the relevant conveyance losses and the actual amounts of water delivered.

Arvin-Edison Water Storage District and Kern County Water Agency. An agreement executed on May 3, 2001, between the Department, Arvin-Edison, and Kern approved the purchase of up to 10,000 acre-feet of water for support of EWA under the CALFED Program. Arvin-Edison and Kern made approved carryover of 2000 Table A water available through a local 3-way exchange with Improvement District No. 4, Kern-Tulare Water District, and Rag Gulch Water District. A total of 10,000 acre-feet of the agencies' water was purchased. (SWPAO #01701)

Buena Vista Water Storage District, West Kern Water District, Rosedale-Rio Bravo Water District, and Kern County Water Agency. An agreement executed on May 3, 2001, between the Department and the participating agencies approved the purchase of up to 25,000 acre-feet of stored groundwater through the exchange of approved Table A water for support of EWA under the CALFED Program. Approved SWP water was stored by Kern for the participating agencies within Buena Vista's boundaries in 1995. A total of 23,719 acre-feet of the participants' water was purchased. (SWPAO #01706, #01707, #01708)

Cawelo Water District and Kern County Water Agency. An agreement executed on November 30, 2001, between the Department, Cawelo, and Kern approved the purchase of 5,000 acre-feet of groundwater through the exchange for approved Table A water and storage of up to 10,000 acre-feet of water for support of EWA under the CALFED Program. A total of 5,000 acre-feet of Cawelo's water was purchased. (SWPAO #01711)

Kern County Water Agency. An agreement executed on May 3, 2001, between the Department and Kern approved the purchase of up to 20,000 acre-feet of water stored in KWB through the exchange of approved Table A water for support of EWA under the CALFED Program. A total of 20,000 acre-feet of Kern's water was purchased. (SWPAO #01704)

Metropolitan Water District of Southern California. An agreement executed on February 14, 2001, between the Department and Metropolitan approved the exchange of up to 100,000 acre-feet of Metropolitan's approved Table A water to provide environmental enhancement and fisheries benefits to EWA under the CALFED Program. In exchange, the Department would return an equal amount of water at a later date. A total of 50,000 acre-feet of Metropolitan's approved Table A water was exchanged. (SWPAO #01720)

Merced Irrigation District. An agreement executed on August 15, 2001, between the Department and Merced approved the release of up to 25,000 acre-feet of stored water for support of EWA under the CALFED Program. Merced will pump additional groundwater to compensate for the release of the transfer water in addition to the amounts otherwise scheduled to be released to the Merced River. A total of 25,000 acre-feet of Merced's water was transferred. (SWPAO #01715)

Oroville-Wyandote Irrigation District. An agreement executed on December 8, 2001, between the Department and Oroville-Wyandote approved the transfer of up to 10,000 acre-feet of South Fork Project water that would otherwise remain in storage for support of EWA under the CALFED Program. A total of 10,000 acre-feet of Oroville-Wyandote's water was transferred. (SWPAO #01713)

Placer County Water Agency. An agreement executed on August 3, 2001, between the Department and Placer County approved the purchase of up to 20,000 acre-feet of water stored in the Middle Fork Project reservoirs for support of EWA under the CALFED Program. A total of 20,000 acre-feet of Placer County's water was purchased. (SWPAO #01716)

Rosedale Rio-Bravo Water Storage District and Kern County Water Agency. An agreement executed on May 3, 2001, between the Department, Rosedale Rio-Bravo, and Kern approved the purchase of up to 19,036 acre-feet of water for support of EWA under the CALFED Program. Rosedale Rio-Bravo made approved Table A water available through local use of a like amount of Section 215 Friant-Kern water banked in 2000. Rosedale Rio-Bravo acquired Section 215 water through an exchange with Arvin-Edison in 2000. A total of 19,036 acre-feet of the agencies' water was purchased. (SWPAO #01702)

Santa Clara Valley Water District and Kern County Water Agency. An agreement executed on August 10, 2001, between the Department, Santa Clara, and Kern approved the purchase and recharge of up to 30,000 acre-feet of water stored in the Semitropic Groundwater Basin for support of EWA under the CALFED Program. A total of 30,000 acre-feet of the agencies' water was purchased. (SWPAO #01714)

Semitropic Water Storage District, Kern County Water Agency, and Tulare Irrigation District. An agreement executed on September 12, 2001, between the Department and the participating agencies approved the purchase of up to 25,000 acre-feet of water stored in KWB. Semitropic stored 20,000 acre-feet of Table A water in KWB in 1995 and 1996, and 5,000 acre-feet of Semitropic's 2001 portion of Kern's approved Table A water was made available as a result of receiving Tulare's Section 215 water. The water was made available for support of EWA under the CALFED Program. A total of 10,767 acre-feet of Semitropic's water was purchased and 4,233 acre-feet of Tulare's water was exchanged. (SWPAO #01709)

Westside Mutual Water Company and Kern County Water Agency. An agreement executed on May 3, 2001, between the Department, Westside, and Kern approved the purchase of up to 21,000 acre-feet of water stored in KWB through exchange of approved Table A water for support of EWA under the CALFED Program. A total of 21,000 acre-feet of the agencies' water was purchased. (SWPAO #01710)

Westside Mutual Water Company, Tejon-Castac Water District, and Kern County Water Agency. An agreement executed on August 15, 2001, between the Department and participating agencies approved the purchase of up to 15,000 acre-feet of water stored in KWB through exchange of approved Table A water for support of EWA under the CALFED Program. A total of 15,000 acre-feet of the agencies' water was purchased. (SWPAO #01703)

Yuba County Water Agency. An agreement executed on February 8, 2001, between the Department and Yuba approved the transfer of up to 50,000 acre-feet of water from storage in New Bullards Bar Reservoir, in addition to amounts otherwise scheduled to be released for diversions from the Yuba River, for support of EWA under the CALFED Program. A total of 50,000 acre-feet of Yuba's water was transferred. (SWPAO #01712)

Variable Assets

EWA Share of State Gain. The Department has the opportunity to pump half the CVPIA (b)(2) releases that reach the Delta on behalf of EWA. A total of 11,472 acre-feet of water was

pumped at Banks Pumping Plant in 2000 and 37,916 acre-feet in 2001. (SWPAO #00740, SWPAO #01740)

Relaxation of the Export/Import Ratio. The Department has the opportunity to gain water credits if the EWA managing agencies decide that the E/I ratio can be relaxed, thus allowing the SWP to pump any extra water that the fisheries do not need. A total of 1,829 acre-feet of water was credited to EWA in 2000 and 3,354 acre-feet in 2001. (SWPAO #00730, SWPAO #01730)

CVP/SWP Exchange. The Bureau transferred 72,280 acre-feet of CVP water in San Luis Reservoir to the SWP for support of EWA under the CALFED Program (SWPAO #01750).

For additional information on EWA, see Chapter 7, *Water Supply Development and Reliability.*

Miscellaneous Agreements with Other Agencies

In addition to negotiating agreements with SWP contractors to provide for specified water deliveries, the Department also entered into several agreements with other agencies for water conveyance, or exchange, between January 1, 2001, and December 31, 2001.

Water Conveyance Agreements–CVP Water

The Department regularly enters into agreements to convey CVP water, such as agreements with contractors receiving water from the Bureau through the Cross Valley Canal, a water conveyance facility that connects with the Aqueduct near Tupman in Kern County. Other agencies or corporations receive CVP water through agreements between the Department and the Bureau, including the U.S. Department of Veterans Affairs, USFWS, and Musco Olive Products, Inc. Occasionally the Department also enters into agreements with the Bureau to convey CVP or SWP water from the Delta to O'Neill Forebay through CVP or SWP facilities. Some of these agreements allow the Bureau to make up for curtailed water exports from Tracy Pumping Plant associated with improving conditions for fish in the Delta. Other agreements allow replacing water exports foregone during maintenance and repair of Tracy and Banks Pumping Plants and CVP and SWP conveyance facilities between the Delta and O'Neill Forebay.

Cross Valley Canal. Eight CVP water contractors use CVC to obtain water from the California Aqueduct either by exchange with other agencies or by direct delivery. The eight water contractors are: County of Fresno, County of Tulare, Hills Valley Irrigation District, Kern-Tulare Water District, Lower Tule River Irrigation District, Pixley Irrigation District, Rag Gulch Water District, and Tri-Valley Water District. These agencies have had water conveyance service by the Department since 1976 through

- long-term 3-party contracts with the Department and the Bureau, executed in 1976, and amendments extending the contracts through February 29, 1996; and
- interim renewal contracts: the first from March 1, 1996, through February 28, 1998; the second from March 1, 1998, through February 28, 2000; the third from March 1, 2000, through November 30, 2000; the fourth from December 1, 2000, through February 28, 2001; and the fifth from March 1, 2001, through February 28, 2002.

Between January 1, 2001, and December 31, 2001, the Department delivered CVP water to the CVC contractors as follows:

- On June 7, 2001, Pixley requested the Department to convey up to 13,950 acre-feet of its CVP water to Westlands during the 2001 contract year. From June through August 2001, the Department delivered a total of 13,520 acre-feet of the District's CVP water to Westlands' turnouts in Reaches 4 through 7 of the California Aqueduct. An agreement is expected to be signed in February 2003.
- On June 7, 2001, Lower Tule River requested the Department to convey up to

9,450 acre-feet of its CVP water to Westlands and up to 10,000 acre-feet to J.G. Boswell during the 2001 contract year. From June through August 2001, the Department delivered a total of 9,450 acre-feet of the District's CVP water to Westlands' turnouts in Reaches 4 through 7 of the California Aqueduct. The Department also delivered 4,500 acre-feet of the District's CVP water to J. G. Boswell, which is within Tulare, at turnouts in Reaches 8C and 8D of the California Aqueduct in June and July of 2001. The two agreements are expected to be signed in February 2003.

- On June 26, 2001, Kern-Tulare Water District requested the Department change the point of delivery for up to 24,000 acre-feet of the District's 2001 CVP water from the CVC turnout in Reach 12E to turnouts in Reaches 9 through 13B of the California Aqueduct for delivery to Kern. Under the agreement executed on August 21, 2001, the Department delivered 18,595 acre-feet of water from June through August 2001.
- On June 26, 2001, Rag-Gulch Water District requested the Department change the point of delivery for up to 7,980 acre-feet of their 2001 CVP water from the CVC turnouts in Reach 12E to turnouts in Reaches 9 through 13B of the California Aqueduct for delivery to Kern. Under the agreement executed on August 21, 2001, the Department conveyed 7,004 acre-feet of water from June through August 2001.

Westlands Water District. Westlands Water District requested that the Department convey 132,627 acre-feet of forbearance water to Westlands. Forbearance water is water that Westlands purchased from the Sacramento Valley CVP settlement contractors to augment its water supply. Due to an aqueduct leak, the Department was unable to pump water in June 2001; instead, 6,545 acre-feet was pumped by the Bureau in June and conveyed through State facilities to Westlands. During the rest of 2001, the Department pumped and conveyed an additional 126,082 acre-feet to Westlands. A conveyance agreement is expected to be signed in January 2003.

Musco Olive Products, Incorporated. Annual agreements dated December 15, 2000, and October 22, 2001, among Musco Olive Products, Inc., the Department, and the Bureau, provided for the conveyance of up to a combined 1,600 acre-feet of CVP water to Reach 2A of the California Aqueduct for use by Musco Olive Products, Inc. A portion of this water was delivered from January 1, 2001, through December 31, 2001. A total of 577 acre-feet was delivered in 2001.

Tracy Golf and Country Club. An agreement dated August 25, 2000, among the Department, the Bureau, and Tracy Golf and Country Club, provided for the conveyance of up to 300 acre-feet of CVP water through SWP facilities to the Tracy Golf and Country Club. This water was to be conveyed from May 11, 2000, through May 11, 2001. A total of 21 acre-feet was delivered to the Tracy Golf and Country Club turnout in Reach 2A of the California Aqueduct in 2001.

U.S. Department of Veterans Affairs. Letter agreements dated October 5, 2000, and December 12, 2001, among the U.S. Department of Veterans Affairs, the Department, and the Bureau, provided for the conveyance of up to 900 acre-feet of CVP approved water to Reach 2B of the California Aqueduct to the U.S. Department of Veterans Affairs' San Joaquin Valley National Cemetery. A total of 46 acre-feet was delivered to the National Cemetery in Reach 2B of the California Aqueduct in 2001.

U.S. Fish and Wildlife Service Cooperative Agreement. The Bureau initiated a cooperative agreement with the Department to deliver CVP water to the Kern National Wildlife Refuge for USFWS. Under the terms of this cooperative agreement, dated September 9, 1994, up to 26,530 acre-feet of CVP water would be delivered from Check 21 to the Buena Vista Water Storage District Turnout BV-1B, on Reach 10A of the California Aqueduct, from October 1,

1993, through April 10, 1995. Since the cooperative agreement was signed, eight modifications to the agreement have been executed. Under Modification No. 001, dated October 31, 1994, additional funding was provided. Similar funding adjustments through modifications were made each year to the agreement. Modification No. 010, executed March 13, 2001, extended the agreement through April 10, 2002, and defined the water delivery rates for 2001 and 2002. The Department conveyed 18,763 acre-feet of CVP water to Kern National Wildlife Refuge in 2001.

Other Turnout Agreements. In 2001, there were no new turnout agreements with non-SWP contractor agencies.

Water Deliveries

Approved Table A Deliveries

Each year, by October 1, the SWP long-term water contractors submit initial requests for approved Table A deliveries allocated to contractors for use in the subsequent calendar year. Initial approved Table A amounts for the coming year are made by the Department in December and are based on operations studies that assume 90 percent exceedence of historic water supply (where exceedence refers to the possibility that water supply in the coming year will be exceeded by the historic water supply), current reservoir storage, and total requests by the SWP water contractors. Forecasts for the year are updated as hydrological conditions change. Approved Table A amounts are increased or decreased depending on both actual and projected hydrologic conditions.

On October 1, 2000, SWP long-term contractors submitted initial requests for 2001 approved Table A deliveries totaling 4.12 million acre-feet. The Department approved deliveries of 1.65 million acre-feet on December 1, 2000 (Notice to SWP Contractors 00-17), resulting in initial approved Table A amounts of 40 percent for most SWP contractor requests. Unusually dry conditions caused the Department to decrease the 2001 approved Table A amounts to 824,000 acre-feet (20 percent) on January 31, 2001 (Notice to SWP Contractors 01-03). As a result of improvements in water conditions, approved Table A amounts were further increased to 1.03 million acre-feet (25 percent) on March 6 (Notice to SWP Contractors 01-07); 1.24 million acre-feet (30 percent) on March 15 (Notice to SWP Contractors 01-10); 1.38 million acre-feet (33 percent) on May 4 (Notice to SWP Contractors 01-12); 1.44 million acre-feet (35 percent) on May 17 (Notice to SWP Contractors 01-13); and finally to 1.61 million acre-feet (39 percent) on August 16 (Notice to SWP Contractors 01-15).

SWP Deliveries

The SWP delivers water for a variety of beneficial uses. In addition to delivering approved Table A water to long-term water supply contractors, the SWP

- conveys water to, and stores water for, other public agencies through special contracts and agreements;
- provides water for wildlife and recreational uses; and
- stores, releases, and delivers local runoff water from SWP facilities to agencies that hold local water rights.

In 2001, 3,206,922 acre-feet of water were conveyed to 26 long-term contractors and 18 other agencies. That amount includes

- 1,546,742 acre-feet of approved Table A water;[1]
- 43,182 acre-feet of Article 21 water and 253 acre-feet of unscheduled water;
- 2,929 acre-feet of SWP water for recreation, fish and wildlife; and
- 1,613,816 acre-feet of water delivered to satisfy water rights settlement agreements and

[1] Annual Table A water is the amount of SWP water long-term contractors may request each year in accordance with Article 12(a), "Procedure for Determining Water Delivery Schedule," of their water supply contract.

agreements with SWP contractors and other agencies, including the Bureau.

Figure 9-1 shows amounts of water delivered to various locations during 2001.

Specific information about water deliveries made to long-term contractors and other agencies during 2001 and historical deliveries from 1962 through 2001 are presented in the following three sections, each with a corresponding table:

- Water Delivered to Long-term Water Supply Contractors in 2001, by Service Area (Table 9-2);
- Water Delivered in 2001, by Month (Table 9-3); and
- Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962-01 (Table 9-4).

Water Deliveries and Credits to Long-Term SWP Contractors

Table 9-2 shows amounts of water delivered in 2001. The following information about specific columns in Table 9-2 is arranged by column number.

2001 Approved Table A Water Delivered. Columns 1 through 5 show a detailed breakdown of approved Table A water delivered to long-term water supply contractors in 2001.

Turnback Pool Water. Column 4 shows 18,240 acre-feet of turnback pool water was delivered to long-term water supply contractors in 2001.

2000 Carryover Approved Table A Water Delivered During 2001. For several years, the Department has offered contractors the opportunity to carry over a portion of their approved Table A water for delivery in the current year to be delivered during the next year.

The carryover program was designed to encourage the most effective and beneficial use of water and to avoid obligating the contractors to use or lose the water by December 31 of each year. The SWP contractors' long-term contracts and amendments state the criteria for carrying over approved Table A water from one year to the next. Column 6 shows 291,344 acre-feet of water was carried over from 2000 for delivery in 2001.

Total Table A Water Delivered. Column 7 shows all approved Table A water delivered in 2001—a total of 1,546,742 acre-feet.

2001 Water Bank Recoveries. Column 8 shows 57,322 acre-feet of Water Bank recoveries in 2001.

2001 Article 21 Water. Column 9 shows 43,435 acre-feet of 2001 Article 21 water delivered to long-term water supply contractors in 2001 (includes 253 acre-feet of unscheduled water). Long-term water supply contractors who have not signed the Monterey Amendment receive unscheduled water.

Dry Year Purchase Program. Column 10 shows 114,073 acre-feet of Dry Year Water Program water delivered in 2001.

2001 Article 54 Flexible Storage Withdrawal Recoveries. Column 11 shows 74,992 acre-feet of Article 54, Flexible Storage Withdrawal in 2001.

Total SWP Water Delivered. Column 12 shows 1,836,564 acre-feet of total SWP water delivered in 2001. This includes total approved Table A water, water bank recoveries, Dry Year Purchase Program, Flexible Storage Withdrawal, and Article 21 and unscheduled water.

Non-SWP Water Deliveries. Column 13 includes deliveries of nonproject water to long-term water contractors. Nonproject water is generally local and permit water that a SWP contractor has a water right to, or water purchased from, exchanged with, or transferred from non-SWP agencies. In 2001, nonproject water deliveries totaled 113,196 acre-feet.

Total Deliveries. Column 14 shows total amounts of water delivered to long-term contractors. In 2001, the SWP delivered 1,949,760 acre-feet to 26 long-term contractors.

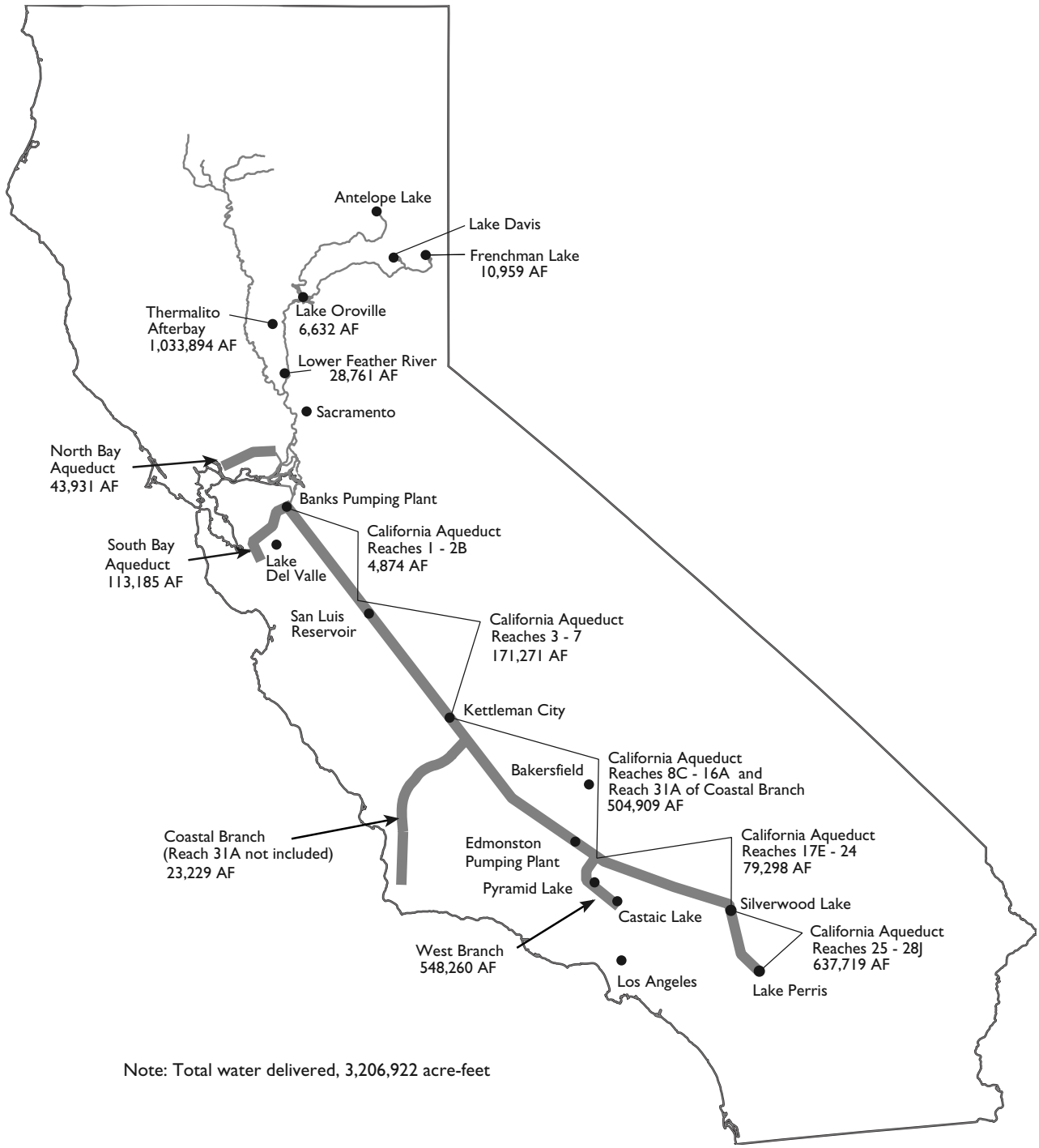


Figure 9-1. Water Delivered in 2001 and Delivery Locations of Long-Term Water Supply Contractors and Feather River Area Districts with Water Right Agreements with the Department

Table 9-2. Water Delivered to Long-Term Contractors through 2001, by Service Area (Acre-Feet)

	Water Deliveries in 2001													
	Annual Table A Water Deliveries													
Water Contractor or Agency	2001 Table A without Transfers, Exchanges, and Storage (1)	2001 Table A Delivered through Transfers and Exchanges (2)	2001 Table A Delivered to Storage (3)	Pool Water (4)	Total 2001 Table A Delivered (5)	2000 Carryover Table A Delivered during 2001 (6)	Total Table A Deliveries (7)	Water Bank Recoveries (8)	2001 Article 21 Water (9)	2001 Dry Year Purchase (10)	2001 Article 54 Flexible Withdrawal (11)	Total SWP Water Delivered (12)	Non-SWP Water Deliveries (13)	Total Deliveries (14)
Feather River Area														
County of Butte	513	0	0	0	513	0	513	0	0	0	0	513	0	513
Plumas County Flood Control and Water Conservation District	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Yuba City	1,065	0	0	0	1,065	0	1,065	0	0	0	0	1,065	0	1,065
North Bay Area			0	0				0	0	0	0			
Napa County Flood Control and Water Conservation District	4,293	0	0	82	4,375	1,723	6,098	0	996	2,251	0	9,345	0	9,345
Solano County Water Agency	17,756	0	0	0	17,756	1,021	18,777	0	2,304	0	0	21,081	13,505[a]	34,586
South Bay Area														
Alameda County Flood Control and Water Conservation District-Zone 7	22,307	0	0	308	22,615	5,990	28,605	1,807	0	0	0	30,412	13,741[b]	44,153
Alameda County Water District	13,695	0	0	107	13,802	4,192	17,994	0	10	0	0	18,004	7,910[c]	25,914
Santa Clara Valley Water District	35,689	0	0	0	35,689	12,233	47,922	0	0	0	0	47,922	0	47,922
San Joaquin Valley Area														
Castaic Lake Water Agency	1,238	0	0	0	1,238	0	1,238	0	0	0	0	1,238	0	1,238
County of Kings	1,560	0	0	0	1,560	0	1,560	0	0	0	0	1,560	0	1,560
Dudley Ridge Water District	18,821	7,048[d]	0	347	26,216	6,815	33,031	3,215	933	10,812	0	47,991	0	47,991
Empire-West Side Irrigation District	0	0	0	0	0	1,607[e]	1,607	0	253	0	0	1,860	0	1,860
Kern County Water Agency	211,223	11,487[f]	0	6,502	229,212	48,016	277,228	0	23,233	11,647	0	312,108	42,845[g]	354,953
Oak Flat Water District	2,089	0	0	22	2,111	101	2,212	0	0	1,380	0	3,592	0	3,592
Tulare Lake Basin Water Storage District	37,773	3,057[h]		769	41,599	7,389	48,988	0	8,755	1,319	0	59,062	29,664[i]	88,726
Central Coastal Area														
San Luis Obispo County Flood Control and Water Conservation District	4,184	0	0	99	4,283	0	4,283	0	0	0	0	4,283	0	4,283
Santa Barbara County Flood Control and Water Conservation District	14,285	0	0	296	14,581	0	14,581	0	396	3,969	0	18,946	0	18,946
Southern California														
Antelope Valley-East Kern Water Agency	45,071	0	0	899	45,970	0	45,970	0	0	16,735	0	62,705	0	62,705
Castaic Lake Water Agency	29,233	0	0	618	29,851	0	29,851	0	850	0	0	30,701	4,931[j]	35,632
Coachella Valley Water District	9,009	0	0	91	9,100	0	9,100	0	0	0	0	9,100	0	9,100
Crestline-Lake Arrowhead Water Agency	1,057	0	0	0	1,057	0	1,057	0	0	0	0	1,057	600[k]	1,657
Desert Water Agency	14,859	0	0	151	15,010	0	15,010	0	0	0	0	15,010	0	15,010
Littlerock Creek Irrigation District	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Metropolitan Water District of Southern California	686,545	0	0	7,949	694,494	200,000	894,494	52,300	5,705	65,960	74,992	1,093,451	0	1,093,451
Mojave Water Agency	4,433	0	0	0	4,433	0	4,433	0	0	0	0	4,433	0	4,433
Palmdale Water District	8,170	0	0	0	8,170	2,257	10,427	0	0	0	0	10,427	0	10,427
San Bernardino Valley Municipal Water District	26,488	0	0	0	26,488	0	26,488	0	0	0	0	26,488	0	26,488
San Gabriel Valley Municipal Water District	2,360	0	0	0	2,360	0	2,360	0	0	0	0	2,360	0	2,360
San Gorgonio Pass Water Agency	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ventura County Flood Control District	1,850	0	0	0	1,850	0	1,850	0	0	0	0	1,850	0	1,850
Total	**1,215,566**	**21,592**	**0**	**18,240**	**1,255,398**	**291,344**	**1,546,742**	**57,322**	**43,435**	**114,073**	**74,992**	**1,836,564**	**113,196**	**1,949,760**

Note: For specific details, see Table 9-2.

[a]Permit water

[b]3,997 acre-feet of transfer water from Byron-Bethany and 9,744 acre-feet of local water.

[c]Local water.

[d]4,174 acre-feet from San Gabriel and 2,874 acre-feet from Kern.

[e]1,107 acre-feet of wet weather carryover and 500 acre-feet from Tulare.

[f]To the Bureau.

[g]17,246 acre-feet from the Bureau and 25,599 acre-feet from CVC contractors.

[h]To Westlands (1,082 acre-feet through transfer and 1,975 acre-feet through exchange).

[i]25,164 acre-feet from Westlands and 4,500 acre-feet from CVC contractors.

[j]Local water.

[k]Local water.

Table 9-3. Water Delivered in 2001, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2001 Total Deliveries	2001 Contract Table A
Feather River Area														
City of Yuba City														
Approved Table A water	0	0	0	0	0	0	541	524	0	0	0	0	1,065	9,600
County of Butte														
Approved Table A water	81	42	103	84	5	3	22	24	8	27	38	76	513	3,500
Plumas County Flood Control and Water Conservation District														
Approved Table A water	0	0	0	0	0	0	0	0	0	0	0	0	0	1,570
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water	0	0	0	1	1	1	1	0	0	3	5	0	12	
Last Chance Creek Water District														
Regulated delivery of local supply	0	0	0	30	3,935	3,172	1,658	1,847	198	119	0	0	10,959	
Thermalito Irrigation District														
Regulated delivery of local supply	110	81	127	145	336	394	414	384	280	228	0	17	2,516	
Oroville-Wyandotte Irrigation District														
Regulated delivery of local supply	91	0	35	339	1,020	1,010	1,050	1,050	1,010	747	217	63	6,632	
Western Canal Water District														
Regulated delivery of local supply	5,898	0	0	6,952	55,703	49,379	52,608	41,390	12,100	43,829	20,731	8,027	296,617	
Joint Water Districts Board														
Regulated delivery of local supply	32,710	0	0	27,880	122,935	112,491	116,560	101,740	51,090	58,370	62,150	48,310	734,236	
Oswald Water District														
Regulated delivery of local supply	0	0	0	0	1	150	122	16	0	0	0	0	289	
Tudor Mutual Water Company														
Regulated delivery of local supply	0	0	0	0	748	1,048	1,061	441	343	40	0	0	3,681	
Garden Highway Mutual Water Company														
Regulated delivery of local supply	0	0	108	1,041	2,511	2,900	2,484	2,233	1,234	2,521	69	0	15,101	
Plumas Mutual Water Company														
Regulated delivery of local supply	0	0	2	631	1,632	2,031	1,725	1,115	721	88	0	0	7,945	
Dana Brothers														
Regulated delivery of local supply	0	0	0	0	63	285	157	156	19	0	0	0	680	
SWP	81	42	103	85	6	4	564	548	8	30	43	76	1,590	
Non-SWP	38,809	81	272	37,018	188,884	172,860	177,839	150,372	66,995	105,942	83,167	56,417	1,078,656	
Feather River Area Total	38,890	123	375	37,103	188,890	172,864	178,403	150,920	67,003	105,972	83,210	56,493	1,080,246	14,670
North Bay Area														
Napa County Flood Control and Water Conservation District														
Approved Table A water	0	0	0	1,022	509	595	0	0	0	1,196	971	0	4,293	20,725
Article 21 water	0	0	532	0	0	0	0	0	0	0	0	464	996	
Article 56(c) extended carryover	920	803	0	0	0	0	0	0	0	0	0	0	1,723	
Dry Year Purchase Program	0	0	0	0	0	0	758	593	900	0	0	0	2,251	
Pool B water	0	0	0	0	0	82	0	0	0	0	0	0	82	
Agency Total	920	803	532	1,022	509	677	758	593	900	1,196	971	464	9,345	
Solano County Water Agency														
Approved Table A water	0	0	0	2,040	1,686	3,081	3,508	2,686	1,765	2,002	973	15	17,756	45,836
Article 21 water	0	1,324	456	0	0	0	0	0	0	0	0	524	2,304	
Article 56(c) extended carryover	1,021	0	0	0	0	0	0	0	0	0	0	0	1,021	
Vallejo Permit water	0	0	0	743	1,805	1,789	1,895	1,767	1,577	1,938	1,875	116	13,505	
Agency Total	1,021	1,324	456	2,783	3,491	4,870	5,403	4,453	3,342	3,940	2,848	655	34,586	
SWP	1,941	2,127	988	3,062	2,195	3,758	3,508	2,686	1,765	3,198	1,944	1,003	28,175	
Non-SWP	0	0	0	743	1,805	1,789	2,653	2,360	2,477	1,938	1,875	116	15,756	
North Bay Area Total	1,941	2,127	988	3,805	4,000	5,547	6,161	5,046	4,242	5,136	3,819	1,119	43,931	66,561
South Bay Area														
Alameda County Flood Control and Water Conservation District, Zone 7														
Approved Table A water	0	0	0	200	1,746	3,338	4,374	2,761	2,522	5,200	2,166	0	22,307	78,000
Article 56(c) extended carryover	990	0	0	0	0	0	0	0	0	0	0	0	990	
Article 56(c) extended carrying delivered to storage (Semitropic)	0	0	5,000	0	0	0	0	0	0	0	0	0	5,000	
Bank water recovery, Semitropic	0	0	0	0	0	1,300	0	507	0	0	0	0	1,807	
Local water	444	802	1,918	2,490	2,482	246	55	275	73	0	113	846	9,744	
Pool B water	0	0	0	0	0	0	100	108	100	0	0	0	308	
Transfer local water from Byron-Bethany Irrigation District	0	0	0	0	0	0	0	2,000	1,997	0	0	0	3,997	
Agency Total	1,434	802	6,918	2,690	4,228	4,884	4,529	5,651	4,692	5,200	2,279	846	44,153	
Alameda County Water District														
Approved Table A water	0	0	0	0	0	2,216	2,723	2,664	2,587	2,842	663	0	13,695	42,000
Article 21 water	0	0	10	0	0	0	0	0	0	0	0	0	10	

Table 9-3. Water Delivered in 2001, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2001 Total Deliveries	2001 Contract Table A
Article 56(c) extended carryover	1,953	1,412	827	0	0	0	0	0	0	0	0	0	4,192	
Local water	0	0	687	1,863	2,062	242	0	880	631	534	183	828	7,910	
Pool A water	0	0	0	0	0	0	0	107	0	0	0	0	107	
Agency Total	1,953	1,412	1,524	1,863	2,062	2,458	2,723	3,651	3,218	3,376	846	828	25,914	
Santa Clara Valley Water District														
Approved Table A water	0	0	0	4,112	4,341	3,770	4,639	5,154	4,501	6,284	2,888	0	35,689	100,000
Article 56(c) extended carryover	3,079	3,168	5,986	0	0	0	0	0	0	0	0	0	12,233	
Bank water recovery, Semitropic (for EWA)*	0	0	0	0	0	0	0	17,879	0	0	0	12,121	30,000	
Agency Total (*excluded water)	3,079	3,168	5,986	4,112	4,341	3,770	4,639	5,154	4,501	6,284	2,888	0	47,922	
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water, Lake Del Valle	7	4	8	8	18	27	31	56	25	9	1	2	196	
SWP	6,022	4,580	70,921	39,250	37,306	20,624	14,336	29,180	30,710	25,093	14,950	12,121	305,093	
Non-SWP	444	802	2,605	4,353	4,544	488	55	3,155	2,701	534	296	1,674	21,651	
South Bay Area Total	6,466	5,382	73,526	43,603	41,850	21,112	14,391	32,335	33,411	25,627	15,246	13,795	326,744	220,000
San Joaquin Valley Area														
Castaic Lake Water Agency														
Approved Table A water	1,194	0	0	4	10	6	5	0	18	1	0	0	1,238	
County of Kings														
Approved Table A water	0	0	0	0	0	400	300	300	0	0	100	460	1,560	4,000
Dudley Ridge Water District														
Approved Table A water	0	0	0	1,642	3,036	3,307	4,352	453	3,804	1,819	86	308	18,807	53,370
Approved Table A water delivered through Tulare	0	0	0	0	0	0	0	14	0	0	0	0	14	
Article 21 water delivered to storage (Kern Water Bank)	0	0	933	0	0	0	0	0	0	0	0	0	933	
Article 56(c) extended carryover	1,199	533	3,609	0	0	0	0	0	0	0	0	0	5,341	
Article 56(c) extended carryover delivered to storage (Kern Water Bank)	0	0	800	0	0	0	0	0	0	0	0	0	800	
Article 56(c) extended carryover delivered through Tulare	0	0	674	0	0	0	0	0	0	0	0	0	674	
Bank water recovery, Kern Water Bank	0	0	0	0	2,250	965	0	0	0	0	0	0	3,215	
Dry Year Purchase Program	0	0	0	0	0	3,310	3,310	3,880	312	0	0	0	10,812	
Exchange approved Table A water from Kern	0	0	0	0	0	0	0	1,374	0	0	0	0	1,374	
Exchange approved Table A water from San Gabriel	0	0	0	0	0	1,300	1,574	1,300	0	0	0	0	4,174	
Pool A water	0	0	0	0	0	0	136	0	0	0	0	0	136	
Pool B water	0	0	0	0	0	0	211	0	0	0	0	0	211	
Transfer approved Table A water from Kern	0	0	0	0	0	0	0	1,500	0	0	0	0	1,500	
Agency Total	1,199	533	6,016	1,642	5,286	8,882	9,583	8,521	4,116	1,819	86	308	47,991	
Empire West Side Irrigation District														
Transfer Article 56 extended carryover from Tulare	0	0	500	0	0	0	0	0	0	0	0	0	500	3,000
Unscheduled water	0	0	253	0	0	0	0	0	0	0	0	0	253	
Wet weather carryover water	340	459	308	0	0	0	0	0	0	0	0	0	1,107	
Agency Total	340	459	1,061	0	0	0	0	0	0	0	0	0	1,860	
Kern County Water Agency														
Approved Table A water	0	0	1,702	0	23,541	62,788	48,131	28,985	24,186	15,905	4,920	427	210,585	1,000,949
Approved Table A water delivered for Western Hills	0	0	0	0	116	64	102	134	131	79	12	0	638	
Approved Table A water delivered to EWA*	0	0	0	0	31,219	10,000	2,500	0	21,000	9,296	9,233	0	83,248	
Article 21 water	0	0	23,233	0	0	0	0	0	0	0	0	0	23,233	
Article 56(c) extended carryover	25,671	11,982	10,363	0	0	0	0	0	0	0	0	0	48,016	
Article 56(c) extended carryover delivered to EWA*	0	0	44,036	0	0	0	0	0	0	0	0	0	44,036	
Dry Year Purchase Program	0	0	0	0	0	0	6,623	4,700	57	267	0	0	11,647	
Exchange approved Table A water to Dudley Ridge*	0	0	0	0	0	0	0	1,374	0	0	0	0	1,374	
Exchange approved Table A water for Alameda-Zone 7 (Semitropic water)*	0	0	0	0	0	1,300	0	507	0	0	0	0	1,807	
Exchange approved Table A water for Dudley Ridge (Kern Water Bank water)*	0	0	0	0	2,250	965	0	0	0	0	0	0	3,215	
Exchange approved Table A water for Metropolitan (Arvin-Edison water)*	0	0	0	0	0	0	0	0	5,000	5,800	5,000	5,000	20,800	
Exchange approved Table A water for Metropolitan (Semitropic water)*	0	0	1,614	1,300	0	13,179	0	0	0	0	0	0	16,093	
Exchange approved Table A water for Santa Clara (Semitropic water)*	0	0	0	0	0	0	0	17,879	0	0	0	6,065	23,944	
Exchange approved Table A water to the Bureau*	0	0	0	0	0	0	0	11,487	0	0	0	0	11,487	
Exchange water from the Bureau	0	0	0	0	0	0	11,487	0	0	0	0	0	11,487	
Pool A water	0	0	0	0	0	0	1,740	575	231	0	0	0	2,546	
Pool B water	0	0	0	0	0	0	2,619	997	340	0	0	0	3,956	
Turn-in water (from Kern Water Bank) recovered by Kern*	0	0	6,363	22,125	27,161	24,081	21,385	20,917	6,704	844	0	1,815	131,395	
Turn-in water (from Semitropic) recovered by Kern	0	0	0	0	184	0	0	0	0	0	230	1,399	1,813	
Kern Water Bank water turn-in water for EWA*	0	0	0	0	0	0	0	0	0	1,471	0	0	1,471	

Table 9-3. Water Delivered in 2001, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2001 Total Deliveries	2001 Contract Table A
Transfer approved Table A water to Dudley Ridge*	0	0	0	0	0	0	0	1,500	0	0	0	0	1,500	
Transfer CVP water from Kern-Tulare	0	0	0	0	0	750	5,028	12,817	0	0	0	0	18,595	
Transfer CVP water from Rag Gulch	0	0	0	0	0	250	1,672	5,082	0	0	0	0	7,004	
Agency Total (*excluded water)	25,671	11,982	35,298	0	23,657	63,852	77,402	53,290	24,945	16,251	4,932	427	337,707	
Oak Flat Water District														
Approved Table A water	0	0	0	193	622	753	45	0	28	409	37	2	2,089	5,700
Article 56(c) extended carryover water	49	9	43	0	0	0	0	0	0	0	0	0	101	
Dry Year Purchase Program	0	0	0	0	0	0	688	396	296	0	0	0	1,380	
Pool B water	0	0	0	0	22	0	0	0	0	0	0	0	22	
Agency Total	49	9	43	193	644	753	733	396	324	409	37	2	3,592	
Tulare Lake Basin Water Storage District														
Approved Table A water	0	0	0	477	838	7,976	9,507	11,438	412	1,234	237	5,654	37,773	118,500
Article 21 water	0	0	8,755	0	0	0	0	0	0	0	0	0	8,755	
Article 56(c) extended carryover	2,960	384	4,045	0	0	0	0	0	0	0	0	0	7,389	
Dry Year Purchase Program	0	0	0	0	0	0	0	1,319	0	0	0	0	1,319	
Dudley Ridge's approved Table A water delivered through Tulare*	0	0	0	0	0	0	0	14	0	0	0	0	14	
Exchange approved water to Westlands*	0	0	0	0	0	0	600	1,375	0	0	0	0	1,975	
Exchange CVP water from Westlands	10,864	0	5,360	8,940	0	0	0	0	0	0	0	0	25,164	
Pool A water	0	0	0	0	0	0	0	29	0	0	0	272	301	
Pool B water	0	0	0	0	0	0	0	0	0	0	0	468	468	
Transfer CVP water from Lower Tule River Irrigation District	0	0	0	0	0	1,042	3,458	0	0	0	0	0	4,500	
Transfer Article 56(c) extended carryover to Empire*	0	0	500	0	0	0	0	0	0	0	0	0	500	
Transfer approved Table A water to Westlands*	0	0	0	0	0	0	1,082	0	0	0	0	0	1,082	
Agency Total (*excluded water)	13,824	384	18,160	9,417	838	9,018	12,965	12,786	412	1,234	237	6,394	85,669	
Westlands Water District														
Transfer CVP water from Lower Tule River	0	0	0	0	0	1,332	4,210	3,908	0	0	0	0	9,450	
Transfer CVP water from Pixley	0	0	0	0	0	902	6,209	6,409	0	0	0	0	13,520	
Transfer CVP water from the Bureau (Sacramento Valley Contractors)	0	0	0	0	0	6,545	34,861	60,471	30,750	0	0	0	132,627	
Transfer approved Table A water from Tulare	0	0	0	0	0	0	1,082	0	0	0	0	0	1,082	
Exchange approved Table A water from Tulare	0	0	0	0	0	0	600	1,375	0	0	0	0	1,975	
Exchange water to Tulare*	10,864	0	5,360	8,940	0	0	0	0	0	0	0	0	25,164	
Agency Total (*excluded water)	0	0	0	0	0	8,779	46,962	72,163	30,750	0	0	0	158,654	
Recreation/Fish and Wildlife														
Department of Fish and Game, O'Neill Forebay/Lateral 4	27	29	53	54	24	8	3	13	10	131	61	31	444	
Department of Parks and Recreation, O'Neill Forebay/San Luis Reservoir	2	1	2	7	13	16	29	25	24	5	1	1	126	
Total	29	30	55	61	37	24	32	38	34	136	62	32	570	
EWA Program														
Article 56(c) extended carryover from Kern*	0	0	44,036	0	0	0	0	0	0	0	0	0	44,036	
Approved Table A water from Kern*	0	0	0	0	31,219	10,000	2,500	0	21,000	9,296	9,233	0	83,248	
E/I Relaxation*	0	0	0	0	0	0	0	0	0	0	3,354	0	3,354	
EWA share of State gain*	8,158	711	935	1,431	0	0	0	4,036	19,337	3,308	0	0	37,916	
Flexible storage withdrawal (Castaic Lake) from Metropolitan*	0	0	15,062	34,938	0	0	0	0	0	0	0	0	50,000	
Kern Water Bank water from Kern*	0	0	0	0	0	0	0	0	0	1,471	0	0	1,471	
Local water from Merced Irrigation District*	0	0	0	0	0	0	0	0	0	11,753	10,747	0	22,500	
Local water from Oroville-Wyandote Irrigation District*	0	0	0	0	0	0	0	0	8,500	0	0	0	8,500	
Local water from Placer County Water Agency*	0	0	0	0	0	0	0	0	0	2,240	12,759	0	14,999	
Local water from Yuba County Water Agency*	0	0	0	0	0	0	42,500	0	0	00	0	0	42,500	
Semitropic Water Bank water from Santa Clara*	0	0	0	0	0	0	0	17,879	0	0	0	12,121	30,000	
Total EWA Water (*excluded water)	8,158	711	60,033	36,369	31,219	10,000	45,000	21,915	48,837	28,068	36,093	12,121	338,524	
SWP	31,442	13,397	54,599	2,377	28,222	76,618	70,436	48,512	29,184	19,583	5,454	7,623	387,447	
Non-SWP	10,864	0	5,360	8,940	0	14,131	77,546	98,982	31,415	267	0	0	247,505	
San Joaquin Valley Area subtotal	42,306	13,397	59,959	11,317	28,222	90,749	147,982	147,494	60,599	19,850	5,454	7,623	634,952	1,185,519
Other Non-SWP Water Conveyed														
Tracy Golf and Country Club	4	6	11	0	0	0	0	0	0	0	0	0	21	
CVP Water Conveyed--Annual Contracts														
Plain View Water District/ Musco Olive Products, Inc.	38	43	47	39	0	50	41	68	72	78	78	23	577	
U.S. Department of Veteran Affairs, S.J.V. National Cemetery	1	1	1	2	7	6	3	9	4	8	3	1	46	
Subtotal	39	44	48	41	7	56	44	77	76	86	81	24	623	
Cross Valley Canal Contracts														
CVP water to Kern from Kern-Tulare*	0	0	0	0	0	750	5,028	12,817	0	0	0	0	18,595	
CVP water to Kern from Rag Gulch*	0	0	0	0	0	250	1,672	5,082	0	0	0	0	7,004	
CVP water to Tulare from Lower Tule River*	0	0	0	0	0	1,042	3,458	0	0	0	0	0	4,500	

Table 9-3. Water Delivered in 2001, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2001 Total Deliveries	2001 Contract Table A
CVP water to Westlands from Lower Tule River*	0	0	0	0	0	1,332	4,210	3,908	0	0	0	0	9,450	
CVP water to Westlands from Pixley*	0	0	0	0	0	902	6,209	6,409	0	0	0	0	13,520	
County of Fresno	0	0	0	0	0	0	0	1,350	0	0	0	0	1,350	
County of Tulare	0	0	0	0	0	0	0	2,389	0	0	0	0	2,389	
Hills Valley Irrigation District	0	0	0	0	0	0	396	1,110	0	0	0	0	1,506	
Tri-Valley Water District	0	0	0	0	0	0	0	514	0	0	0	0	514	
Subtotal (*excluded water)	0	0	0	0	0	0	396	5,363	0	0	0	0	5,759	
Bureau of Reclamation														
Kern National Wildlife Refuge	649	641	0	0	294	260	59	547	3,875	4,973	4,635	2,830	18,763	
Exchange approved Table A from Kern	0	0	0	0	0	0	0	11,487	0	0	0	0	11,487	
Recreation/fish and wildlife water	23	25	42	54	30	19	24	34	27	110	54	118	560	
Exchange CVP water to Kern*	0	0	0	0	0	0	11,883	5,363	0	0	0	0	17,246	
Subtotal (*excluded water)	672	666	42	54	324	279	83	12,068	3,902	5,083	4,689	2,948	30,810	
SWP	0	0	0	0	0	0	0	11,487	0	0	0	0	11,487	
Non-SWP	715	716	101	95	331	335	523	6,021	3,978	5,169	4,770	2,972	25,726	
San Joaquin Valley Area subtotal	715	716	101	95	331	335	523	17,508	3,978	5,169	4,770	2,972	37,213	
SWP (Total)	31,442	13,397	54,599	2,377	28,222	76,618	70,436	59,999	29,184	19,583	5,454	7,623	398,934	
Non-SWP (Total)	11,579	716	5,461	9,035	331	14,466	78,069	105,003	35,393	5,436	4,770	2,972	273,231	
San Joaquin Valley Area Total	43,021	14,113	60,060	11,412	28,553	91,084	148,505	165,002	64,577	25,019	10,224	10,595	672,165	
Central Coastal Area														
San Luis Obispo County Flood Control and Water Conservation District														
Approved Table A water	299	274	310	336	378	437	450	454	396	170	267	413	4,184	25,000
Pool B water	0	0	0	0	0	0	0	0	0	99	0	0	99	
Agency Total	299	274	310	336	378	437	450	454	396	269	267	413	4,283	
Santa Barbara County Flood Control and Water Conservation District														
Approved Table A water	1,186	888	699	1,315	1,926	2,499	62	2,424	512	987	776	1,011	14,285	45,486
Article 21 water	0	0	396	0	0	0	0	0	0	0	0	0	396	
Dry Year Purchase Program	0	0	0	0	0	0	2,232	0	1,737	0	0	0	3,969	
Pool A water	0	0	0	0	0	0	0	0	0	116	0	0	116	
Pool B water	0	0	0	0	0	0	0	0	0	180	0	0	180	
Agency Total	1,186	888	1,095	1,315	1,926	2,499	2,294	2,424	2,249	1,283	776	1,011	18,946	
SWP	1,485	1,162	1,405	1,651	2,304	2,936	512	2,878	908	1,552	1,043	1,424	19,260	
Non-SWP	0	0	0	0	0	0	2,232	0	1,737	0	0	0	3,969	
Central Coastal Area Total	1,485	1,162	1,405	1,651	2,304	2,936	2,744	2,878	2,645	1,552	1,043	1,424	23,229	70,486
Southern California Area														
Antelope Valley-East Kern Water Agency														
Approved Table A water	2,576	1,695	2,341	3,843	5,904	8,708	5,440	5,002	2,773	811	3,324	2,654	45,071	138,400
Dry Year Purchase Program	0	0	0	0	0	0	3,498	3,687	4,413	5,137	0	0	16,735	
Mojave's approved Table A water delivered through AVEK*	30	24	58	113	129	148	203	164	240	99	101	76	1,385	
Pool A water	0	0	0	0	352	0	0	0	0	0	0	0	352	
Pool B water	0	0	0	0	547	0	0	0	0	0	0	0	547	
Local turn-in water recovered by AVEK*	0	0	0	0	0	62	66	24	0	0	0	0	152	
Agency Total (*excluded water)	2,576	1,695	2,341	3,843	6,803	8,708	8,938	8,689	7,186	5,948	3,324	2,654	62,705	
Castaic Lake Water Agency														
Approved Table A water	1,769	803	1,081	2,995	3,686	3,808	3,669	3,749	3,599	3,576	498	0	29,233	95,200
Article 21 water	0	0	850	0	0	0	0	0	0	0	0	0	850	
Local water	0	0	0	0	0	0	0	0	0	0	2,337	2,594	4,931	
Pool A water	0	0	0	0	0	0	42	100	100	0	0	0	242	
Pool B water	0	0	0	0	0	0	100	100	176	0	0	0	376	
Flexible storage replacement with local water*	0	0	0	0	0	0	0	0	0	0	0	2,589	2,589	
Agency Total (*excluded water)	1,769	803	1,931	2,995	3,686	3,808	3,811	3,949	3,875	3,576	2,835	2,594	35,632	
Coachella Valley Water District														
Approved Table A water	0	0	0	1,155	1,155	1,925	1,925	2,849	0	0	0	0	9,009	23,100
Pool B water	0	0	0	91	0	0	0	0	0	0	0	0	91	
Agency Total	0	0	0	1,246	1,155	1,925	1,925	2,849	0	0	0	0	9,100	

Table 9-3. Water Delivered in 2001, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2001 Total Deliveries	2001 Contract Table A
Crestline-Lake Arrowhead Water Agency														
Approved Table A water	112	0	0	0	0	0	167	209	182	167	118	102	1,057	5,800
Local water	0	100	98	97	132	160	13	0	0	0	0	0	600	
Agency Total	112	100	98	97	132	160	180	209	182	167	118	102	1,657	
Desert Water Agency														
Approved Table A water	0	0	0	1,905	1,905	2,381	2,381	3,142	3,145	0	0	0	14,859	38,100
Pool B water	0	0	0	151	0	0	0	0	0	0	0	0	151	
Agency Total	0	0	0	2,056	1,905	2,381	2,381	3,142	3,145	0	0	0	15,010	
Littlerock Creek Irrigation District														
Approved Table A water	0	0	0	0	0	0	0	0	0	0	0	0	0	2,300
Metropolitan Water District of Southern California														
Approved Table A water	0	0	9,918	59,865	91,335	80,220	60,243	56,098	78,802	116,762	83,689	49,613	686,545	2,011,500
Article 21 water	0	0	5,705	0	0	0	0	0	0	0	0	0	5,705	
Article 56(c) extended carryover	94,266	60,337	45,397	0	0	0	0	0	0	0	0	0	200,000	
Bank water recovery, Arvin-Edison	0	0	0	0	0	0	0	0	5,000	5,800	5,000	5,000	20,800	
Bank water recovery, Semitropic	0	0	1,614	2,573	0	13,179	0	0	0	0	14,134	0	31,500	
Dry Year Purchase Program	0	0	0	0	0	0	35,712	30,248	0	0	0	0	65,960	
Flexible storage replacement with Article 21 water (Lake Perris)*	0	0	4,710	0	0	0	0	0	0	0	0	0	4,710	
Flexible storage replacement with local water (Castaic Lake)*	0	0	0	0	0	0	0	0	0	0	0	2,589	2,589	
Pool B water	0	0	0	7,949	0	0	0	0	0	0	0	0	7,949	
Flexible storage withdrawal (Castaic Lake)	0	0	0	0	0	0	0	0	0	0	0	14,300	14,300	
Flexible storage withdrawal (Castaic Lake) for EWA*	0	0	15,062	34,938	0	0	0	0	0	0	0	0	50,000	
Flexible storage withdrawal (Lake Perris)	0	0	0	0	0	0	0	0	0		0	10,692	10,692	
Agency Total (*excluded water)	94,266	60,337	62,634	70,387	91,335	93,399	95,955	86,346	83,802	122,562	102,823	79,605	1,043,451	
Mojave Water Agency														
Approved Table A water	84	20	577	280	655	256	105	250	190	330	234	67	3,048	75,800
Approved Table A water delivered through AVEK	30	24	58	113	129	148	203	164	240	99	101	76	1,385	
Pool B water sale*	0	0	14,240	0	0	0	0	0	0	0	0	0	14,240	
Agency Total (*excluded water)	114	44	635	393	784	404	308	414	430	429	335	143	4,433	
Palmdale Water District														
Article 56(c) extended carryover	1,078	698	481	0	0	0	0	0	0	0	0	0	2,257	21,300
Approved Table A water	0	0	0	0	577	954	1,662	1,972	1,407	1,096	502	0	8,170	
Agency Total	1,078	698	481	0	577	954	1,662	1,972	1,407	1,096	502	0	10,427	
San Bernardino Valley Municipal Water District														
Approved Table A water	1,145	0	165	164	1,062	2,159	2,560	2,690	2,576	2,635	3,278	8,054	26,488	102,600
San Gabriel Valley Municipal Water District														
Approved Table A water	0	0	0	0	0	0	0	0	0	0	0	2,360	2,360	28,800
Exchange approved water to Dudley Ridge*	0	0	0	0	0	1,300	1,574	1,300	0	0	0	0	4,174	
Agency Total (*excluded water)	0	0	0	0	0	0	0	0	0	0	0	2,360	2,360	
San Gorgonio Pass Water Agency														
Pool A water sale*	0	800	0	0	0	0	0	0	0	0	0	0	800	4,000
Pool B water sale*	0	0	200	0	0	0	0	0	0	0	0	0	200	
Agency Total (*excluded water)	0	800	200	0	0	0	0	0	0	0	0	0	1,000	
Ventura County Flood Control District														
Approved Table A water	154	154	154	154	154	154	154	154	154	154	154	156	1,850	20,000
Pool A water sale*	0	3,000	0	0	0	0	0	0	0	0	0	0	3,000	
Agency Total (*excluded water)	154	154	154	154	154	154	154	154	154	154	154	156	1,850	
Recreation/Fish and Wildlife														
Castaic Lake	16	8	6	15	28	31	43	56	40	30	6	10	289	
Castaic Lake to Lagoon	52	49	75	61	73	326	192	394	190	0	0	0	1,412	
Silverwood Lake	2	2	1	4	10	10	13	12	11	8	3	0	76	
Lake Perris	26	13	13	21	41	37	47	52	41	36	27	20	374	
Agency Total	96	72	95	101	152	404	295	514	282	74	36	30	2,151	
Recreation/Fish and Wildlife														
USFWS Recreation/fish and wildlife water (Pyramid Lake)	0	0	0	0	2	1	3	2	2	2	1	0	13	
SWP	101,214	63,731	68,341	81,238	107,461	113,892	78,651	76,479	98,344	131,430	111,032	93,074	1,124,887	
Non-SWP	0	100	98	97	132	160	39,223	33,935	4,413	5,137	2,337	2,594	88,226	
Southern California Area Total	101,214	63,831	68,439	81,335	107,593	114,052	117,874	110,414	102,757	136,567	113,369	95,668	1,213,113	2,566,900

Table 9-3. Water Delivered in 2001, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2001 Total Deliveries	2001 Contract Table A
SWP Water														
SWP Approved Table A Water														
Agricultural and M&I approved Table A water	8,630	3,900	17,108	81,899	145,316	191,946	157,270	134,294	133,938	163,785	106,032	71,448	1,215,566	
Agricultural and M&I approved Table A water for EWA*	0	0	0	0	31,219	10,000	2,500	0	21,000	9,296	9,233	0	83,248	
Article 21 water	0	1,324	40,870	0	0	0	0	0	0	0	0	988	43,182	
Article 56(c) extended carryover	133,186	79,326	77,225	0	0	0	0	0	0	0	0	0	289,737	
Article 56(c) extended carryover for EWA*	0	0	44,036	0	0	0	0	0	0	0	0	0	44,036	
Transfer Article 56(c) extended carryover	0	0	500	0	0	0	0	0	0	0	0	0	500	
Flexible storage replacement with Article 21 water (Lake Perris)*	0	0	4,710	0	0	0	0	0	0	0	0	0	4,710	
Flexible storage replacement with local water (Castaic Lake)*	0	0	0	0	0	0	0	0	0	0	0	2,589	2,589	
Flexible storage withdrawal (Castaic Lake)	0	0	0	0	0	0	0	0	0	0	0	14,300	14,300	
Flexible storage withdrawal (Castaic Lake) delivered for EWA	0	0	15,062	34,938	0	0	0	0	0	0	0	0	50,000	
Flexible storage withdrawal (Lake Perris)	0	0	0	0	0	0	0	0	0	0	0	10,692	10,692	
Kern Water Bank turn-in water for EWA*	0	0	0	0	0	0	0	0	0	1,471	0	0	1,471	
Wet weather carryover	340	459	308	0	0	0	0	0	0	0	0	0	1,107	
Unscheduled water	0	0	253	0	0	0	0	0	0	0	0	0	253	
Transfer approved water	0	0	0	0	0	0	1,082	1,500	0	0	0	0	2,582	
Exchange approved water	0	0	0	0	0	1,300	2,174	15,536	0	0	0	0	19,010	
Exchange approved water for banked water*	0	0	1,814	1,300	2,250	15,444	0	18,386	5,000	5,800	5,000	11,065	65,859	
Pool A water	0	0	0	0	352	0	1,918	811	331	116	0	272	3,800	
Pool B water	0	0	0	8,191	569	82	3,030	1,205	616	279	0	468	14,440	
Pool A water sale*	0	3,800	0	0	0	0	0	0	0	0	0	0	3,800	
Pool B water sale*	0	0	14,440	0	0	0	0	0	0	0	0	0	14,440	
Turn-in recoveries*	0	0	6,363	22,125	27,345	24,143	21,451	20,941	6,704	844	230	3,214	133,360	
Semitropic Water Bank turn-in water for EWA*	0	0	0	0	0	0	0	17,879	0	0	0	12,121	30,000	
Water Bank water recoveries	0	0	1,614	2,573	2,250	15,444	0	507	5,000	5,800	19,134	5,000	57,322	
Subtotal (approved Table A water) (*excluded)	142,156	85,009	152,940	127,601	148,487	208,772	165,474	153,853	139,885	169,980	125,186	103,168	1,722,491	
SWP Table A-related water														
Recreation/fish and wildlife water	132	106	158	171	208	456	359	608	341	222	104	64	2,929	
Subtotal (SWP water)	142,288	85,115	153,098	127,772	148,695	209,228	165,833	154,461	140,226	170,202	125,270	103,232	1,725,420	
Non-SWP Water														
Other water														
Local water	39,253	983	2,975	41,468	193,560	173,508	177,907	151,527	67,699	106,476	85,800	60,685	1,101,841	
Dry Year Purchase Program	0	0	0	0	0	3,310	52,821	44,823	7,715	5,404	0	0	114,073	
Vallejo Permit Water	0	0	0	743	1,805	1,789	1,895	1,767	1,577	1,938	1,875	116	13,505	
General conveyance	0	0	0	0	0	0	0	2,000	1,997	0	0	0	3,997	
Subtotal	39,253	983	2,975	42,211	195,365	178,607	232,623	200,117	78,988	113,818	87,675	60,801	1,233,416	
CVP Water														
CVC allocated deliveries	0	0	0	0	0	0	396	5,363	0	0	0	0	5,759	
Transferred water from CVP contractor	0	0	0	0	0	10,821	55,438	88,687	30,750	0	0	0	185,696	
Exchange water from CVP contractor to SWP contractor	10,864	0	5,360	8,940	0	0	11,883	0	0	0	0	0	36,651	
Conveying CVP water Annual Contract	43	50	59	41	7	56	44	77	76	86	81	24	644	
Conveying CVP water (Kern National Wildlife Refuge–the Bureau)	649	641	0	0	294	260	59	547	3,875	4,973	4,635	2,830	18,763	
Conveying CVP water recreation/fish and wildlife water (San Luis/Pyramid)	23	25	42	54	32	20	27	36	29	112	55	118	573	
Subtotal (CVP water)	11,579	716	5,461	9,035	333	11,157	67,451	94,710	34,730	5,171	4,771	2,972	248,086	
Total (Non-SWP water)	50,832	1,699	8,436	51,246	195,698	189,764	300,074	294,827	113,718	118,989	92,446	63,773	1,481,502	
Grand Total	193,120	86,814	161,534	179,018	344,393	398,992	465,907	449,288	253,944	289,191	217,716	167,005	3,206,922	4,124,136

Table 9-4. Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962-01 (Acre-feet)

	Annual Table A Water According to Long-Term Water Supply Contract							Water Conveyed								
								Deliveries								
Year	Upper Feather River Area (1)	North Bay Area (2)	South Bay Area (3)	San Joaquin Valley Area (4)	Central Coastal Area (5)	Southern California Area (6)	Total (7)	Annual Table A Water (8)	Article 21 Surplus and Unscheduled Water[a] (9)	Other Water[b] (10)	Feather River Diversions[c] (11)	Wildlife/ Recreation Water (12)	Subtotal (13)	Initial Fill Water (14)	Operational Losses and Storage Changes[d] (15)	Total (16)
1962	0	0	0	0	0	0	0	0	0	18,289	0	0	18,289	9	272	18,570
1963	0	0	0	0	0	0	0	0	0	22,456	0	0	22,456	71	185	22,712
1964	0	0	0	0	0	0	0	0	0	32,507	0	0	32,507	171	152	32,830
1965	0	0	0	0	0	0	0	0	0	44,105	0	0	44,105	93	729	44,927
1966	0	0	0	0	0	0	0	0	0	67,928	0	0	67,928	0	1,746	69,674
1967	0	0	11,538	0	0	0	11,538	11,538	0	53,605	0	0	65,143	8,328	4,212	77,683
1968	550	0	109,900	77,350	0	3,700	191,500	171,709	121,534	14,777	866,926	0	1,174,946	498,926	117,906	1,791,778
1969	620	0	98,700	163,075	0	5,000	267,395	193,020	72,397	18,829	794,374	0	1,078,620	510,614	72,196	1,661,430
1970	700	0	114,200	202,000	0	5,700	322,600	233,993	133,024	38,080	759,759	0	1,164,856	23,947	2,435	1,191,238
1971	890	0	116,200	251,800	0	6,700	375,590	357,340	296,019	44,119	778,362	8	1,475,848	7,853	5,812	1,489,513
1972	970	0	118,300	413,066	0	209,423	741,759	611,801	423,964	66,638	817,398	6,489	1,926,290	100,274	53,062	2,079,626
1973	1,100	0	120,400	383,652	0	481,100	986,252	694,388	296,416	42,511	800,743	1,155	1,835,213	204,638	53,798	2,093,649
1974	1,230	0	122,400	460,650	0	597,920	1,182,200	874,077	417,676	46,224	911,613	2,118	2,251,708	237,554	10,657	2,499,919
1975	1,610	0	124,500	545,809	0	714,950	1,386,869	1,223,990	622,902	63,793	862,218	3,377	2,776,280	103,352	(94,606)	2,785,026
1976	1,990	0	126,500	543,417	0	836,480	1,508,387	1,373,002	580,110	115,217	946,440	1,745	3,016,514	61,122	(681,025)	2,396,611
1977	2,420	0	128,600	581,400	0	954,901	1,667,321	574,155	0	389,065	581,994	1,111	1,546,325	0	(131,151)	1,415,174
1978	1,850	0	130,700	635,900	0	1,049,584	1,818,034	1,452,699	16,914	121,225	786,517	1,691	2,379,046	64,443	717,370	3,160,859
1979	2,130	0	132,700	702,685	0	1,190,573	2,028,088	1,659,896	648,389	187,630	882,549	1,766	3,380,230	12,302	(83,430)	3,309,102
1980	1,810	500	134,800	758,100	1,946	1,317,614	2,214,770	1,529,749	404,557	46,459	875,045	2,131	2,857,941	0	(26,606)	2,831,335
1981	1,940	650	137,000	818,000	2,813	1,432,065	2,392,468	1,909,562	908,428	279,161	838,557	4,688	3,940,396	0	(802,263)	3,138,133
1982	1,970	800	139,200	876,500	5,626	1,550,449	2,574,545	1,750,024	215,873	154,882	776,330	4,646	2,901,755	0	480,752	3,382,507
1983	2,000	950	141,400	867,118	8,439	1,681,257	2,701,164	1,184,869	13,019	181,453	602,905	7,849	1,990,095	0	(90,997)	1,899,098
1984	3,630	1,100	143,600	979,211	12,698	1,744,098	2,884,337	1,588,619	262,917	381,024	832,332	7,040	3,071,932	0	(140,182)	2,931,750
1985	3,760	1,250	145,800	1,019,049	21,138	1,864,849	3,055,846	1,995,453	307,672	404,842	870,008	4,033	3,582,008	0	92,885	3,674,893
1986	4,190	1,400	148,100	1,091,946	28,210	1,983,890	3,257,736	1,995,636	36,620	193,606	791,737	3,865	3,021,464	0	284,380	3,305,844
1987	4,620	1,550	150,300	1,188,500	35,204	2,103,941	3,484,115	2,130,086	114,907	377,592	831,947	7,672	3,462,204	0	(390,413)	3,071,791
1988	5,060	15,471	152,500	1,246,100	43,722	2,225,482	3,688,335	2,385,122	0	507,076	794,834	4,889	3,691,921	0	(92,850)	3,599,071
1989	5,500	24,615	156,700	1,290,400	56,342	2,424,633	3,958,190	2,853,747	0	474,559	830,500	8,135	4,166,941	0	447,917	4,614,858
1990	6,040	28,190	160,900	1,313,450	70,486	2,500,600	4,079,666	2,582,151	90	424,697	875,099	9,262	3,891,299	0	(528,869)	3,362,430
1991	11,880	29,590	166,400	1,338,011	70,486	2,510,200	4,126,567	549,113	3,521	551,051	565,395	4,879	1,673,959	0	167,435	1,841,394
1992	11,920	32,010	171,900	1,342,300	70,486	2,510,200	4,138,816	1,471,454	1,156	144,789	613,978	2,605	2,233,982	0	(63,541)	2,170,441
1993	11,960	34,620	177,400	1,342,300	70,486	2,510,200	4,146,966	2,315,235	0	254,854	822,589	2,609	3,395,287	0	726,123	4,121,410
1994	12,000	37,215	182,000	1,342,300	70,486	2,510,200	4,154,201	1,749,351	112,625	236,739	874,018	8,200	2,980,933	0	(295,405)	2,685,528
1995	12,050	44,030	184,000	1,342,300	70,486	2,510,200	4,163,066	1,967,093	64,330	78,425	860,077	2,575	2,972,500	0	69,536	3,042,036
1996	12,100	48,225	186,000	1,301,630	70,486	2,492,900	4,111,341	2,514,825	28,647	251,391	934,997	3,907	3,733,767	86	491,550	4,225,403
1997	12,150	49,315	188,000	1,297,300	45,201	2,492,900	4,084,866	2,325,775	21,432	322,000	993,211	4,146	3,666,564	527	(11,806)	3,655,285
1998	12,200	50,420	188,000	1,272,300	45,201	2,517,900	4,086,021	1,725,519	20,288	134,682	872,738	2,108	2,755,335	0	(132,491)	2,622,844
1999	12,250	51,500	188,000	1,272,300	70,486	2,519,900	4,114,436	2,738,891	158,070	85,312	1,108,672	4,324	4,095,269	0	(189,525)	3,905,744
2000	14,000	55,945	210,000	1,205,300	70,486	2,565,900	4,121,631	3,200,677	308,785	322,655	1,085,886	4,030	4,932,032	0	(20,103)	4,750,274
2001	14,670	66,561	220,000	1,185,519	70,486	2,566,900	4,124,136	1,546,742	43,435	535,160	1,078,656	2,929	3,206,922	0	159,983	3,378,772
Total	**193,760**	**575,907**	**5,126,638**	**30,650,738**	**1,011,400**	**54,592,309**	**92,150,752**	**53,441,301**	**6,655,717**	**7,739,406**	**28,518,404**	**125,982**	**96,480,810**	**1,834,310**	**24,175**	**98,351,162**

[a] Values include amounts of deliveries to short-term contractors (Mustang Water District, 1970-72; Tracy Golf and Country Club, 1974, 1979, and 1980; Green Valley Water District, 1974, 1975, 1978, 1979, 1980, and 1985; Granite Construction Company, 1980).
[b] Includes amounts of SWP non-Table A water and non-SWP water conveyed for SWP and non-SWP water contractors.
[c] Includes amounts of water diverted under various water rights agreements.
[d] Amounts reflect net effect of (1) operational losses from SWP transportation facilities; (2) changes in reservoir storage south of Delta; (3) storable local inflows to SWP reservoirs; (4) side inflow to San Luis Canal; and (5) inflow into California Aqueduct from Kern River Intertie.

This amount included 1,546,742 acre-feet of approved Table A water, 43,435 acre-feet of Article 21 and unscheduled water, and 113,196 acre-feet of nonproject water.

Water Delivered in 2001 by Month

During 2001, the SWP provided water service to 44 agencies, including 26 long-term water contractors. Those agencies and the amounts of water delivered to them by month are listed in Table 9-3.

This section and the accompanying table summarize water deliveries for 2001. Information about those deliveries is categorized as SWP water and nonproject water.

SWP Water

SWP water delivered in 2001 is categorized as follows:

Long-term water supply contracts

- Article 21
- carryover Table A water
- current year approved Table A amounts
- flexible storage
- transfer and exchange of approved Table A water
- turnback pools A and B

Related water

- operational flood release
- recreation and fish and wildlife

In 2001, SWP water was delivered in the following classifications and amounts.

Approved Table A Water. A total of 1,546,742 acre-feet of 2001 approved Table A water was delivered to 26 long-term contractors. Also, 291,344 acre-feet of carryover water, and 74,992 acre-feet of flexible storage withdrawal water were delivered in 2001.

Exchanges and Transfers of Approved Table A Water. During 2001, a total of 21,592 acre-feet of approved Table A water was exchanged or transferred to SWP long-term contractors and non-SWP water agencies as follows:

- Kern transferred 2,874 acre-feet to Dudley Ridge;
- Tulare Lake transferred 1,082 acre-feet of water to Westlands and exchanged 1,975 acre-feet with Westlands;
- the Bureau received 11,487 acre-feet of exchange water from Kern; and
- Dudley Ridge received 4,174 acre-feet of exchange water from San Gabriel.

2000 Carryover Approved Table A Water. In 2001, 291,344 acre-feet of 2000 approved Table A water were delivered that had been stored in SWP storage facilities in 2000; this amount includes 500 acre-feet of carryover water transferred from Tulare Lake to Empire.

Article 21 Water. The Article 21 water program allows a contractor to take delivery of water over the approved and scheduled Table A amounts for the current year. In 2001, nine contractors participated in the program. A total of 43,182 acre-feet of Article 21 water was delivered to Napa, Solano, Alameda County, Dudley Ridge, Kern, Tulare, Santa Barbara, Castaic Lake, and Metropolitan. Empire took delivery of 253 acre-feet of unscheduled water.

Water for Recreation and Fish and Wildlife. A total of 2,929 acre-feet of SWP water was conveyed for recreational use and enhancement of fish and wildlife.

Recreational Use. The SWP delivered 784 acre-feet of water for facilities at Lake Oroville, Lake Del Valle, O'Neill Forebay, Silverwood Lake, and Lake Perris. In addition, 1,701 acre-feet were delivered to Castaic Lake and Castaic

Lagoon, an impoundment downstream from Castaic Lake devoted entirely to recreation.

Wildlife Management. The SWP delivered 444 acre-feet of water to use in managing wildlife in the Pilibos Wildlife Area, located on about 770 acres of land near O'Neill Forebay, 40 miles south of Los Banos.

Operational Flood Release Water

There was no operational flood water released in 2001.

Non-SWP Water

In 2001, the Department used SWP facilities to convey non-SWP water for various agencies according to the terms of water rights and water transfer and exchange agreements. Detailed information concerning those conveyances is found under "Miscellaneous Agreements with Other Agencies" in this chapter.

Floodwater. Occasionally, during wet years, the Department accepts floodwater from the Kern River into the California Aqueduct through the Kern River-California Aqueduct Intertie under an agreement entitled *Agreement among the State of California, Kern County Water Agency, and the Kern River Interests for Diversions of Floodwaters through the Kern River-California Aqueduct Intertie*, dated November 18, 1975. In 2001, the Department did not accept any floodwater into the California Aqueduct.

Water Rights Water. Water in this category is transported through SWP facilities to long-term SWP contractors and other agencies according to terms of various local water rights agreements. Some water simply passes through SWP transportation facilities; a portion is stored in SWP reservoirs for release at a later time. In 2001, 1,101,841 acre-feet of water in this category were delivered to the Feather River and South Bay and Southern California areas.

Feather River Area. Ten nonproject agencies in the Feather River area received 1,078,656 acre-feet. Those agencies are

- Last Chance Creek Water District, 10,959 acre-feet
- Thermalito Irrigation District, 2,516 acre-feet
- Oroville-Wyandotte Irrigation District, 6,632 acre-feet
- Western Canal Water District, 296,617 acre-feet
- Joint Water Districts Board, 734,236 acre-feet
- Oswald Water District, 289 acre-feet
- Tudor Mutual Water Company, 3,681 acre-feet
- Garden Highway Mutual Water Company, 15,101 acre-feet
- Plumas Mutual Water Company, 7,945 acre-feet
- Dana Brothers, 680 acre-feet

South Bay Area. In the South Bay area, 17,654 acre-feet of local water were delivered to Alameda-Zone 7 and Alameda County. These two South Bay Aqueduct contractors hold water rights to runoff from Lake Del Valle watershed.

Southern California. In Southern California, 600 acre-feet of local runoff from the Houston Creek watershed were stored and delivered to Crestline under water rights held by the Department on Houston Creek. The authorized place of use is limited to Crestline.

In 2001, Castaic entered into transfer agreements with four parties downstream of Castaic Lake to transfer 4,931 acre-feet of local water to Castaic.

Annual Table A Water and Water Delivered Since 1962

Information about annual Table A water and water conveyed for the past 40 years is contained in Table 9-4. The following discussion of conveyed Table A water is arranged according to column numbers.

Annual Table A. Columns 1 through 7 of Table 9-4 show the amount of long-term contractor's annual Table A water by area for years 1962 through 2001 as specified in the Table A

schedules of the long-term water supply contracts.

In some instances Table A schedules—projections of each contractor's need for water to 2035—have been amended to meet the needs of individual contractors. The amounts of annual Table A water each contractor may request for years 1962 through 2035 can be found in Table B-4 in Appendix B.

Water Delivered. Columns 8 through 16 show water delivered or conveyed, including initial fill water and operational losses and storage changes.

Approved Table A Water. Column 8 shows amounts of approved Table A water delivered each year from 1962 through 2001.

Article 21 and Unscheduled Water. Article 21 and unscheduled water is water in excess of that required to meet all demands for the year's approved Table A water and water to be stored in SWP reservoirs.

Column 9 shows amounts of Article 21 water, as defined under *SWP Deliveries*, and unscheduled water delivered from 1962 through 2001.

Other Water. Column 10 includes amounts of water classified as other water delivered in 2001, including nonproject water conveyed through SWP facilities and regulated delivery of local supply.

In 2001, a total of 535,160 acre-feet of other water was delivered.

Feather River Diversions. Column 11 includes amounts of water from the Feather River delivered according to agreements for water rights water. In 2001, a total of 1,078,656 acre-feet in this category was delivered to agencies in the Feather River area.

Recreation Water. Column 12 shows water conveyed for recreational use or to provide water to improve water quality for fish and wildlife. In 2001, a total of 2,929 acre-feet of SWP water was conveyed for this purpose.

Initial Fill Water. The quantities listed in Column 14 represent the amounts used to initially fill the aqueducts and reservoirs south of the Delta to maximum operating capacities. Initial filling began in 1962 with the filling of the South Bay Aqueduct and was completed in 1979 when Lake Perris reached its maximum operating capacity of 127,000 acre-feet. In 1996 and 1997, the Coastal Aqueduct was initially filled.

Operational Losses. Column 15 includes the total amounts of water lost through evaporation and seepage, net storage changes in reservoirs south of the Delta, and amounts of inflow from local drainage areas, including inflows into San Luis Canal and from the Kern River Intertie.

Negative values are indicated for years when withdrawals and evaporation from reservoirs south of the Delta exceed the amounts of water added to the reservoirs.

Information for this chapter was provided by the State Water Project Analysis Office.

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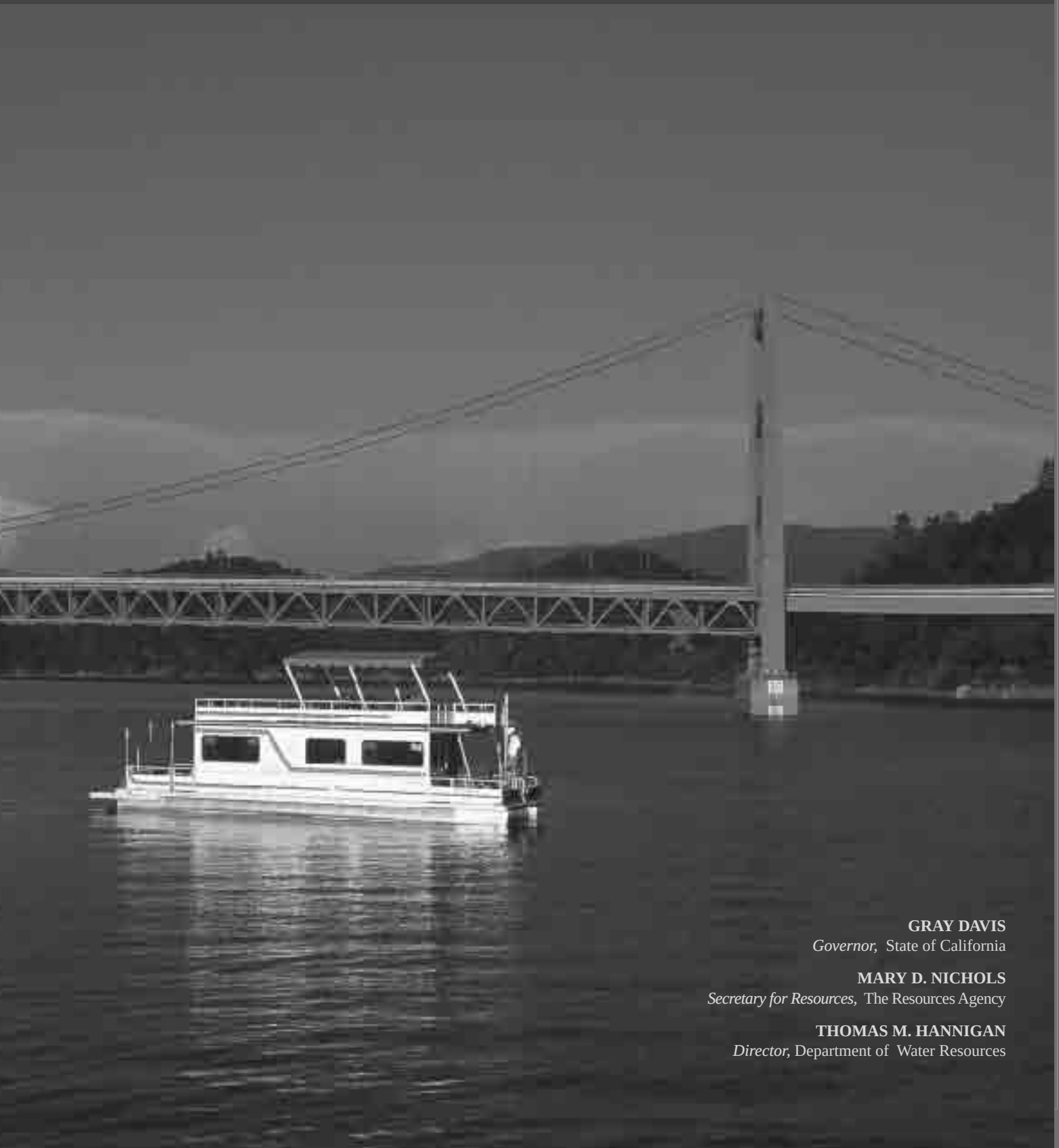
MANAGEMENT OF THE CALIFORNIA STATE WATER PROJECT



GRAY DAVIS
Governor, State of California

MARY D. NICHOLS
Secretary for Resources, The Resources Agency

THOMAS M. HANNIGAN
Director, Department of Water Resources

Chapter 9
Water Contracts and Deliveries

Oroville Dam spillway

Significant Events in 2000

- On October 1, 1999, State Water Project long-term contractors submitted initial requests for 2000 approved Table A deliveries totalling 3.62 million acre-feet. The Department approved deliveries of 2.06 million acre-feet on November 30, 1999, resulting in an initial approved Table A amount for most SWP contractors of 50 percent of Table A requests for 2000. Improved water conditions increased the 2000 approved Table A amount to 2.88 million acre-feet or 70 percent on February 25, 2000. As a result of additional improvements in water conditions, approved Table A amounts were further increased to 3.62 million acre-feet or 100 percent on March 10, 2000. Unusually dry conditions from mid-March on caused a reduction in approved Table A amounts to 3.42 million acre-feet or 90 percent of contractor requests; approved Table A amounts remained at that level for the rest of 2000.
- In 2000, 4,932,032 acre-feet of water were conveyed to 27 long-term contractors and 17 other agencies. That amount includes a total of 3,523,492 acre-feet of SWP water of which 2,983,670 acre-feet is approved Table A water; 308,257 acre-feet is Article 21 water and 528 acre-feet is unscheduled water; 216,237 acre-feet is carryover; 10,770 acre-feet is flexible storage withdrawal; and 4,030 acre-feet is SWP water for recreation.
- The Department executed seven amendments to long-term water supply contracts.
- The Department executed 14 water conveyance/storage agreements and 3 turnout agreements with SWP contractors.
- The Department conveyed 301,146 acre-feet of Central Valley Project water through SWP facilities.
- Nine Feather River water right settlement agencies received a total of 1,085,886 acre-feet of water.

The long-term water supply contracts for water service from the State Water Project between the Department and 29 local agencies are basic to the project's construction and operation. In return for State financing, constructing, operating, and maintaining facilities needed to provide water service, the agencies contractually agreed to repay all associated SWP capital and operating costs.

The Department delivers water to SWP contractors according to their long-term water supply contracts.

The SWP contractors' long-term water supply contracts set forth Table A amounts, which determine how much water a contractor may request each year from the Department.

Annual Table A represents the total amount of project water that an SWP contractor may request each year, according to that contractor's long-term water supply contracts.

Approved Table A represents the amount of annual Table A requested by the contractors and approved for delivery by the Department, based on hydrologic conditions, current reservoir storage, and total requests by the SWP

Long-Term SWP Water Supply Contracts

The first water supply contract was signed with the Metropolitan Water District of Southern California on November 4, 1960. The contract was negotiated by the Department and Metropolitan according to terms of the contracting principles for water service contracts announced by Governor Edmund G. Brown on January 20, 1960.

The Metropolitan contract became the prototype for all water contracts; by the end of 1967, 31 agencies had contracted for water. In addition, a water supply contract was executed with the City of West Covina in December 1963, but was terminated in August 1965; the city's Table A amount was transferred to Metropolitan through an amendment to the district's long-term contract with the Department. Long-term contracts with Hacienda Water District and Devil's Den Water District were also terminated when those districts transferred their Table A amounts, through contract amendments, to Tulare Lake Basin Water Storage District (1981) and Castaic Lake Water Agency (1992), respectively. Today the SWP has long-term water supply contracts with 29 agencies. Those contracts have been amended periodically to incorporate mutually desired modifications.

All water contracts signed in the 1960s included an estimate of the date water would first be delivered and a schedule of the amount of water the agency could expect to be delivered annually (annual Table A amounts). That amount was designed to increase gradually until the maximum amount of annual Table A was reached. The total combined maximum annual Table A amount for all water contracting agencies was initially 4,230,000 acre-feet, assuming full development of the SWP.

The contracts were initially designed to be valid for 75 years or until all bonds sold as part of the California Water Resources Development Bond Act were repaid, whichever period was longer. As a result of amendments to contracts in the 1990s, the current combined maximum annual Table A amount totals 4,172,786 acre-feet, and the contracts are in effect for the longest of the following periods: (1) the project repayment period, which extends to the year 2035; (2) 75 years from the date of the contract; or (3) the period ending with the latest maturity date of any bond used to finance the construction costs of project facilities.

water contractors. The Department is not always able to deliver the quantity of water requested by the contractors; under certain conditions, a lesser amount, allocated according to the long-term water supply contracts and the process noted above, is made available for delivery.

Approved Table A amounts may also be referred to in this chapter as *approved amounts* or *approved water.*

The long-term water contracts are amended as needed. During 2000, the Department executed seven amendments to these contracts.

The Department also enters into miscellaneous agreements with SWP contractors and other agencies—which may be amended periodically—to convey SWP and non-SWP water through the California Aqueduct and approve the construction, operation, and maintenance of turnouts along SWP facilities. During 2000, the Department executed 14 water conveyance/storage agreements, and 3 turnout agreements with SWP contractors.

The State Water Project Analysis Office has developed a numbering system for contracts, amendments, and agreements executed by the Department. These numbers, designated as SWPAO #XXXXX, are located in parentheses after each contract, amendment, or agreement.

Detailed information about contracts and amendments follows.

Amendments to Long-Term SWP Water Supply Contracts

All the original contracts signed by the Department and local agencies have been previously amended to incorporate mutually desired changes. Most amendments fall under the following five general categories:

- revision of Table A amounts in the water supply contracts;
- allocation of costs and benefits for the enlargement or extension of the East Branch and extension of the Coastal Branch of the California Aqueduct;
- purchase of excess capacity in the California Aqueduct;
- provisions to allow contractors, during certain conditions, to carry over undelivered SWP approved Table A water from one year for delivery in the next year; and
- implementation of Monterey Agreement principles.

The following long-term SWP Water Supply Contracts were amended during 2000.

Alameda County Flood Control and Water Conservation District, Zone 7. The Department executed Amendment Number 21 to the Water Supply Contract between Alameda-Zone 7 and the Department on December 8, 2000. The Amendment provided for the permanent transfer of 10,000 acre-feet of SWP agricultural Table A water to Alameda-Zone 7 from Kern County Water Agency, and set forth conditions for the transfer. The transfer is consistent with implementation of the Monterey Amendment, which provides for the permanent transfer of up to 130,000 acre-feet of agricultural Table A water to urban agencies. The transfer is effective January 1, 2001. (SWPAO #01005)

County of Butte. The Department executed Amendment Number 15 to the Water Supply Contract between Butte and the Department on November 14, 2000. The Amendment provided for reduction of Butte's Table A amounts from 27,500 acre-feet to 3,500 acre-feet for 2001. In 2002, Butte's Table A amounts will revert to the maximum of 27,500 acre-feet. (SWPAO #01002)

Kern County Water Agency. The Department executed Amendment Number 32 to the Water Supply Contract between Kern and the Department on December 8, 2000. The Amendment provided for the permanent transfer of 10,000 acre-feet of SWP agricultural Table A amount from Kern to Alameda-Zone 7, and set forth conditions for the transfer. The transfer is

consistent with implementation of the Monterey Amendment, which provides for the permanent transfer of up to 130,000 acre-feet of agricultural Table A amounts to urban agencies. The transfer is effective January 1, 2001. (SWPAO #01008)

Kern County Water Agency. The Department executed Amendment Number 33 to the Water Supply Contract between Kern and the Department on December 8, 2000. The Amendment provided for the permanent transfer of 5,756 acre-feet of SWP agricultural Table A amounts from Kern to Solano County Water Agency, and set forth conditions for the transfer. The transfer is consistent with implementation of the Monterey Amendment, which provides for the permanent transfer of up to 130,000 acre-feet of agricultural Table A amounts to urban agencies. The transfer is effective January 1, 2001. (SWPAO #01007)

Kern County Water Agency. The Department executed Amendment Number 34 to the Water Supply Contract between Kern and the Department on December 8, 2000. The Amendment provided for the permanent transfer of 4,025 acre-feet of SWP agricultural Table A amount from Kern to Napa County Flood Control and Water Conservation District, and set forth conditions for the transfer. The transfer is consistent with implementation of the Monterey Amendment, which provides for the permanent transfer of up to 130,000 acre-feet of agricultural Table A amount to urban agencies. The transfer is effective January 1, 2001. (SWPAO #01006)

Napa County Flood Control and Water Conservation District. The Department executed Amendment Number 21 to the Water Supply Contract between Napa and the Department on December 8, 2000. The Amendment provided for the permanent transfer of 4,025 acre-feet of SWP agricultural Table A amounts to Napa from Kern and set forth conditions for the transfer. The transfer is consistent with implementation of the Monterey Amendment, which provides for the permanent transfer of up to 130,000 acre-feet of agricultural Table A amounts to urban agencies. The transfer is effective January 1, 2001. (SWPAO #01003)

Solano County Water Agency. The Department executed Amendment Number 17 to the Water Supply Contract between Solano and the Department on December 8, 2000. The Amendment provided for the permanent transfer of 5,756 acre-feet of SWP agricultural Table A amounts to Solano from Kern, and set forth conditions for the transfer. The transfer is consistent with implementation of the Monterey Amendment, which provides for the permanent transfer of up to 130,000 acre-feet of agricultural Table A amounts to urban agencies. The transfer is effective January 1, 2001. (SWPAO #01004)

Monterey Amendments

The Monterey Amendments increase the reliability of existing water supplies; provide stronger financial management for the SWP; and increase water management flexibility, providing more tools for local water agencies to maximize use of existing facilities.

Changes to SWP operations incorporated in the Monterey Amendments include changes in determination of approved Table A water, the transfer of Table A amounts and land, financial restructuring, and increased operational flexibility. The Monterey Amendments are discussed in detail in Chapter 1, *Summary of Significant Events*, of Bulletin 132-95.

No Monterey Amendments were executed during 2000. Plumas County Flood Control and Water Conservation District and Empire West Side Irrigation District remain the only long-term SWP contractors who have not signed the Monterey Amendment.

The Planning and Conservation League filed a lawsuit on December 27, 1995, challenging the California Environmental Quality Act compliance for the Monterey Amendment. A Sacramento County Superior Court judge later dismissed the lawsuit. PCL appealed the decision and on September 15, 2000, the Third District Court of Appeal reversed the Superior Court ruling. Additional information can be found in Chapter 6, *Legislation and Litigation*.

Miscellaneous Agreements with Long-Term SWP Contractors

Water Conveyance/Exchange Agreements

During 2000, water conveyance/exchange agreements were executed with long-term SWP contractors as described below.

Antelope Valley-East Kern Water Agency. An agreement pending execution among the Department, AVEK, and Littlerock Creek Irrigation District, will provide for the delivery of up to 5,000 acre-feet of AVEK's 2000 approved Table A water to Littlerock. The water delivered through the Littlerock Creek Turnout will be used to study recharge into AVEK's service area. A total of 5,002 acre-feet was delivered in 2000. (SWPAO #00024)

Castaic Lake Water Agency. A letter agreement dated August 30, 2000, and executed September 6, 2000, between the Department and Castaic Lake, approved a water transfer of Castaic Lake's 2000 approved Table A water to Westlands Water District, a Central Valley Project contractor. The transfer was on behalf of Rolling Hills Farms, who leases land in both the Castaic Lake and WWD service areas, in order to utilize annual water supplies in the most beneficial manner for 2000 farming operations. The transfer was completed in 2000, with a total of 1,200 acre-feet delivered to WWD. (SWPAO #00015)

Dudley Ridge Water District. A letter agreement pending execution among the Department, Dudley Ridge, and Kern, will provide for the transfer of up to 1,500 acre-feet of Dudley Ridge's 1999 approved Table A carryover water to Kern during the first three months of 2000. The agreement will facilitate a transfer of water to Paramount Farming Company, a landholder who farms in both Dudley Ridge and Kern service areas. A total of 1,500 acre-feet was transferred to Kern in 2000. (SWPAO #00034).

Empire West Side Irrigation District. An agreement executed May 1, 2000, between the Department and Empire, approved the delivery of unscheduled water to Empire in 2000 at times when project water was not needed for fulfilling approved Table A water deliveries or for meeting project operational commitments. A total of 528 acre-feet of unscheduled water was delivered to Empire in 2000. (SWPAO #00011)

Kern County Water Agency. A letter agreement dated May 12, 2000, and executed May 31, 2000, between the Department and Kern, approved the transfer of up to 32,767 acre-feet of Kern's 2000 approved Table A water to WWD. The agreement facilitated a water transfer in 2000 from landholders within member units of Kern—Lost Hills Water District, Berrenda Mesa Water District, and BWSD—to land they farm in WWD. The Department has approved similar transfers annually since 1996. A total of 29,267 acre-feet was delivered to WWD in 2000. (SWPAO #00012)

Kern County Water Agency. A letter agreement dated June 29, 2000, and executed July 5, 2000, between the Department and Kern, approved the transfer in 2000 of up to 6,580 acre-feet of Kern's 2000 approved Table A water to WWD. The agreement facilitated a water transfer from landholders within member units of Kern—LHWD, BMWD, and BWSD—to land they farm in WWD. The Department has approved similar transfers annually since 1996. A total of 6,580 acre-feet was delivered to WWD in 2000. (SWPAO #00014)

Kern County Water Agency. A letter agreement dated August 31, 2000, and executed September 7, 2000, between the Department and Kern, approved the exchange of up to 60,000 acre-feet of Kern's 2000 approved Table A water for a like amount of Kern Water Bank water acquired by WWD. The Department petitioned and received approval from the State Water Resources Control Board and then approved the delivery to WWD from Reaches 4, 5, 6, and 7 of the California Aqueduct. In return, WWD would release up to 60,000 acre-feet of previously banked Kern River floodwater from

the Kern Water Bank Authority to Kern. The exchange was completed in 2000, and a total of 54,629 acre-feet was delivered to WWD. (SWPAO #00016)

Kern County Water Agency. A letter agreement dated August 31, 2000, and executed September 11, 2000, between the Department and Kern, approved the delivery of up to 20,000 acre-feet of Kern's 2000 approved Table A water to WWD, in exchange for a like amount of previously banked Kern River floodwater. In 1996, Kern entered into an agreement with Nickel/Garces LLC (La Hacienda, Inc.) to receive Kern River water in exchange for a like amount of future Kern approved Table A water to a future designated water agency. The Department petitioned and received approval from SWRCB and then approved the delivery to WWD from Reaches 4, 5, 6, and 7 of the California Aqueduct. The exchange was completed in 2000, and a total of 15,000 acre-feet was delivered to WWD. (SWPAO #00017)

Kern County Water Agency. A letter agreement dated August 29, 2000, and executed September 13, 2000, among the Department, Kern, and Tulare, approved the transfer of up to 400 acre-feet of Kern's 2000 approved Table A water to Tulare. The water was transferred from LHWD, a member unit of Kern, to Westlake Farms located within the service area of Tulare. The transferred water was used to create wetland habitat for shore birds as required under a mitigation agreement between the Regional Water Quality Control Board and LHWD for the operation of LHWD's evaporation basin. The Department has approved similar transfers annually since 1996. A total of 400 acre-feet was delivered to Tulare in 2000. (SWPAO #00018)

Kern County Water Agency. A letter agreement dated September 29, 2000, and executed October 9, 2000, between the Department and Kern, approved the exchange of up to 75,000 acre-feet of Kern's 2000 approved Table A water for previously banked Kern River floodwater and Friant-Kern Section 215/floodwater purchased by the Bureau of Reclamation from the Kern Water Bank Authority. The Department petitioned and received approval from SWRCB and then approved the delivery of Table A water to the Bureau at O'Neill Forebay. Kern would use banked non-SWP water in lieu of scheduled Table A water. The exchange was completed in 2000, and a total of 72,280 acre-feet was delivered to O'Neill Forebay. (SWPAO #00019)

Kern County Water Agency. A letter agreement dated September 29, 2000, and executed October 16, 2000, between the Department and Kern, approved the 1-year exchange of up to 25,000 acre-feet of Kern's 2000 approved Table A water for a like amount of previously banked Friant-Kern Canal water acquired by WWD. SWP water was approved for delivery to WWD from Reach 7 of the California Aqueduct for use on lands within the SWP place of use. The exchange was completed in 2000, and a total of 20,970 acre-feet was delivered to WWD. (SWPAO #00020)

Kern County Water Agency. An agreement executed on June 8, 2000, between the Department, Kern, and Western Hills Water District, approved the delivery of 8,000 acre-feet of pre-1914 Lower River Rights Water banked in Kern's share of the Pioneer Groundwater Banking Project. A portion of Kern's annual Table A water will be delivered to WHWD from Reach 2A of the California Aqueduct; in exchange, Kern will take a like amount of banked local water from the Pioneer Groundwater Bank. The Department petitioned SWRCB and by SWRCB Order dated April 21, 2000, WHWD's service area was included within the authorized SWP place of use. The delivery structure for WHWD has not been constructed, so Kern did not exchange any approved Table A water with WHWD in 2000. (SWPAO #01001)

Kern County Water Agency. A letter agreement, pending execution between the Department and Kern, will provide for the delivery of up to 30,000 acre-feet of nonproject water from four CVP contractors using 2000 water year CVP water supply. In exchange, Kern would return a like amount of its approved Table A water back to CVP by December 31, 2003. The

Department will petition SWRCB for approval for delivery of the return water. A total of 23,941 acre-feet was delivered to Kern in 2000. (SWPAO #00032)

Kern County Water Agency. A letter agreement, pending execution between the Department and Kern, will provide for the delivery of up to 20,000 acre-feet of Kern's 2000 approved Table A water to WWD, in exchange for a like amount of WWD's CVP water. SWP water was approved for delivery to WWD from Reach 7 of the California Aqueduct for use on lands within the SWP place of use. A total of 20,000 acre-feet was delivered to Kern and a total of 20,000 acre-feet was returned to WWD in 2000. (SWPAO #00035)

Kern County Water Agency. A letter agreement dated December 20, 2000, and pending execution between the Department and Kern, will provide for the delivery of up to 4,167 acre-feet of Kern's 2000 approved Table A water to WWD, in exchange for a like amount of WWD's CVP water returned prior to December 2000. SWP water was approved for delivery to WWD from Reach 7 of the California Aqueduct for use on lands within the SWP place of use. A total of 4,167 acre-feet was delivered to Kern in 2000, and a total of 4,167 acre-feet of water was returned to WWD in 2000. (SWPAO #00036)

Metropolitan Water District of Southern California. A letter agreement dated October 27, 2000, and executed November 27, 2000, between the Department and Metropolitan, approved the delivery of up to 1,995 acre-feet of nonproject water to the Santa Margarita Water District through Metropolitan's delivery structures in Reach 26A of the California Aqueduct, in accordance with Water Right Orders 99-012 and 2000-01. The transfer was completed in 2000, and a total of 900 acre-feet was delivered to Metropolitan. (SWPAO #00021)

Metropolitan Water District of Southern California. A letter agreement, dated December 18, 2000, and pending execution between the Department and Metropolitan, will provide for the delivery of up to 20,000 acre-feet of Metropolitan's 2000 approved Table A water to WWD in exchange for a like amount of water from WWD, prior to December 31, 2003. SWP water was approved for delivery to WWD from Reach 7 of the California Aqueduct for use on lands within the SWP place of use. A total of 20,000 acre-feet was delivered to WWD in 2000. (SWPAO #00026)

Napa County Flood Control and Water Conservation District. An agreement, pending execution between the Department, Napa, and Solano will provide for the delivery of up to 628 acre-feet of Napa's annual Table A amount to a turnout in Solano's service area. This water will be delivered to the City of Vallejo water treatment plant in Solano and then further conveyed to the City of American Canyon, a member agency of Napa. The agreement shall remain in effect through December 31, 2035. No water was delivered to Solano in 2000. (SWPAO #00029)

Tulare Lake Basin Water Storage District. A letter agreement dated May 12, 2000, and executed June 12, 2000, between the Department and Tulare, approved the transfer of up to 3,000 acre-feet of Tulare's 2000 Table A water to WWD. The agreement facilitated the water transfer from Tulare to WWD, on behalf of landowner Hansen Ranches who farms in both the Tulare and WWD (Vista Verde Farms, Inc.) service areas. The Department has approved similar transfers annually since 1996. The transfer was completed in 2000, and a total of 3,000 acre-feet was delivered to WWD. (SWPAO #00013)

Tulare Lake Basin Water Storage District. A letter agreement dated August 14, 2000, and executed August 18, 2000, between the Department and Tulare, will provide for the delivery of up to 20,500 acre-feet of Tulare's 2000 approved Table A water to WWD, in exchange for a like amount of the Bureau's Section 215 water or Tule River water. SWP water is approved for delivery to WWD from Reach 7 of the California Aqueduct for use on lands within the SWP place of use. The exchange was completed in 2000, and a total of 20,500 acre-feet was delivered to WWD. (SWPAO #00023)

Tulare Lake Basin Water Storage District. A letter agreement dated December 15, 2000, and executed December 27, 2000, between the Department and Tulare, approved the delivery to Tulare of 7,000 acre-feet of nonproject CVP water on behalf of Arvin-Edison Water Storage District, a CVP contractor. In exchange, Tulare is to return a like amount of water to AEWSD from the Friant-Kern Canal. AEWSD's water was delivered from O'Neill Forebay to Tulare's delivery structures in Reaches 8C and 8D of the California Aqueduct. The exchange was completed in 2000, and a total of 7,000 acre-feet of nonproject water was delivered to Tulare. (SWPAO #00022)

Tulare Lake Basin Water Storage District. A letter agreement, pending execution between the Department, Tulare, and WWD, provides for the delivery of up to 50,000 acre-feet of nonproject water from WWD to Tulare between December 2000 and April 15, 2001, in exchange for a like amount of Tulare's Table A water during the period from 2001 through 2003. The delivery of SWP exchange water to WWD will be from the Delta to Reach 7 of the California Aqueduct for use within the Kings County portion of WWD's service area. A total of 2,981 acre-feet was delivered to Tulare in December 2000. (SWPAO #01009)

During 2000, water was delivered pursuant to agreements with long-term SWP contractors executed prior to 2000, as described below.

Alameda County Flood Control and Water Conservation District-Zone 7. A conveyance agreement dated July 28, 1995, between Alameda-Zone 7 and the Department provides for the transfer of up to 5,000 acre-feet of BBID's local water annually to Alameda-Zone 7 through SWP facilities. An amendment to extend the agreement to December 31, 2001, is expected to be executed in March 2001. BBID may only transfer water that has been made available by conservation and fallowing. In 2000, 1,000 acre-feet of BBID's local water was pumped at Banks Pumping Plant and delivered to Alameda-Zone 7's turnouts in the South Bay Aqueduct.

Dudley Ridge Water District. An agreement executed May 22, 1998, among the Department, Dudley Ridge, and Tulare, provided for the conveyence, through the year 2035, of up to 1,000 acre-feet of Dudley Ridge's approved Table A amount through Tulare's turnout located at milepost 172.66 of the California Aqueduct. Dudley Ridge's approved Table A water will be delivered to Westlake Farms, which is located within Dudley Ridge's service area but not near its conveyance facilities. Tulare has conveyance capability and has agreed to provide service to Westlake Farms. During 2000, the Department delivered 166 acre-feet of Dudley Ridge's 2000 approved Table A water through Tulare's turnout. (SWPAO #98001)

Kern County Water Agency. Under two programs in 1978 and 1982, Metropolitan reduced its approved Table A deliveries by supplementing its water supply with Colorado River water, in order to help during a predicted dry year (1978) and during the San Luis slide repair (1982). Kern was one of several SWP contractors that acquired water from these programs. In 1978, when it became apparent that a dry year would not occur, and in 1982, when San Luis slide repairs progressed ahead of schedule, Metropolitan agreed to store the water acquired by Kern in Metropolitan's local groundwater basins for future use. During 2000, the Department delivered to Kern, by exchange of Metropolitan's approved Table A water, its remaining 24,870 acre-feet of the 1978/1982 water.

Mojave Water Agency. An agreement executed November 13, 1997, among AVEK, Mojave, and the Department, approved a change in point of delivery through the year 2019 of up to 2,250 acre-feet of Mojave's approved Table A amount to AVEK's Fairmont Turnout in Reach 19 of the California Aqueduct. Mojave does not have conveyance facilities to provide service to a solar energy generating station located within its service area. AVEK has conveyance capability and has agreed to provide service. During 2000, the Department delivered 1,361 acre-feet of Mojave's 2000

approved Table A water through AVEK's turnout. (SWPAO #97003)

Turnout Agreements

Antelope Valley-East Kern Water Agency. An agreement dated March 28, 2000, between the Department and AVEK, allowed the construction, operation, and maintenance of the Rancho Vista Turnout at milepost 339.68, Reach 20B of the California Aqueduct. The turnout has a design capacity of 5 cfs. Construction was completed in March 2000.

Kern County Water Agency and West Kern Water District. An agreement dated March 6, 2000, among the Department, Kern, and WKWD, allowed the construction, operation, and maintenance of the West Kern Turnout No. 3 at milepost 224.07, Reach 12D of the California Aqueduct. The turnout has a design capacity of 15 cfs. Construction of the turnout is expected to be completed in January 2001.

Kern County Water Agency and Western Hills Water District. An agreement dated June 8, 2000, among the Department, Kern, and WHWD, allowed the construction, operation, and maintenance of the Western Hills Turnout at milepost 42.90, Reach 2A, on the west side of the California Aqueduct. The turnout has a design capacity of 30 cfs. Construction of the turnout is expected to be completed in September 2001.

Agreements and Activities Related to the Monterey Amendments

Turnback Water Pool Program. Under Article 56(d) of the Monterey Amendments, the fourth year of the Turnback Water Pool Program was initiated through Notice to the State Water Project Contractors No. 00-01, dated January 28, 2000. All SWP contractors who signed Monterey Amendments were permitted to participate in the program. The program allowed SWP contractors to offer a portion of their approved 2000 Table A water for sale in a turnback pool for use by interested SWP contractors. Based on supply and demand, the turnback water was allocated among the selling and purchasing contractors. In 2000, 282,305 acre-feet of water were purchased under the Turnback Water Pool Program.

Transactions for Pool A occurred in February 2000; transactions for Pool B occurred in March 2000. Turnback water sold for $11.97 per acre-foot, 50 percent of the Delta Water Rate through Pool A, and for $5.99 per acre-foot, 25 percent of the Delta Water Rate through Pool B. All money collected through the Turnback Water Pool Program was paid to the selling contractors. The 2000 Turnback Water Pool Program closed April 1, 2000.

The following contractors participated in Pool A of the Turnback Water Pool Program:

- County of Butte sold 645 acre-feet
- City of Yuba City sold 3,300 acre-feet
- San Luis Obispo County Flood Control and Water Conservation District sold 8,561 acre-feet
- AVEK sold 430 acre-feet
- Castaic Lake sold 4,101 acre-feet
- Crestline-Lake Arrowhead Water Agency sold 750 acre-feet
- Mojave sold 29,000 acre-feet
- San Bernardino Valley Municipal Water District sold 25,000 acre-feet
- San Gorgonio Pass Water Agency sold 1,500 acre-feet
- Ventura County Flood Control District sold 7,500 acre-feet
- Dudley Ridge purchased 3,615 acre-feet
- Kern purchased 69,145 acre-feet
- Tulare purchased 8,027 acre-feet

The following contractors participated in Pool B of the Turnback Water Pool Program:

- Butte sold 1,156 acre-feet
- Yuba City sold 3,840 acre-feet
- San Luis Obispo sold 10,000 acre-feet
- Santa Barbara sold 8,392 acre-feet

- AVEK sold 46,630 acre-feet
- Castaic Lake sold 40,000 acre-feet
- Crestline sold 2,320 acre-feet
- Mojave sold 28,220 acre-feet
- San Bernardino Valley Municipal Water District sold 42,340 acre-feet
- San Gabriel Valley Municipal Water District sold 11,920 acre-feet
- San Gorgonio sold 1,200 acre-feet
- Ventura sold 5,500 acre-feet
- Dudley Ridge purchased 8,578 acre-feet
- Kern purchased 164,057 acre-feet
- Tulare purchased 19,046 acre-feet
- Coachella Valley Water District purchased 3,713 acre-feet
- Desert Water Agency purchased 6,124 acre-feet

Storage of Water Outside Service Area. Pursuant to Article 56 of the Monterey Amendments, five SWP contractors delivered and stored SWP water outside their service area for later use within their service area. The following agreements include provisions concerning the points of delivery and method for transporting such water.

Alameda County Flood Control and Water Conservation District, Zone 7. An agreement pending execution among the Department, Alameda-Zone 7, and Kern, will provide for the delivery of a portion of Alameda-Zone 7's 2000 approved Table A water, Article 21 water, and other water supplies for storage and later recovery from the Semitropic Water Storage District Banking Program, in accordance with the Alameda-Zone 7 and Semitropic Water Storage District Banking Program Agreement. Alameda-Zone 7 signed similar delivery agreements for 1998 and 1999. All return water is to be delivered to Alameda-Zone 7 by December 31, 2010. During 2000, the Department delivered 20,200 acre-feet of Alameda-Zone 7's 2000 approved Table A water and 3,740 acre-feet of Article 21 water to Reach 10A for storage by SWSD. (SWPAO #00037)

Alameda County Water District. An agreement, pending execution among the Department, Alameda County, and Kern, will provide for the delivery of a portion of Alameda County's 2000 approved Table A water, Article 21 water, and other water supplies for storage and later recovery from the Semitropic Water Storage District Banking Program, in accordance with the Alameda County and Semitropic Banking Program Agreement. Alameda County has signed similar delivery agreements since 1996. All return water is to be delivered to Alameda County by December 31, 2035. During 2000, the Department delivered 11,000 acre-feet of Alameda County's 2000 approved Table A water and 2,380 acre-feet of Article 21 water to Reach 10A for storage by Semitropic. (SWPAO #00030)

Dudley Ridge Water District. An agreement pending execution among the Department, Dudley Ridge, and Kern, will provide for the delivery of a portion of Dudley Ridge's 2000 approved Table A water, Article 21 water, and other water supplies for storage and later recovery from KWB. Dudley Ridge signed similar delivery agreements since 1996. All return water is to be delivered to Dudley Ridge by December 31, 2010. During 2000, the Department delivered 953 acre-feet of Dudley Ridge's 2000 Article 21 water to Reach 12E for storage by Kern. (SWPAO #00033)

Dudley Ridge Water District. A letter agreement dated January 14, 2000, and executed February 2, 2000, among the Department, Dudley Ridge, and San Gabriel, provides for the delivery of a portion of Dudley Ridge's 1999 carryover Table A water for storage and later recovery from groundwater basins within San Gabriel. All return water is to be delivered to Dudley Ridge by December 31, 2010. During January 2000, the Department delivered 665 acre-feet of Dudley Ridge's 1999 Article 56(c) (extended carryover) Table A water to Reach 26A for storage by San Gabriel. (SWPAO #99002)

Metropolitan Water District of Southern California. An agreement, pending execution among the

Department, Metropolitan, and Kern, will provide the delivery of a portion of Metropolitan's annual Table A and other water supplies for storage and later recovery from groundwater basins within Arvin-Edison Water Storage District, in accordance with the Metropolitan and Arvin-Edison Water Storage District water management program agreement. All return water is to be delivered to Metropolitan by December 31, 2035. During 2000, the Department delivered 133,207 acre-feet of Metropolitan's 2000 approved Table A water and 16,524 acre-feet of extended carryover to Reach 12E for storage by AEWSD. (SWPAO #01013)

Santa Clara Valley Water District. An agreement pending execution among the Department, Santa Clara, and Kern, will provide for the delivery of a portion of Santa Clara's 2000 approved Table A water, Article 21 water, and other water supplies, for storage and later recovery from the Semitropic Water Storage District Banking Program, in accordance with the Santa Clara and Semitropic Banking Program Agreement. Santa Clara has signed similar delivery agreements since 1996. All return water is to be delivered to Santa Clara by December 31, 2010. During 2000, the Department delivered 10,000 acre-feet of Santa Clara's 2000 approved Table A water and 13,730 acre-feet of Article 21 water to Reach 10A for storage by SWSD. (SWPAO #00031)

Solano County Water Agency. A letter agreement pending execution among the Department, Solano, and Mojave Water Agency, will provide for a 2:1 exchange of up to 4,000 acre-feet of Solano's 2000 approved Table A water to Mojave for the return of up to 2,000 acre-feet of Mojave's future annual Table A or other future water supply as mutually agreed to by Mojave and Solano, and as approved by the Department. The water is to be returned to Mojave by December 31, 2010. The Department has approved similar exchanges annually since 1997. A total of 2,245 acre-feet of Solano's 2000 approved Table A water was delivered to Mojave in 2000. (SWPAO #00028).

Other Administrative Action

Santa Barbara County Flood Control and Water Conservation District. A letter dated August 13, 1999, from the Department to Santa Barbara approved the extension of the deadline for reacquisition of all or a portion of the 12,214 acre-feet of previously established relinquished Table A amounts until July 1, 2000. The original deadline of March 12, 1998, previously established by the Department, had been extended several times. Santa Barbara did not take delivery of any reacquired water in 2000.

Article 21 Water Program

Pursuant to Article 21 of the Monterey Amendments, Article 21 water replaces surplus, wet weather, and Article 12(d) water. The Article 21 water program allows a contractor to take delivery of water over the approved and scheduled Table A amounts for the current year. Article 21 water is available for delivery on a short-term basis as determined by the Department when water is still available after operational requirements for project water deliveries, water quality, and other requirements are being met.

The conditions for the Article 21 Water Program for 2000 were described in the January 4, 2000, Notice to State Water Project Contractors No. 99-12. Participants were required to sign the notice, which indicated acceptance of the criteria, procedures, and charges for the program. Twelve SWP contractors participated and collectively received a total of 308,257 acre-feet of Article 21 water.

Since Empire has not signed the Monterey Amendment, it may still receive unscheduled water for agricultural purposes. Empire received 528 acre-feet of unscheduled water in 2000.

Flexible Storage Program

Pursuant to Article 54 of the Monterey Amendments, the flexible storage program provides SWP contractors participating in the repayment of the capital costs of Castaic Lake and Lake Perris the option to withdraw water in excess of

approved deliveries. The objective of this program is to provide additional flexibility and water management benefits to local participating agencies.

Available "flexible storage" is approximately 50 percent of active storage, providing for 160,000 acre-feet at Castaic Lake and 65,000 acre-feet at Lake Perris. Participating contractors of the Castaic Lake flexible storage program include Metropolitan, Ventura, and Castaic Lake. Respectively, each can withdraw a maximum amount of 153,940 acre-feet, 1,377 acre-feet, and 4,683 acre-feet. At Lake Perris, Metropolitan can withdraw a maximum amount of 65,000 acre-feet. Any participating contractor is given 5 years to replace the water with Table A water, purchased water, exchange water, or local water.

Two SWP contractors participated in the Flexible Storage Program in 2000. Metropolitan withdrew 8,181 acre-feet from Lake Perris in the spring and replaced 3,471 acre-feet in the summer. Castaic Lake withdrew 2,589 acre-feet during the winter from Castaic Lake.

Extended Carryover Program

Pursuant to Article 56 of the Monterey Amendments, contractors can elect to store project water outside of their service area for later use within their service area. Qualified contractors can request carryover Table A water for delivery in the following year to the extent that such deliveries do not adversely affect current or future project operations. Factors that influence how much extended carryover water can be delivered include operational constraints of project facilities, filling of SWP conservation storage facilities, flood control releases, and water quality restrictions. If storage requests exceed the available storage capacity, the amount available is allocated among the contractors requesting storage in proportion to their annual Table A amounts for that year. Six SWP contractors took delivery of 186,060 acre-feet of 1999 approved Table A water carried over into 2000 as extended carryover. Two SWP contractors had 17,189 acre-feet of their extended carryover delivered to storage outside their service areas.

Miscellaneous Agreements with Other Agencies

In addition to negotiating agreements with SWP contractors to provide for specified water deliveries, the Department also entered into several agreements with other agencies for water conveyance, or exchange, between January 1, 2000, and December 31, 2000.

Water Conveyance Agreements—CVP Water

The Department regularly enters into agreements to convey CVP water, such as agreements with contractors receiving water from the Bureau through the Cross Valley Canal, a water conveyance facility that connects with the Aqueduct near Tupman in Kern County. Other agencies or corporations receive CVP water through agreements between the Department and the Bureau, including the U.S. Department of Veterans Affairs, U.S. Fish and Wildlife Service, and Musco Olive Products, Inc. Occasionally the Department also enters into agreements with the Bureau to convey CVP or SWP water from the Delta to O'Neill Forebay through CVP or SWP facilities. Some of these agreements allow the Bureau to make up for curtailed water exports from Tracy Pumping Plant associated with improving conditions for fish in the Delta. Other agreements allow replacing water exports foregone during maintenance and repair of Tracy and Banks Pumping Plants and CVP and SWP conveyance facilities between the Delta and O'Neill Forebay.

Cross Valley Canal. Eight CVP water contractors use the CVC to obtain water from the California Aqueduct either by exchange with other agencies or by direct delivery. The eight water contractors are: County of Fresno, County of Tulare, Hill's Valley Irrigation District, Kern-Tulare Water District, Lower Tule River Irrigation District, Pixley Irrigation District, Rag Gulch Water District, and Tri-Valley Water

District. These agencies have had uninterrupted water conveyance service by the Department since 1976 through:

- individual 3-party contracts with the Department and the Bureau, executed in 1976, and amendments extending the contracts through February 29, 1996;
- interim renewal contracts: the first from March 1, 1996, through February 28, 1998; the second from March 1, 1998, through February 28, 2000; the third from March 1, 2000, through November 30, 2000; and the fourth from December 1, 2000, through February 28, 2001.

Between January 1, 2000, and December 31, 2000, the Department executed agreements with CVC contractors as follows:

- On March 22, 2000, PID requested the Department extend the term of the December 21, 1999, agreement through April 30, 2000. Under this extension, the Department delivered a total of 12,704 acre-feet of PID's 1999 CVP approved water to WWD in 2000. On July 11, 2000, PID requested that the Department change the point of delivery for their full 2000 CVP water from the CVC turnout in Reach 12E to turnouts in Reaches 4 through 7 of the California Aqueduct for delivery to WWD. The Department conveyed 12,000 acre-feet of the District's 31,102 acre-feet of CVP water to WWD's turnouts in 2000. An agreement is expected to be signed in January 2001.
- On March 22, 2000, LTRID requested the Department extend the term of the December 21, 1999, agreement through April 30, 2000. Under this extension, executed on June 7, 2000, the Department delivered a total of 5,237 acre-feet of LTRID's 1999 CVP approved water to WWD in 2000. On July 11, 2000, LTRID requested that the Department change the point of delivery for their full 2000 CVP water from the CVC turnout in Reach 12E to turnouts in Reaches 4 through 7 of the California Aqueduct for delivery to WWD. The Department conveyed 20,771 acre-feet of the District's 31,102 acre-feet of CVP approved water to WWD's turnouts in 2000. An agreement is expected to be signed in January 2001.
- Kern-Tulare Water District requested the Department change the point of delivery for up to 28,000 acre-feet of their 1999 and 23,000 acre-feet of their 2000 CVP water from the CVC turnout in Reach 12E to turnouts in Reaches 4 through 7 of the California Aqueduct for delivery to WWD. Under agreements executed on December 21, 1999, and a second, expected to be signed in April 2001, the Department conveyed 22,045 acre-feet and 23,000 acre-feet of water, respectively, in 2000.
- Rag-Gulch Water District requested the Department change the point of delivery for up to 9,310 acre-feet of their 1999 and 5,000 acre-feet of their 2000 CVP approved water from the CVC turnouts in Reach 12E to turnouts in Reaches 4 through 7 of the California Aqueduct for delivery to WWD. Under agreements executed on December 21, 1999, and a second, expected to be signed in April 2001, the Department conveyed 5,676 acre-feet and 5,002 acre-feet of water, respectively, for the District in 2000.
- On January 10, 2000, County of Tulare requested the Department change the point of delivery for up to 3,716 acre-feet of their 2000 CVP approved water from the CVC turnout in Reach 12E of the California Aqueduct to the federal share of O'Neill Forebay. The Department and the District executed the agreement on June 9, 2000, for the Department conveyance of up to 3,716 acre-feet, of which 3,605 acre-feet were delivered to the federal share of O'Neill Forebay.
- On December 7, 1999, Fresno County requested the Department change the point of delivery for up to 2,100 acre-feet of their 1999 CVP approved water from the CVC turnouts in Reach 12E to turnouts in Reaches 4 through 7 of the California Aqueduct for delivery to WWD. Under an agreement expected to be signed in February

2001, the Department conveyed 2,100 acre-feet to WWD's turnouts in 2000.

- On January 10, 2000, Hills Valley and Tri-Valley Water Districts requested the Department change the point of delivery for up to 2,324 and 799 acre-feet, respectively, of their 2000 CVP approved water from the CVC turnout in Reach 12E of the California Aqueduct to the federal share of O'Neill Forebay. The Department and the Districts executed the agreements on June 9, 2000, for the Department conveyance of up to 2,324 acre-feet and 799 acre-feet, respectively, of which 2,254 acre-feet and 775 acre-feet were delivered to the federal share of O'Neill Forebay.

Friant Water Users Authority. An agreement dated September 24, 1999, between the Department and Friant Water Users Authority requested the Department to convey up to 25,000 acre-feet of CVP approved water from the San Luis Canal at Kettleman City to the CVC turnout at Tupman. The water was identified as "Exchange Water" in a July 6, 1999, letter agreement between the Friant Water Users Authority, various CVP Friant water service contractors, and the Bureau. This water was to be conveyed from July 1, 1999, through February 29, 2000. In 2000, a total of 4,894 acre-feet was delivered.

Musco Olive Products, Incorporated. An annual agreement dated December 15, 2000, between the Department and the Bureau provided for the conveyance of up to 800 acre-feet of CVP approved water to Reach 2A of the California Aqueduct for use by Musco Olive Products, Inc. This water was to be conveyed from January 1, 2000, through September 30, 2001. A total of 568 acre-feet was delivered in 2000.

Tracy Golf and Country Club. An agreement dated April 28, 1999, among the Department, the Bureau, and Tracy Golf and Country Club, provided for the conveyance of up to 1,240 acre-feet of CVP water through SWP facilities to the Tracy Golf and Country Club. This water was to be conveyed from March 1, 1999, through February 29, 2000. A total of 54 acre-feet was delivered in 2000.

U.S. Department of Veterans Affairs. A total of 33 acre-feet was delivered to the San Joaquin Valley National Cemetery in 2000. An annual agreement between the Department and the Bureau for the conveyance of up to 450 acre-feet of CVP approved water to Reach 2B of the California Aqueduct to the U.S. Department of Veterans Affairs' San Joaquin Valley National Cemetery is expected to be executed in June 2001. The water was conveyed from October 1, 1999, through September 30, 2000.

Bureau Level 4 Water. Between October and December 2000, the Department conveyed a total of 21,666 acre-feet of Bureau-purchased Level 4 water to O'Neill Forebay. The water was provided to the wildlife refuges in San Joaquin Valley to enhance and maintain wetland habitats for the benefit of waterfowl and wetland-dependent wildlife. The water was purchased from Merced Irrigation District's Lake McClure. A letter agreement is expected to be executed between the Department and the Bureau in January 2001.

U.S. Fish and Wildlife Service Cooperative Agreement. The Bureau initiated a cooperative agreement with the Department to deliver CVP water to the Kern National Wildlife Refuge for USFWS. Under the terms of this cooperative agreement, dated September 9, 1994, up to 26,530 acre-feet of CVP water would be delivered from Check 21 to the Buena Vista Water Storage District Turnout BV-1B, on Reach 10A of the California Aqueduct, from October 1, 1993, through April 10, 1995. Since the cooperative agreement was signed, eight modifications to the agreement have been executed. Under Modification No. 001, dated October 31, 1994, additional funding was provided. Similar funding adjustments through modifications were made each year to the agreement. Modification No. 007, executed August 17, 1999, extended the agreement through April 10, 2000, and defined the water delivery rates for 2000. Modification No. 008, dated November 29, 1999, obligated

funding for that period. The Department conveyed 17,068 acre-feet for the Bureau to the Kern National Wildlife Refuge in 2000.

Bureau of Reclamation. Pursuant to a letter agreement, dated April 18, 2000, between the Department and the Bureau, the Department conveyed 82,980 acre-feet of CVP water from the Sacramento-San Joaquin Delta to O'Neill Forebay. CVP water transported to O'Neill Forebay, under the terms of this agreement, replaces exports forgone by the Bureau as a result of environmental protection action taken in 1999. The estimated shortfall would have resulted in lower allocations of CVP water for CVP purposes or decreased storage of CVP water in San Luis Reservoir at the end of the 2000 water year.

Other Agreements-Turnouts. In 2000, there were no new turnout agreements with non-SWP contractor agencies.

Amendment to Miscellaneous Agreements with Other Agencies

An amendment, executed February 7, 2000, modified and clarified provisions of the existing contract between the Department and East Contra Costa Irrigation District, dated January 7, 1981, and the contract among the Department, ECCID, and Contra Costa Water District, dated April 11, 1991, to allow the diversion of water under both contracts at the Contra Costa Canal Intake and the Los Vaqueros Project Intake and to increase the allowable rate of diversion at those locations. The amendment also defined the allowable place of use and allowed the use of water outside ECCID boundaries only with the prior written consent of the Department.

Water Deliveries

Approved Table A Deliveries

Each year, by October 1, the SWP long-term water contractors submit initial requests for approved Table A deliveries allocated to contractors for use in the subsequent calendar year. Initial approved Table A amounts for the coming year are made by the Department in December and are based on operations studies that assume 90 percent exceedence of historic water supply, current reservoir storage, and total requests by the SWP water contractors. Forecasts for the year are updated as the hydrological conditions change. Approved Table A amounts are increased or decreased depending on both actual and projected hydrologic conditions.

On October 1, 1999, SWP long-term contractors submitted initial requests for 2000 approved Table A deliveries totaling 3.62 million acre-feet. The Department approved deliveries of 2.06 million acre-feet on November 30, 1999 (Notice to SWP Contractors 99-10), resulting in initial approved Table A amounts of 50 percent for most SWP contractor requests. Improved water conditions increased the 2000 approved Table A amounts to 2.88 million acre-feet or 70 percent on February 25, 2000 (Notice to SWP Contractors 00-03). As a result of additional improvements in water conditions, approved Table A amounts were further increased to 3.62 million acre-feet or 100 percent on March 10, 2000 (Notice to SWP Contractors 00-06). Unusually dry conditions during March and April 2000 created the need to reduce approved Table A amounts to 90 percent on April 20, 2000 (Notice to SWP Contractors 00-09), which equated to a reduction from 3.62 million acre-feet to 3.42 million acre-feet.

SWP Deliveries

The SWP delivers water for a variety of beneficial uses. In addition to delivering approved Table A water to long-term water supply contractors, the SWP

- conveys water to, and stores water for, other public agencies through special contracts and agreements;
- provides water for wildlife and recreational uses; and

- stores, releases, and delivers local runoff water from SWP facilities to agencies that hold local water rights.

In 2000, 4,932,032 acre-feet of water were conveyed to 27 long-term contractors and 17 other agencies. That amount includes

- 3,199,907 acre-feet of approved Table A water[1];
- 308,257 acre-feet of Article 21 water and 528 acre-feet of unscheduled water;
- 10,770 acre-feet of Article 54 flexible storage withdrawal;
- 4,030 acre-feet of SWP water for recreation, fish and wildlife; and
- 1,408,540 acre-feet of water delivered to satisfy water rights settlement agreements and agreements with SWP contractors and other agencies, including the Bureau.

Figure 9-1 shows amounts of water delivered to various locations during 2000.

Specific information about water deliveries made to long-term contractors and other agencies during 2000 and historical deliveries from 1962 through 2000 are presented in the following three sections, each with a corresponding table:

- Water Delivered to Long-term Water Supply Contractors in 2000, by Service Area (Table 9-1);
- Water Delivered in 2000, by Month (Table 9-2); and
- Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962-00 (Table 9-3).

[1] Annual Table A water is the amount of SWP water long-term contractors may request each year in accordance with Article 12(a), "Procedure for Determining Water Delivery Schedule," of their water supply contract.

Water Deliveries and Credits to Long-Term SWP Contractors

Table 9-1 shows amounts of water delivered in 2000. The following information about specific columns in Table 9-1 is arranged by column number.

2000 Approved Table A Water Delivered. Columns 1 through 5 show a detailed breakdown of approved Table A water delivered to long-term water supply contractors in 2000.

Turnback Pool Water. Column 4 shows 282,305 acre-feet of turnback pool water was delivered to long-term water supply contractors in 2000.

1999 Carryover Approved Table A Water Delivered During 2000. For several years, the Department has offered contractors the opportunity to carry over a portion of their approved Table A water for delivery in the current year to be delivered during the next year.

The carryover program was designed to encourage the most effective and beneficial use of water and to avoid obligating the contractors to use or lose the water by December 31 of each year. The SWP contractors' long-term contracts and amendments state the criteria for carrying over approved Table A water from one year to the next. Column 6 shows 217,737 acre-feet of water was carried over from 1999 for delivery in 2000.

Article 14(b) Water. No 1999 approved Table A water was delivered in 2000 under Article 14(b).

Total Table A Water Delivered. Column 8 shows all approved Table A water delivered in 2000—a total of 3,199,907 acre-feet.

2000 Article 21 Water. Column 9 shows 308,785 acre-feet of 2000 Article 21 water delivered to long-term water supply contractors in 2000 (includes 528 acre-feet of unscheduled

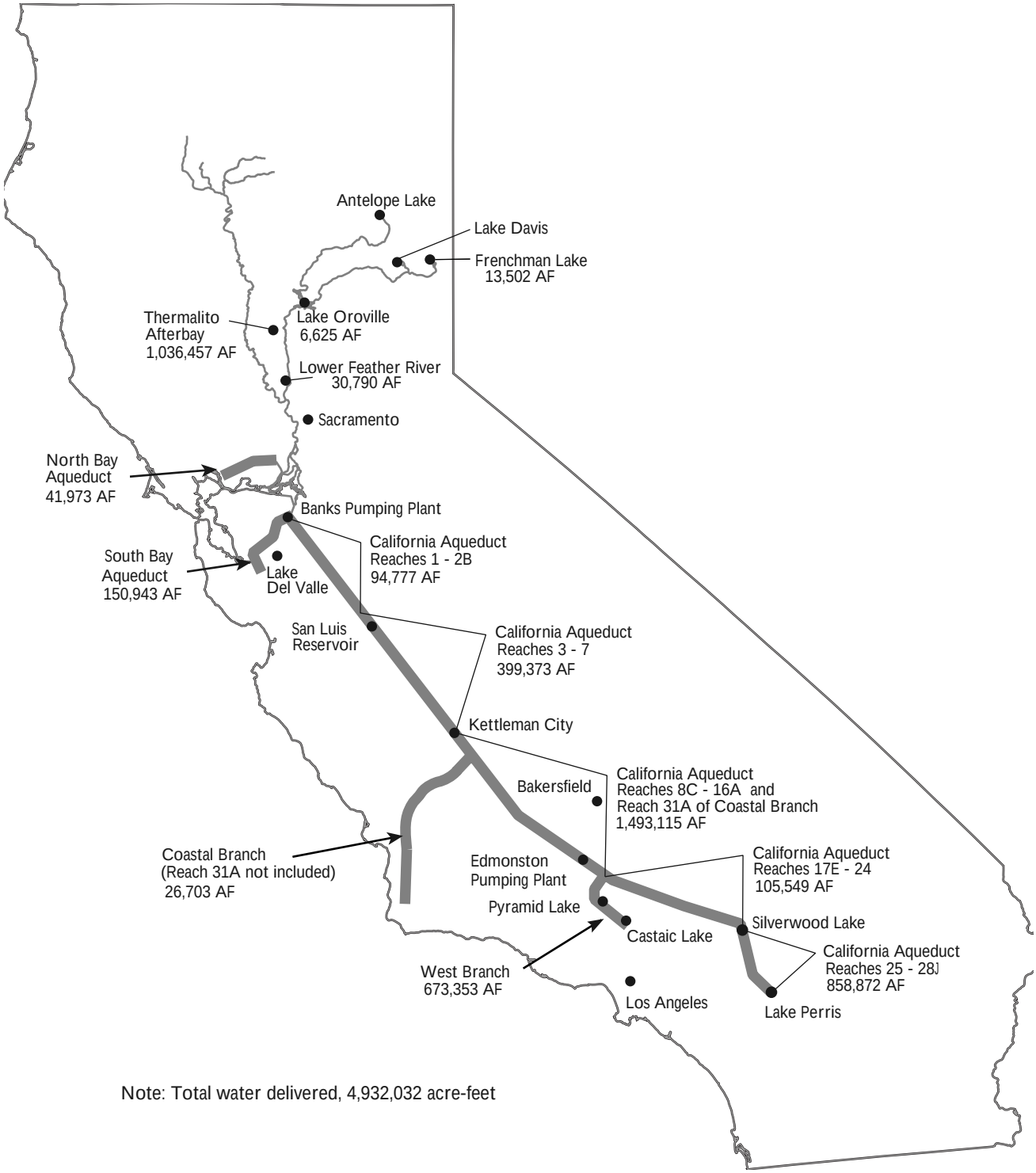


Figure 9-1. Water Delivered in 2000 and Delivery Locations of Long-Term Water Supply Contractors and Feather River Area Districts with Water Right Agreements with the Department

Table 9-1. Water Delivered to Long-Term Contractors through 2000, by Service Area (Acre-feet)

	Water Deliveries in 2000													
	Annual Table A Water Deliveries													
Water Contractor or Agency	2000 Table A without Transfers, Exchanges, and Storage (1)	2000 Table A Delivered through Transfers and Exchanges (2)	2000 Table A Delivered to Storage (3)	Pool Water (4)	Total 2000 Table A Delivered (5)	1999 Carryover Table A Delivered during 2000 (6)	Makeup Water Per Article 14(b) (7)	Total Table A Delivered (8)	2000 Article 21 Water (9)	2000 Article 54 Flexible Payback (10)	2000 Article 54 Flexible Withdrawal (11)	Total SWP Water Delivered (12)	Non-SWP Water Deliveries (13)	Total Deliveries (14)
Feather River Area														
County of Butte	586	0	0	0	586	0	0	586	0	0	0	586	0	586
Plumas County FCWCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Yuba City	901	0	0	0	901	0	0	901	0	0	0	901	0	901
North Bay Area														
Napa County FCWCD	3,136	0	0	0	3,136	1,525	0	4,661	297	0	0	4,958	0	4,958
Solano County WA	30,637	0	0	0	30,637	1,417	0	32,054	1,040	0	0	33,094	3,921	37,015
South Bay Area														
Alameda County FCWCD-Zone 7	33,677	0	20,200	0	53,877	0	0	53,877	3,740	0	0	57,617	10,967	68,584
Alameda County WD	22,598	0	11,000	0	33,598	0	0	33,598	2,380	0	0	35,978	5,364	41,342
Santa Clara Valley WD	60,433	0	10,000	0	70,433	13,174	0	83,607	18,381	0	0	101,988	0	101,988
San Joaquin Valley Area														
Castaic Lake WA	8,395	1,200[a]	0	0	9,595	0	0	9,595	0	0	0	9,595	0	9,595
County of Kings	3,600	0	0	0	3,600	0	0	3,600	0	0	0	3,600	0	3,600
Dudley Ridge WD	38,507	0	0	12,193	50,700	719	0	51,419	7,454	0	0	58,873	0	58,873
Empire West Side ID	1,271	0	0	0	1,271	0	0	1,271	528[b]	0	0	1,799	0	1,799
Kern County WA	316,063	247,763[c]	286,501	233,202	1,083,529	14,693[d]	0	1,098,222	78,908	0	0	1,177,130	48,108[e]	1,225,238
Oak Flat WD	4,494	0	0	0	4,494	14	0	4,508	0	0	0	4,508	0	4,508
Tulare Lake Basin WSD	75,095	24,066[f]	0	27,073	126,234	15,827	0	142,061	56,818	0	0	198,879	9,981[g]	208,860
Central Coastal Area														
San Luis Obispo County FCWCD	3,962[h]	0	0	0	3,962	0	0	3,962	0	0	0	3,962	0	3,962
Santa Barbara County FCWCD	22,741	0	0	0	22,741	0	0	22,741	0	0	0	22,741	0	22,741
Southern California														
Antelope Valley-East Kern WA	78,575[i]	1,361[j]	0	0	79,936	0	0	79,936	0	0	0	79,936	0	79,936
Castaic Lake WA	31,085	0	0	0	31,085	0	0	31,085	0	0	2,589	33,674	0	33,674
Coachella Valley WD	20,790	0	0	3,713	24,503	0	0	24,503	17,820	0	0	42,323	0	42,323
Crestline-Lake Arrowhead WA	1,194	0	0	0	1,194	0	0	1,194		0	0	1,194	264	1,458
Desert WA	34,290	0	0	6,124	40,414	0	0	40,414	17,820	0	0	58,234	0	58,234
Littlerock Creek ID	0	5,002[k]	0	0	5,002	0	0	5,002	0	0	0	5,002	0	5,002
Metropolitan WD	1,092,181	20,000[l]	133,207	0	1,245,388	169,529	0	1,414,917	103,124	3,471[m]	8,181	1,529,693	0	1,529,693
Mojave WA	7,774	2,245[n]	0	0	10,019	0	0	10,019	0	0	0	10,019	0	10,019
Palmdale WD	8,221	0	0	0	8,221	839	0	9,060	0	0	0	9,060	0	9,060
San Bernardino Valley MWD	18,399	0	0	0	18,399	0	0	18,399	0	0	0	18,399	0	18,399
San Gabriel Valley MWD	14,000	665[o]	0	0	14,665	0	0	14,665	475	0	0	15,140	0	15,140
San Gorgonio Pass WA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ventura County FCD	4,050	0	0	0	4,050	0	0	4,050	0	0	0	4,050	0	4,050
Total	**1,936,655**	**302,302**	**460,908**	**282,305**	**2,982,170**	**217,737**	**0**	**3,199,907**	**308,785**	**3,471**	**10,770**	**3,522,933**	**78,605**	**3,601,538**

[a]Transfer approved Table A water to WWD
[b]Unscheduled water.
[c]Includes deliveries of 24,870 acre-feet exchange approved Table A water from Metropolitan WDSC; 72,280 acre-feet approved Table A transfer water to the Bureau; 35,847 acre-feet transfer approved Table A water to WWD; and 114,766 acre-feet exchange approved Table A water to WWD.
[d]Includes delivery of 1,500 acre-feet of carryover approved Table A water from Dudley Ridge WD.
[e]Includes 23,941 acre-feet from the Bureau and 24,167 acre-feet from WWD.
[f]Includes deliveries of 400 acre-feet exchange approved Table A from Kern County WA; 166 acre-feet exchange Table A water from Dudley Ridge WD; 3,000 acre-feet transfer Table A water to WWD; and 20,500 acre-feet exchange Table A water to WWD.
[g]Includes 7,000 acre-feet from Arvin-Edison Water Storage District and 2,981 acre-feet from WWD.
[h]Includes delivery of 23 acre-feet of approved Table A advance water.
[i]Includes delivery of 5,904 acre-feet of approved Table A advance water.
[j]Transferred approved Table A water from Mojave WA.
[k]Includes 4,829 acre-feet of approved Table A and 173 acre-feet of approved Table A advance water from AVEK.
[l]Exchange approved Table A water to WWD.
[m]Article 54 flexible payback is not counted toward SWP deliveries.
[n]Exchange approved Table A water from Solano County WA.
[o]Exchange carryover approved Table A water from Dudley Ridge WD.

Table 9-2. Water Delivered in 2000, by Month

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2000 Total Deliveries	2000 Contract Table A
Feather River Area														
City of Yuba City														
Approved Table A water	0	0	0	0	0	0	427	474	0	0	0	0	901	9,600
Pool A water sale *	0	3,300	0	0	0	0	0	0	0	0	0	0	3,300	
Pool B water sale *	0	0	3,840	0	0	0	0	0	0	0	0	0	3,840	
Agency Total (* excluded water)	0	0	0	0	0	0	427	474	0	0	0	0	901	
County of Butte														
Approved Table A water	89	158	186	119	2	3	16	4	3	4	1	1	586	2,890
Pool A water sale *	0	645	0	0	0	0	0	0	0	0	0	0	645	
Pool B water sale *	0	0	1,156	0	0	0	0	0	0	0	0	0	1,156	
Agency Total (* excluded water)	89	158	186	119	2	3	16	4	3	4	1	1	586	
Plumas County Flood Control and Water Conservation District														
Approved Table A water	0	0	0	0	0	0	0	0	0	0	0	0	0	1,510
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water	0	0	0	0	0	0	1	0	0	0	0	0	1	
Last Chance Creek Water District														
Regulated delivery of local supply	0	0	0	190	2,729	3,370	3,088	3,080	845	200	0	0	13,502	
Thermalito Irrigation District														
Regulated delivery of local supply	90	71	115	183	227	362	393	381	272	171	110	103	2,478	
Oroville-Wyandotte Irrigation District														
Regulated delivery of local supply	184	61	101	283	745	1,060	1,060	1,140	1,060	556	171	204	6,625	
Western Canal Water District														
Regulated delivery of local supply	7,051	0	0	6,999	53,007	52,084	61,468	43,903	10,169	30,335	27,795	20,624	313,435	
Joint Water Districts Board														
Regulated delivery of local supply	32,580	0	0	24,400	114,229	113,500	126,520	108,840	50,690	37,118	56,190	55,890	719,957	
Oswald Water District														
Regulated delivery of local supply	0	0	0	0	143	174	190	39	0	0	0	0	546	
Tudor Mutual Water Company														
Regulated delivery of local supply	0	0	0	48	801	1,245	1,214	300	606	66	0	0	4,280	
Garden Highway Mutual Water Company														
Regulated delivery of local supply	0	0	0	954	2,482	3,460	3,667	2,603	840	0	0	0	14,006	
Plumas Mutual Water Company														
Regulated delivery of local supply	0	0	0	971	1,809	2,429	2,388	866	2,199	395	0	0	11,057	
SWP	89	158	186	119	2	3	444	478	3	4	1	1	1,488	
Non-SWP	39,905	132	216	34,028	176,172	177,684	199,988	161,152	66,681	68,841	84,266	76,821	1,085,886	
Feather River Area Total	39,994	290	402	34,147	176,174	177,687	200,432	161,630	66,684	68,845	84,267	76,822	1,087,374	14,000
North Bay Area														
Napa County Flood Control and Water Conservation District														
Approved Table A water	0	0	0	102	220	250	252	337	397	173	488	917	3,136	16,325
Article 12(e) carryover approved water	726	799	0	0	0	0	0	0	0	0	0	0	1,525	
Article 21 water	0	0	297	0	0	0	0	0	0	0	0	0	297	
Agency Total	726	799	297	102	220	250	252	337	397	173	488	917	4,958	
Solano County Water Agency														
Approved Table A water	1,577	1,178	0	318	1,880	3,724	5,018	4,669	5,015	3,772	1,530	1,956	30,637	39,620
Article 21 water	0	0	1,040	0	0	0	0	0	0	0	0	0	1,040	
Article 56(c) extended carryover	1,417	0	0	0	0	0	0	0	0	0	0	0	1,417	
Vallejo Permit water	157	144	0	235	327	437	478	483	1,095	158	145	262	3,921	
Exchange approved water to Mojave Water Agency *	0	0	0	0	0	0	0	0	0	0	1,205	1,040	2,245	
Agency Total (* excluded water)	3,151	1,322	1,040	553	2,207	4,161	5,496	5,152	6,110	3,930	1,675	2,218	37,015	
SWP	3,720	1,977	1,337	420	2,100	3,974	5,270	5,006	5,412	3,945	2,018	2,873	38,052	
Non-SWP Total	157	144	0	235	327	437	478	483	1,095	158	145	262	3,921	
North Bay Area Total	3,877	2,121	1,337	655	2,427	4,411	5,748	5,489	6,507	4,103	2,163	3,135	41,973	55,945
South Bay Area														
Alameda County Flood Control and Water Conservation District, Zone 7														
Approved Table A water	285	0	0	890	6,876	13,072	14,176	6,164	4,909	3,596	1,910	1,999	53,877	68,000
Article 21 water	0	1,340	2,400	0	0	0	0	0	0	0	0	0	3,740	
General Conveyance	0	0	0	0	0	0	0	1,000	0	0	0	0	1,000	
Local water	1,788	1,690	2,193	2,997	359	166	77	233	215	118	0	131	9,967	
Agency Total	2,073	3,030	4,593	3,887	7,235	13,238	14,253	7,397	5,124	3,714	1,910	2,130	68,584	
Alameda County Water District														
Approved Table A water	1,748	0	0	0	2,111	6,622	9,028	3,607	4,268	2,535	1,132	2,547	33,598	42,000
Article 21 water	0	880	1,500	0	0	0	0	0	0	0	0	0	2,380	
Local Water	0	1,541	1,804	1,988	31	0	0	0	0	0	0	0	5,364	
Agency Total	1,748	2,421	3,304	1,988	2,142	6,622	9,028	3,607	4,268	2,535	1,132	2,547	41,342	
Santa Clara Valley Water District														
Approved Table A water	0	0	0	6,627	6,846	8,067	8,020	8,636	16,269	5,116	4,576	6,276	70,433	100,000

Table 9-2. Water Delivered in 2000, by Month (Continued)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2000 Total Deliveries	2000 Contract Table A
Article 21 water	0	5,664	12,717	0	0	0	0	0	0	0	0	0	18,381	
Article 56(c) extended carryover	7,760	5,414	0	0	0	0	0	0	0	0	0	0	13,174	
Agency Total	7,760	11,078	12,717	6,627	6,846	8,067	8,020	8,636	16,269	5,116	4,576	6,276	101,988	
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water	4	2	4	10	15	15	29	24	0	28	6	8	145	
SWP	9,797	13,300	16,621	7,527	15,848	27,776	31,253	18,431	25,446	11,275	7,624	10,830	195,728	
Non-SWP	1,788	3,231	3,997	4,985	390	166	77	1,233	215	118	0	131	16,331	
South Bay Area Total	11,585	16,531	20,618	12,512	16,238	27,942	31,330	19,664	25,661	11,393	7,624	10,961	212,059	210,000
San Joaquin Valley Area														
Castaic Lake Water Agency														
Approved Table A water	1,675	1,252	1,064	1,614	226	614	1,020	902	22	0	0	6	8,395	12,700
Transfer approved water to Westlands *	0	0	0	0	0	0	1,200	0	0	0	0	0	1,200	
Agency Total (* excluded water)	1,675	1,252	1,064	1,614	226	614	1,020	902	22	0	0	6	8,395	
County of Kings														
Approved Table A water	0	0	0	400	400	400	400	400	0	500	600	500	3,600	4,000
Dudley Ridge Water District														
Approved Table A water	494	877	0	4,309	5,557	9,546	9,607	1,704	3,532	1,940	409	532	38,507	53,370
Article 21 water	0	2,671	4,783	0	0	0	0	0	0	0	0	0	7,454	
Article 56(c) extended carryover	719	0	0	0	0	0	0	0	0	0	0	0	719	
Pool A water	0	0	0	0	0	0	3,113	502	0	0	0	0	3,615	
Pool B water	0	0	0	0	0	0	0	8,578	0	0	0	0	8,578	
Exchange carryover approved water to San Gabriel WA *	665	0	0	0	0	0	0	0	0	0	0	0	665	
Transfer carryover approved water to Kern Co. WA *	0	1,500	0	0	0	0	0	0	0	0	0	0	1,500	
Transfer approved water to Tulare Lake Basin WSD *	0	0	0	0	0	0	0	0	166	0	0	0	166	
Agency Total (* excluded water)	1,213	3,548	4,783	4,309	5,557	9,546	12,720	10,784	3,532	1,940	409	532	58,873	
Empire West Side Irrigation District														
Approved Table A water	0	0	373	549	0	0	0	0	0	0	185	164	1,271	3,000
Unscheduled water	0	528	0	0	0	0	0	0	0	0	0	0	528	
Agency Total	0	528	373	549	0	0	0	0	0	0	185	164	1,799	
Kern County Water Agency														
Approved Table A water	6,151	21,716	20,283	61,658	94,243	172,025	91,963	61,370	35,156	22,644	8,207	7,148	602,564	1,020,730
Article 21 water	0	37,227	41,681	0	0	0	0	0	0	0	0	0	78,908	
Article 56(c) extended carryover	7,320	5,873	0	0	0	0	0	0	0	0	0	0	13,193	
Pool A water	0	0	0	10,000	12,100	0	17,926	22,274	500	6,345	0	0	69,145	
Pool B water	0	0	0	0	0	12,290	89,144	61,082	1,541	0	0	0	164,057	
Exchange approved water from MWD	0	0	0	0	0	0	0	16,208	8,662	0	0	0	24,870	
Transfer carryover approved water from Dudley Ridge WD	0	1,500	0	0	0	0	0	0	0	0	0	0	1,500	
Exchange water from the Bureau	0	0	0	0	0	0	0	0	0	0	14,205	9,736	23,941	
Exchange water from Westlands Water District	11,570	8,430	0	4,167	0	0	0	0	0	0	0	0	24,167	
Transfer approved water to Tulare Lake Basin WSD *	0	0	0	0	0	0	0	400	0	0	0	0	400	
Exchange approved water to Westlands Water District *	0	0	0	0	10,000	23,061	0	56,067	14,967	2,794	4,500	3,377	114,766	
Exchange banked approved water to the Bureau *	0	0	0	0	0	0	44,000	19,000	9,280	0	0	0	72,280	
Transfer approved water to Westlands *	0	0	0	0	0	0	18,500	17,347	0	0	0	0	35,847	
Agency Total (* excluded water)	25,041	74,746	61,964	75,825	106,343	184,315	199,033	160,934	45,859	28,989	22,412	16,884	1,002,345	
Oak Flat Water District														
Approved Table A water	0	0	108	569	657	945	996	528	366	281	5	39	4,494	5,700
Article 12(e) carryover approved water	14	0	0	0	0	0	0	0	0	0	0	0	14	
Agency Total	14	0	108	569	657	945	996	528	366	281	5	39	4,508	
Tulare Lake Basin Water Storage District														
Approved Table A water	0	0	0	7,697	2,357	11,786	1,394	5,481	8,858	4,042	10,463	23,017	75,095	118,500
Article 12(e) carryover approved water	10,452	5,375	0	0	0	0	0	0	0	0	0	0	15,827	
Article 21 water	0	18,927	37,881	0	0	0	0	0	0	0	0	0	56,818	
Pool A water	0	0	0	0	0	0	8,027	0	0	0	0	0	8,027	
Pool B water	0	0	0	0	0	0	4,622	14,424	0	0	0	0	19,046	
Transfer approved water from Kern County WA	0	0	0	0	0	0	200	200	0	0	0	0	400	
Transfer approved water from Dudley Ridge WD	0	0	0	0	0	0	0	0	166	0	0	0	166	
Exchange CVP water from Arvin-Edison Water Storage District	5,306	1,694	0	0	0	0	0	0	0	0	0	0	7,000	
Exchange CVP water from Westlands Water District	0	0	0	0	0	0	0	0	0	0	0	2,981	2,981	
Exchange approved water to Westlands Water District *	0	0	0	0	0	0	20,500	0	0	0	0	0	20,500	
Transfer approved water to Westlands Water District *	0	0	0	0	0	0	2,000	1,000	0	0	0	0	3,000	
Agency Total (* excluded water)	15,758	26,006	37,881	7,697	2,357	11,786	14,243	20,105	9,024	4,042	10,463	25,998	185,360	
Westlands Water District														
Transfer approved water from Kern County WA	0	0	0	0	0	0	18,500	17,347	0	0	0	0	35,847	
Transfer approved water from Tulare Lake Basin WSD	0	0	0	0	0	0	2,000	1,000	0	0	0	0	3,000	

Table 9-2. Water Delivered in 2000, by Month (Continued)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2000 Total Deliveries	2000 Contract Table A
Transfer approved water from Castaic Lake WA	0	0	0	0	0	0	1,200	0	0	0	0	0	1,200	
Exchange approved water from Kern County WA	0	0	0	0	10,000	23,061	0	56,067	14,967	2,794	4,500	3,377	114,766	
Exchange approved water from MWD	0	0	0	0	0	0	1,843	15,867	1,968	322	0	0	20,000	
Exchange approved water from Tulare Lake Basin WSD	0	0	0	0	0	0	20,500	0	0	0	0	0	20,500	
Transfer CVP water from Lower Tule River	0	5,237	7,273	1,500	0	0	6,270	4,517	125	1,086	0	0	26,008	
Transfer CVP water from Pixley ID	0	0	9,704	3,000	0	0	6,270	4,517	125	1,088	0	0	24,704	
Transfer CVP water from Kern-Tulare WD	0	0	17,545	4,500	0	0	10,971	7,906	220	3,903	0	0	45,045	
Transfer CVP water from Rag Gulch WD	0	0	4,676	1,000	0	0	2,612	1,882	52	456	0	0	10,678	
Transfer CVP water from Co. of Fresno	0	2,100	0	0	0	0	0	0	0	0	0	0	2,100	
Exchange water to Kern County WA *	11,570	8,430	0	4,167	0	0	0	0	0	0	0	0	24,167	
Exchange water to Tulare Lake Basin WSD *	0	0	0	0	0	0	0	0	0	0	0	2,981	2,981	
Agency Total (* excluded water)	0	7,337	39,198	10,000	10,000	23,061	70,166	109,103	17,457	9,649	4,500	3,377	303,848	
Recreation/Fish and Wildlife														
Department of Fish and Game	39	41	42	38	69	116	116	94	30	55	63	50	753	
Department of Parks and Recreation	2	1	2	7	2	12	13	25	11	4	0	2	81	
Total	41	42	44	45	71	128	129	119	41	59	63	52	834	
SWP	26,866	95,998	106,217	86,841	125,611	230,795	272,584	284,053	75,779	38,927	24,432	34,835	1,402,938	
Non-SWP	16,876	17,461	39,198	14,167	0	0	26,123	18,822	522	6,533	14,205	12,717	166,624	
San Joaquin Valley Area subtotal	43,742	113,459	145,415	101,008	125,611	230,795	298,707	302,875	76,301	45,460	38,637	47,552	1,569,562	1,218,000
Other Non-SWP Water Conveyed														
General Conveyance to Tracy Golf and Country Club	4	0	0	0	0	0	0	20	7	1	11	11	54	
CVP Water Conveyed - Annual Contracts														
Plain View WD/ Musco Olive Products, Inc.	40	48	55	53	66	64	52	24	50	50	45	21	568	
U.S. Department of Veteran Affairs, S.J.V. National Cemetery	1	1	2	3	2	3	4	5	6	3	2	1	33	
Subtotal	41	49	57	56	68	67	56	29	56	53	47	22	601	
Cross Valley Canal Contracts														
CVP water to the Bureau's refuge from County of Tulare *	0	3,605	0	0	0	0	0	0	0	0	0	0	3,605	
CVP water to the Bureau's refuge from Hills Valley ID *	0	2,254	0	0	0	0	0	0	0	0	0	0	2,254	
CVP water to the Bureau's refuge from Tri-Valley WD *	0	775	0	0	0	0	0	0	0	0	0	0	775	
CVP water to Westlands WD from County of Fresno *	0	2,100	0	0	0	0	0	0	0	0	0	0	2,100	
CVP water to Westlands WD from Lower Tule River *	0	5,237	7,273	1,500	0	0	6,270	4,517	125	1,086	0	0	26,008	
CVP water to Westlands WD from Pixley ID *	0	0	9,704	3,000	0	0	6,270	4,517	125	1,088	0	0	24,704	
CVP water to Westlands WD from Kern-Tulare WD *	0	0	17,545	4,500	0	0	10,971	7,906	220	3,903	0	0	45,045	
CVP water to Westlands WD from Rag Gulch WD *	0	0	4,676	1,000	0	0	2,612	1,882	52	456	0	0	10,678	
Agency Total (* excluded water)	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bureau Of Reclamation														
Kern National Wildlife Refuge	0	0	0	306	363	0	0	245	3,695	5,486	4,346	2,627	17,068	
CVP water to the Bureau's refuge from County of Tulare *	0	3,605	0	0	0	0	0	0	0	0	0	0	3,605	
CVP water to the Bureau's refuge from Hills Valley ID *	0	2,254	0	0	0	0	0	0	0	0	0	0	2,254	
CVP water to the Bureau's refuge from Tri-Valley WD *	0	775	0	0	0	0	0	0	0	0	0	0	775	
Federal Conveyance	0	0	82,980	0	0	0	0	0	0	0	0	0	82,980	
Exchange banked approved water from KCWA	0	0	0	0	0	0	44,000	19,000	9,280	0	0	0	72,280	
Merced ID water	0	0	0	0	0	0	0	0	0	1,690	17,927	2,049	21,666	
Friant Water Users Authority	1,718	3,176	0	0	0	0	0	0	0	0	0	0	4,894	
Recreation/fish and wildlife water (San Luis)	31	35	37	36	57	105	106	98	32	50	52	40	679	
Exchange water from FWUA to TLBWSD *	5,306	1,694	0	0	0	0	0	0	0	0	0	0	7,000	
Exchange CVP water to KCWA *	0	0	0	0	0	0	0	0	0	0	14,205	9,736	23,941	
Subtotal (* excluded water)	1,749	9,845	83,017	342	420	105	44,106	19,343	13,007	7,226	22,325	4,716	206,201	
SWP	0	0	0	0	0	0	44,000	19,000	9,280	0	0	0	72,280	
Non-SWP	1,794	9,894	83,074	398	488	172	162	392	3,790	7,280	22,383	4,749	134,576	
San Joaquin Valley Area subtotal	1,794	9,894	83,074	398	488	172	44,162	19,392	13,070	7,280	22,383	4,749	206,856	
SWP	26,866	95,998	106,217	86,841	125,611	230,795	316,584	303,053	85,059	38,927	24,432	34,835	1,475,218	
Non-SWP	18,670	27,355	122,272	14,565	488	172	26,285	19,214	4,312	13,813	36,588	17,466	301,200	
San Joaquin Valley Area Total	45,536	123,353	228,489	101,406	126,099	230,967	342,869	322,267	89,371	52,740	61,020	53,301	1,776,418	1,218,000
Central Coastal Area														
San Luis Obispo County Flood Control and WCD														
Approved Table A water	199	264	281	331	358	397	430	435	371	331	292	250	3,939	25,000
Advanced approved water	0	0	0	0	0	0	0	0	0	0	0	23	23	
Pool A water sale *	0	8,561	0	0	0	0	0	0	0	0	0	0	8,561	
Pool B water sale *	0	0	10,000	0	0	0	0	0	0	0	0	0	10,000	
Agency Total (* excluded water)	199	264	281	331	358	397	430	435	371	331	292	273	3,962	

Table 9-2. Water Delivered in 2000, by Month (Continued)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2000 Total Deliveries	2000 Contract Table A
Santa Barbara County Flood Control and WCD														
Approved Table A water	1,306	1,107	1,066	1,883	2,422	3,187	2,572	2,815	2,566	1,419	1,366	1,032	22,741	45,486
Pool B water sale *	0	0	8,392	0	0	0	0	0	0	0	0	0	8,392	
Agency Total (* excluded water)	1,306	1,107	1,066	1,883	2,422	3,187	2,572	2,815	2,566	1,419	1,366	1,032	22,741	
SWP	1,505	1,371	1,347	2,214	2,780	3,584	3,002	3,250	2,937	1,750	1,658	1,305	26,703	
Non-SWP	0	0	0	0	0	0	0	0	0	0	0	0	0	
Central Coastal Area Total	1,505	1,371	1,347	2,214	2,780	3,584	3,002	3,250	2,937	1,750	1,658	1,305	26,703	70,486
Southern California Area														
Antelope Valley-East Kern Water Agency														
Approved Table A water	2,898	2,697	3,998	5,925	8,711	10,631	11,919	11,152	8,336	5,710	694	0	72,671	138,400
Transfer approved water from Mojave Water Agency	73	62	91	147	124	143	209	162	141	108	58	43	1,361	
Advance approved water	0	0	0	0	0	0	0	0	0	0	2,597	3,307	5,904	
Transfer approved water to Littlerock Irrigation District*	0	0	0	0	0	479	945	800	872	921	812	0	4,829	
Transfer advance approved water to Littlerock Irrigation District*	0	0	0	0	0	0	0	0	0	0	53	120	173	
Pool A water sale *	0	430	0	0	0	0	0	0	0	0	0	0	430	
Pool B water sale *	0	0	46,630	0	0	0	0	0	0	0	0	0	46,630	
Agency Total (* excluded water)	2,971	2,759	4,089	6,072	8,835	10,774	12,128	11,314	8,477	5,818	3,349	3,350	79,936	
Castaic Lake Water Agency														
Approved Table A water	1,845	1,387	2,022	2,364	3,187	3,566	4,127	4,266	3,650	2,741	972	958	31,085	82,500
Article 54 Flexible storage withdrawal (Castaic Lake)	0	0	0	0	0	0	0	0	0	0	1,244	1,345	2,589	
Pool A water sale *	0	4,101	0	0	0	0	0	0	0	0	0	0	4,101	
Pool B water sale *	0	0	40,000	0	0	0	0	0	0	0	0	0	40,000	
Agency Total (* excluded water)	1,845	1,387	2,022	2,364	3,187	3,566	4,127	4,266	3,650	2,741	2,216	2,303	33,674	
Coachella Valley Water District														
Approved Table A water	963	0	0	2,202	2,503	2,502	2,753	2,502	3,713	1,704	994	954	20,790	23,100
Pool B water	0	0	0	0	0	0	0	0	0	3,713	0	0	3,713	
Article 21 water	0	5,544	12,276	0	0	0	0	0	0	0	0	0	17,820	
Agency Total	963	5,544	12,276	2,202	2,503	2,502	2,753	2,502	3,713	5,417	994	954	42,323	
Crestline-Lake Arrowhead Water Agency														
Approved Table A water	62	0	0	0	77	153	209	203	181	118	86	105	1,194	5,800
Local water	0	67	93	65	39	0	0	0	0	0	0	0	264	
Pool A water sale *	0	750	0	0	0	0	0	0	0	0	0	0	750	
Pool B water sale *	0	0	2,320	0	0	0	0	0	0	0	0	0	2,320	
Agency Total (* excluded water)	62	67	93	65	116	153	209	203	181	118	86	105	1,458	
Desert Water Agency														
Approved Table A water	3,175	0	0	3,457	4,145	4,147	4,562	4,146	4,146	2,707	2,707	1,098	34,290	38,100
Article 21 water	0	5,544	12,276	0	0	0	0	0	0	0	0	0	17,820	
Pool B water	0	0	0	0	0	0	0	0	0	6,124	0	0	6,124	
Agency Total	3,175	5,544	12,276	3,457	4,145	4,147	4,562	4,146	4,146	8,831	2,707	1,098	58,234	
Littlerock Creek Irrigation District														
Approved Table A water	0	0	0	0	0	0	0	0	0	0	0	0	0	2,300
Transfer approved water from Antelope Valley-East Kern WA	0	0	0	0	0	479	945	800	872	921	812	0	4,829	
Transfer advance approved water from Antelope Valley-East Kern WA	0	0	0	0	0	0	0	0	0	0	53	120	173	
Agency Total	0	0	0	0	0	479	945	800	872	921	865	120	5,002	
Metropolitan Water District of Southern California														
Approved Table A water	0	0	0	135,953	104,298	125,421	134,856	137,539	132,651	149,405	152,228	153,037	1,225,388	2,011,500
Article 12(e) carryover approved water	30,000	0	0	0	0	0	0	0	0	0	0	0	30,000	
Article 21 water	0	15,657	87,467	0	0	0	0	0	0	0	0	0	103,124	
Article 56(c) extended carryover	75,056	64,473	0	0	0	0	0	0	0	0	0	0	139,529	
Article 54 Flexible storage withdrawal (Lake Perris)	0	0	1,243	5,117	1,821	0	0	0	0	0	0	0	8,181	
General Conveyance	0	0	0	0	0	0	0	0	0	900	0	0	900	
Article 54 Flexible storage replacement with approved water (Lake Perris)*	0	0	0	0	0	3,471	0	0	0	0	0	0	3,471	
Exchange approved water to KCWA *	0	0	0	0	0	0	0	16,208	8,662	0	0	0	24,870	
Exchange approved water to Westlands *	0	0	0	0	0	0	1,843	15,867	1,968	322	0	0	20,000	
Agency Total (* excluded water)	105,056	80,130	88,710	141,070	106,119	125,421	134,856	137,539	132,651	150,305	152,228	153,037	1,507,122	
Mojave Water Agency														
Approved Table A water	499	823	1,170	216	124	224	233	235	431	1,067	997	1,755	7,774	75,800
Exchange approved water from Solano County WA	0	0	0	0	0	0	0	0	0	0	1,205	1,040	2,245	
Transfer approved water to Antelope Valley-East Kern WA *	73	62	91	147	124	143	209	162	141	108	58	43	1,361	
Pool A water sale *	0	29,000	0	0	0	0	0	0	0	0	0	0	29,000	
Pool B water sale *	0	0	28,220	0	0	0	0	0	0	0	0	0	28,220	
Agency Total (* excluded water)	499	823	1,170	216	124	224	233	235	431	1,067	2,202	2,795	10,019	
Palmdale Water District														
Approved Table A water	0	0	155	0	0	1,120	1,114	2,044	1,734	1,499	555	0	8,221	21,300
Article 56(c) extended carryover	510	329	0	0	0	0	0	0	0	0	0	0	839	
Agency Total	510	329	155	0	0	1,120	1,114	2,044	1,734	1,499	555	0	9,060	

Table 9-2. Water Delivered in 2000, by Month (Continued)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2000 Total Deliveries	2000 Contract Table A
San Bernardino Valley Municipal Water District														
Approved Table A water	1,219	526	138	46	200	1,425	2,134	2,566	2,919	2,831	2,126	2,269	18,399	102,600
Pool A water sale *	0	25,000	0	0	0	0	0	0	0	0	0	0	25,000	
Pool B water sale *	0	0	42,340	0	0	0	0	0	0	0	0	0	42,340	
Agency Total (* excluded water)	1,219	526	138	46	200	1,425	2,134	2,566	2,919	2,831	2,126	2,269	18,399	
San Gabriel Valley Municipal Water District														
Approved Table A water	0	0	0	0	0	2,307	2,469	2,448	2,369	2,510	1,897	0	14,000	28,800
Article 21 water	0	475	0	0	0	0	0	0	0	0	0	0	475	
Exchange carryover approved water from Dudley Ridge WD	665	0	0	0	0	0	0	0	0	0	0	0	665	
Pool B water sale *	0	0	11,920	0	0	0	0	0	0	0	0	0	11,920	
Agency Total (* excluded water)	665	475	0	0	0	2,307	2,469	2,448	2,369	2,510	1,897	0	15,140	
San Gorgonio Pass Water Agency														
Approved Table A water	0	0	0	0	0	0	0	0	0	0	0	0	0	3,000
Pool A water sale *	0	1,500	0	0	0	0	0	0	0	0	0	0	1,500	
Pool B water sale *	0	0	1,200	0	0	0	0	0	0	0	0	0	1,200	
Agency Total (* excluded water)	0	0	0	0	0	0	0	0	0	0	0	0	0	
Ventura County Flood Control District														
Approved Table A water	154	154	154	154	154	154	154	154	1,960	548	154	156	4,050	20,000
Pool A water sale *	0	7,500	0	0	0	0	0	0	0	0	0	0	7,500	
Pool B water sale *	0	0	5,500	0	0	0	0	0	0	0	0	0	5,500	
Agency Total (* excluded water)	154	154	154	154	154	154	154	154	1,960	548	154	156	4,050	
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water	70	172	98	145	202	238	491	473	324	364	121	352	3,050	
Recreation/Fish and Wildlife														
USFWS Recreation/fish and wildlife water (Pyramid Lake)	28	0	0	0	0	0	0	4	2	2	1	1	38	
SWP	117,189	97,843	121,088	155,726	125,546	152,510	166,175	168,690	163,427	182,970	169,500	166,539	1,787,203	
Non-SWP	28	67	93	65	39	0	0	4	2	2	1	1	302	
Southern California Area Total	117,217	97,910	121,181	155,791	125,585	152,510	166,175	168,694	163,429	180,972	169,501	166,540	1,787,505	2,553,200
SWP Water														
SWP Approved Table A Water														
Agriculture and M&I approved water	24,339	32,139	30,998	237,383	247,554	382,288	309,849	264,781	243,822	217,193	194,574	206,716	2,391,636	4,121,631
Advance Agriculture and M&I approved water	0	0	0	0	0	0	0	0	0	0	2,597	3,330	5,927	
Article 12(e) carryover approved water	41,192	6,174	0	0	0	0	0	0	0	0	0	0	47,366	
Article 21 water	0	93,939	214,318	0	0	0	0	0	0	0	0	0	308,257	
Article 54 Flexible storage withdrawal	0	0	1,243	5,117	1,821	0	0	0	0	0	1,244	1,345	10,770	
Article 56(c) extended carryover	92,782	76,089	0	0	0	0	0	0	0	0	0	0	168,871	
Unscheduled water	0	528	0	0	0	0	0	0	0	0	0	0	528	
Transfer approved water	73	1,562	91	147	124	622	67,054	38,509	10,459	1,029	870	43	120,583	
Transfer advance approved water from Antelope Valley-East Kern WA	0	0	0	0	0	0	0	0	0	0	53	120	173	
Exchange approved water	665	0	0	0	10,000	23,061	22,343	88,142	25,597	3,116	5,705	4,417	183,046	
Pool A water	0	0	0	10,000	12,100	0	29,066	22,776	500	6,345	0	0	80,787	
Pool B water	0	0	0	0	0	12,290	93,766	84,084	1,541	9,837	0	0	201,518	
Pool A water sale *	0	80,787	0	0	0	0	0	0	0	0	0	0	80,787	
Pool B water sale *	0	0	201,518	0	0	0	0	0	0	0	0	0	201,518	
Subtotal (approved Table A water)(* excluded water)	159,051	210,431	246,650	252,647	271,599	418,261	522,078	498,292	281,919	237,520	205,043	215,971	3,519,462	
SWP Table A-related water														
Recreation/fish and wildlife water	115	216	146	200	288	381	650	616	365	451	190	412	4,030	
Subtotal (Table A-related water)	115	216	146	200	288	381	650	616	365	451	190	412	4,030	
Subtotal (SWP water)	*159,166*	*210,647*	*246,796*	*252,847*	*271,887*	*418,642*	*522,728*	*498,908*	*282,284*	*237,971*	*205,233*	*216,383*	*3,523,492*	
Non-SWP Water														
Other water														
Local water	41,693	3,430	4,306	39,078	176,601	177,850	200,065	161,385	66,896	68,959	84,266	76,952	1,101,481	
Vallejo Permit Water	157	144	0	235	327	437	478	483	1,095	158	145	262	3,921	
General Conveyance	4	0	0	0	0	0	0	1,020	7	901	11	11	1,954	
USFS Recreation/fish and wildlife water (Pyramid Lake)	28	0	0	0	0	0	0	4	2	2	1	1	38	
Subtotal	41,882	3,574	4,306	39,313	176,928	178,287	200,543	162,892	68,000	70,020	84,423	77,226	1,107,394	
CVP Water														
Transferred water from CVP contractor	0	13,971	39,198	10,000	0	0	26,123	18,822	522	8,223	17,927	2,049	136,835	
Exchanged water from CVP contractor to SWP contractor	16,876	10,124	0	4,167	0	0	0	0	0	0	14,205	12,717	58,089	
Conveying CVP water Annual Contract	41	49	57	56	68	67	56	29	56	53	47	22	601	
Conveying CVP water (Kern National Wildlife Refuge - the Bureau)	0	0	0	306	363	0	0	245	3,695	5,486	4,346	2,627	17,068	
Conveying CVP water recreation/fish and wildlife water (San Luis)	31	35	37	36	57	105	106	98	32	50	52	40	679	
Federal Conveyance	1,718	3,176	82,980	0	0	0	0	0	0	0	0	0	87,874	
Subtotal (CVP water)	18,666	27,355	122,272	14,565	488	172	26,285	19,194	4,305	13,812	36,577	17,455	301,146	
Total (Non-SWP water)	*60,548*	*30,929*	*126,578*	*53,878*	*177,416*	*178,459*	*226,828*	*182,086*	*72,305*	*83,832*	*121,000*	*94,681*	*1,408,540*	
Grand Total	219,714	241,576	373,374	306,725	449,303	597,101	749,556	680,994	354,589	321,803	326,233	311,064	4,932,032	4,121,631

Table 9-3. Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962-00

	Annual Table A Water According to Long-Term Water Supply Contract							Water Conveyed								
								Deliveries								
Year	Upper Feather River Area (1)	North Bay Area (2)	South Bay Area (3)	San Joaquin Valley Area (4)	Central Coastal Area (5)	Southern California Area (6)	Total (7)	Annual Table A Water (8)	Article 21 Surplus and Unscheduled Water[a] (9)	Other Water[b] (10)	Feather River Diversions[c] (11)	Wildlife/ Recreation Water (12)	Subtotal (13)	Initial Fill Water (14)	Operational Losses and Storage Changes[d] (15)	Total (16)
1962	0	0	0	0	0	0	0	0	0	18,289	0	0	18,289	9	272	18,570
1963	0	0	0	0	0	0	0	0	0	22,456	0	0	22,456	71	185	22,712
1964	0	0	0	0	0	0	0	0	0	32,507	0	0	32,507	171	152	32,830
1965	0	0	0	0	0	0	0	0	0	44,105	0	0	44,105	93	729	44,927
1966	0	0	0	0	0	0	0	0	0	67,928	0	0	67,928	0	1,746	69,674
1967	0	0	11,538	0	0	0	11,538	11,538	0	53,605	0	0	65,143	8,328	4,212	77,683
1968	550	0	109,900	77,350	0	3,700	191,500	171,709	121,534	14,777	866,926	0	1,174,946	498,926	117,906	1,791,778
1969	620	0	98,700	163,075	0	5,000	267,395	193,020	72,397	18,829	794,374	0	1,078,620	510,614	72,196	1,661,430
1970	700	0	114,200	202,000	0	5,700	322,600	233,993	133,024	38,080	759,759	0	1,164,856	23,947	2,435	1,191,238
1971	890	0	116,200	251,800	0	6,700	375,590	357,340	296,019	44,119	778,362	8	1,475,848	7,853	5,812	1,489,513
1972	970	0	118,300	413,066	0	209,423	741,759	611,801	423,964	66,638	817,398	6,489	1,926,290	100,274	53,062	2,079,626
1973	1,100	0	120,400	383,652	0	481,100	986,252	694,388	296,416	42,511	800,743	1,155	1,835,213	204,638	53,798	2,093,649
1974	1,230	0	122,400	460,650	0	597,920	1,182,200	874,077	417,676	46,224	911,613	2,118	2,251,708	237,554	10,657	2,499,919
1975	1,610	0	124,500	545,809	0	714,950	1,386,869	1,223,990	622,902	63,793	862,218	3,377	2,776,280	103,352	(94,606)	2,785,026
1976	1,990	0	126,500	543,417	0	836,480	1,508,387	1,373,002	580,110	115,217	946,440	1,745	3,016,514	61,122	(681,025)	2,396,611
1977	2,420	0	128,600	581,400	0	954,901	1,667,321	574,155	0	389,065	581,994	1,111	1,546,325	0	(131,151)	1,415,174
1978	1,850	0	130,700	635,900	0	1,049,584	1,818,034	1,452,699	16,914	121,225	786,517	1,691	2,379,046	64,443	717,370	3,160,859
1979	2,130	0	132,700	702,685	0	1,190,573	2,028,088	1,659,896	648,389	187,630	882,549	1,766	3,380,230	12,302	(83,430)	3,309,102
1980	1,810	500	134,800	758,100	1,946	1,317,614	2,214,770	1,529,749	404,557	46,459	875,045	2,131	2,857,941	0	(26,606)	2,831,335
1981	1,940	650	137,000	818,000	2,813	1,432,065	2,392,468	1,909,562	908,428	279,161	838,557	4,688	3,940,396	0	(802,263)	3,138,133
1982	1,970	800	139,200	876,500	5,626	1,550,449	2,574,545	1,750,024	215,873	154,882	776,330	4,646	2,901,755	0	480,752	3,382,507
1983	2,000	950	141,400	867,118	8,439	1,681,257	2,701,164	1,184,869	13,019	181,453	602,905	7,849	1,990,095	0	(90,997)	1,899,098
1984	3,630	1,100	143,600	979,211	12,698	1,744,098	2,884,337	1,588,619	262,917	381,024	832,332	7,040	3,071,932	0	(140,182)	2,931,750
1985	3,760	1,250	145,800	1,019,049	21,138	1,864,849	3,055,846	1,995,453	307,672	404,842	870,008	4,033	3,582,008	0	92,885	3,674,893
1986	4,190	1,400	148,100	1,091,946	28,210	1,983,890	3,257,736	1,995,636	36,620	193,606	791,737	3,865	3,021,464	0	284,380	3,305,844
1987	4,620	1,550	150,300	1,188,500	35,204	2,103,941	3,484,115	2,130,086	114,907	377,592	831,947	7,672	3,462,204	0	(390,413)	3,071,791
1988	5,060	15,471	152,500	1,246,100	43,722	2,225,482	3,688,335	2,385,122	0	507,076	794,834	4,889	3,691,921	0	(92,850)	3,599,071
1989	5,500	24,615	156,700	1,290,400	56,342	2,424,633	3,958,190	2,853,747	0	474,559	830,500	8,135	4,166,941	0	447,917	4,614,858
1990	6,040	28,190	160,900	1,313,450	70,486	2,500,600	4,079,666	2,582,151	90	424,697	875,099	9,262	3,891,299	0	(528,869)	3,362,430
1991	11,880	29,590	166,400	1,338,011	70,486	2,510,200	4,126,567	549,113	3,521	551,051	565,395	4,879	1,673,959	0	167,435	1,841,394
1992	11,920	32,010	171,900	1,342,300	70,486	2,510,200	4,138,816	1,471,454	1,156	144,789	613,978	2,605	2,233,982	0	(63,541)	2,170,441
1993	11,960	34,620	177,400	1,342,300	70,486	2,510,200	4,146,966	2,315,235	0	254,854	822,589	2,609	3,395,287	0	726,123	4,121,410
1994	12,000	37,215	182,000	1,342,300	70,486	2,510,200	4,154,201	1,749,351	112,625	236,739	874,018	8,200	2,980,933	0	(295,405)	2,685,528
1995	12,050	44,030	184,000	1,342,300	70,486	2,510,200	4,163,066	1,967,093	64,330	78,425	860,077	2,575	2,972,500	0	69,536	3,042,036
1996	12,100	48,225	186,000	1,301,630	70,486	2,492,900	4,111,341	2,514,825	28,647	251,391	934,997	3,907	3,733,767	86	491,550	4,225,403
1997	12,150	49,315	188,000	1,297,300	45,201	2,492,900	4,084,866	2,325,775	21,432	322,000	993,211	4,146	3,666,564	527	(11,806)	3,655,285
1998	12,200	50,420	188,000	1,272,300	45,201	2,517,900	4,086,021	1,725,519	20,288	134,682	872,738	2,108	2,755,335	0	(132,491)	2,622,844
1999	12,250	51,500	188,000	1,272,300	70,486	2,519,900	4,114,436	2,738,891	158070	85,312	1,108,672	4,324	4,095,269	0	(189,525)	3,905,744
2000	14,000	55,945	210,000	1,205,300	70,486	2,565,900	4,121,631	3,200,677	308,785	332,654	1,085,886	4,030	4,932,032	0	(181,758)	4,750,274
Total	**179,090**	**509,346**	**4,906,638**	**29,465,219**	**940,914**	**52,025,409**	**88,026,616**	**51,894,559**	**6,612,282**	**7,204,246**	**27,439,748**	**123,053**	**93,273,888**	**1,834,310**	**(135,808)**	**94,972,390**

[a] Values include amounts of deliveries to short-term contractors (Mustang Water District, 1970-72; Tracy Golf and Country Club, 1974, 1979, and 1980; Green Valley Water District, 1974, 1975, 1978, 1979, 1980, and 1985; Granite Construction Company, 1980).
[b] Includes amounts of SWP non-Table A water and non-SWP water conveyed for SWP and non-SWP water contractors.
[c] Includes amounts of water diverted under various water rights agreements.
[d] Amounts reflect net effect of (1) operational losses from SWP transportation facilities; (2) changes in reservoir storage south of Delta; (3) storable local inflows to SWP reservoirs; (4) side inflow to San Luis Canal; and (5) inflow into California Aqueduct from Kern River Intertie.

water). Long-term water supply contractors who have not signed the Monterey Amendment receive unscheduled water.

Total SWP Water Delivered. Column 12 shows 3,522,933 acre-feet of total SWP water delivered in 2000. This includes total approved Table A water and Article 21 and unscheduled water.

Non-SWP Water Deliveries. Column 13 includes deliveries of nonproject water to long-term water contractors. Nonproject water is generally local and permit water that a SWP contractor has a water right to, or water purchased from, exchanged with, or transferred from non-SWP agencies. In 2000, nonproject water deliveries totaled 78,605 acre-feet.

Total Deliveries. Column 14 shows total amounts of water delivered to long-term contractors. In 2000, the SWP delivered 3,601,538 acre-feet to 27 long-term contractors. This amount included 3,199,907 acre-feet of approved Table A water, 308,785 acre-feet of Article 21 and unscheduled water, and 78,605 acre-feet of nonproject water.

Water Delivered in 2000, by Month

During 2000, the SWP provided water service to 44 agencies, including 27 long-term water contractors. Those agencies and the amounts of water delivered to them by month are listed in Table 9-2.

This section and the accompanying table summarize water deliveries for 2000. Information about those deliveries is categorized as SWP water and nonproject water.

SWP Water

SWP water delivered in 2000 is categorized as follows:

Long-term water supply contracts

Article 21

carryover Table A water

current year approved Table A amounts

flexible storage

transfer and exchange of approved Table A water

turnback pools A and B

Related water

Operational flood release

Recreation and fish and wildlife

In 2000, SWP water was delivered in the following classifications and amounts.

Approved Table A Water. A total of 2,977,570 acre-feet of 2000 approved Table A water was delivered to 27 long-term contractors and some delivered through transfers or exchanges to the Bureau and WWD. Also, 6,100 acre-feet of approved Table A advance water, 216,237 acre-feet of carryover water, and 10,770 acre-feet of flexible storage withdrawal water were delivered in 2000.

Exchanges and Transfers of Approved Table A Water. During 2000, a total of 300,892 acre-feet of approved Table A water was exchanged or transferred to SWP long-term contractors and non-SWP water agencies as follows:

- AVEK transferred 5,002 acre-feet to Littlerock
- Castaic transferred 1,200 acre-feet to WWD
- Dudley Ridge transferred 1,500 acre-feet to Kern
- Dudley Ridge exchanged 665 acre-feet with San Gabriel
- Dudley Ridge transferred 166 acre-feet to Tulare
- Kern transferred 35,847 acre-feet to WWD
- Kern exchanged 114,766 acre-feet with WWD
- Kern transferred 400 acre-feet to Tulare
- Kern exchanged 72,280 acre-feet with the Bureau

- Metropolitan exchanged 24,870 acre-feet with Kern
- Metropolitan exchanged 20,000 acre-feet with WWD
- Mojave transferred 1,361 acre-feet to AVEK
- Solano exchanged 2,245 acre-feet with Mojave
- Tulare transferred 3,000 acre-feet to WWD
- Tulare exchanged 20,500 acre-feet with WWD

1999 Carryover Approved Table A Water. In 2000, 216,237 acre-feet of 1999 approved Table A water were delivered that had been stored in SWP storage facilities in 1999; this amount does not include 1,500 acre-feet of carryover water transferred from Dudley Ridge to Kern.

Article 21 Water. The Article 21 water program allows a contractor to take delivery of water over the approved and scheduled Table A amounts for the current year. In 2000, thirteen contractors participated in the program. A total of 308,257 acre-feet of Article 21 water was delivered to Napa, Alameda-Zone 7, Alameda County, Santa Clara, Dudley Ridge, Kern, Tulare, Coachella, Desert, San Gabriel, Solano, and Metropolitan. Empire took delivery of 528 acre-feet of unscheduled water. (See page 114 for a description of the Article 21 Water Program.)

Water for Recreation and Fish and Wildlife. A total of 4,030 acre-feet of SWP water was conveyed for recreational use and enhancement of fish and wildlife.

Recreational Use. The SWP delivered 677 acre-feet of water for facilities at Lake Oroville, Lake Del Valle, O'Neill Forebay, Silverwood Lake, and Lake Perris. In addition, 2,600 acre-feet were delivered to Castaic Lake and Castaic Lagoon, an impoundment downstream from Castaic Lake devoted entirely to recreation.

Wildlife Management. The SWP delivered 753 acre-feet of water to use in managing wildlife in the Pilibos Wildlife Area, located on about 770 acres of land near O'Neill Forebay, 40 miles south of Los Banos.

Operational Flood Release Water

There was no operational flood water released in 2000.

Non-SWP Water

In 2000, the Department used SWP facilities to convey non-SWP water for various agencies according to the terms of water rights and water transfer and exchange agreements. Detailed information concerning those conveyances follows.

Alameda County Flood Control and Water Conservation District, Zone 7. Under a contract executed July 28, 1995, between the Department and Alameda-Zone 7, the Department conveyed 1,000 acre-feet of non-SWP water for Alameda-Zone 7 during 2000. The Department conveyed this water in August directly from the Delta to Reach 2 of the South Bay Aqueduct. Alameda-Zone 7 transferred this water from BBID under a separate contract.

Metropolitan Water District of Southern California. Under a letter agreement executed November 27, 2000, between the Department and Metropolitan, the Department conveyed 900 acre-feet of non-SWP water for Metropolitan during 2000. The Department conveyed this water to the Santa Margarita Water District through Metropolitan's delivery structures in Reach 26A of the California Aqueduct.

Tracy Golf and Country Club. Under an agreement dated August 25, 2000, with the Tracy Golf and Country Club, the Department conveyed 54 acre-feet of transferred CVP water to Tracy Golf and Country Club for irrigation purposes.

Central Valley Project Water. In 2000, the Department conveyed 301,146 acre-feet of CVP water through SWP facilities. Conveyance was made in accordance with agreements negotiated with the Bureau and contractors receiving water from the Bureau through the SWP as follows:

Arvin-Edison Water Storage District. An agreement between the Department and Tulare, dated December 15, 2000, approved the delivery to Tulare of 7,000 acre-feet of CVP water on behalf of AEWSD. In exchange, Tulare is to return a like amount of water to AEWSD from the Friant-Kern Canal. A total of 7,000 acre-feet of CVP water was conveyed to Tulare in 2000.

Bureau Level 4 Water. Between October and December 2000, the Department conveyed 21,666 acre-feet of Bureau-purchased Level 4 water to O'Neill Forebay. The water was purchased from Merced Irrigation District's Lake McClure.

Cross Valley Canal Contractors. Under five individual agreements between the Department and PID, LTRID, KTWD, RGWD, and County of Fresno, dated December 21, 1999, the Department conveyed 24,704, 26,008, 45,045, 10,678, and 2,100 acre-feet of CVP water for each district to WWD's turnouts in Reach 4 and Reach 5 of the California Aqueduct, respectively. Also, the Department conveyed for the County of Tulare, Hills Valley, and Tri Valley 3,605, 2,254, and 775 acre-feet, respectively, to the Bureau for wildlife refuge use.

Four CVP Contractors. An agreement between the Department and Kern provided for the delivery of nonproject water from four CVP contractors using 2000 CVP water supply. In exchange, Kern would return a like amount of its approved Table A water back to CVP by December 31, 2003. A total of 23,941 acre-feet of 2000 CVP water was conveyed to Kern in 2000.

Friant Water Users Authority. Under an agreement dated September 24, 1999, for 25,000 acre-feet, the Department conveyed 4,894 acre-feet of CVP water from the San Luis Canal at Kettleman City to the CVC turnout at Tupman in 2000.

Kern National Wildlife Refuge. Under Modification No. 009 to an agreement dated October 1, 1993, the Department conveyed 17,068 acre-feet of CVP water through the California Aqueduct to the Buena Vista Water Storage District for the Kern National Wildlife Refuge. Another 679 acre-feet was conveyed for the Bureau to San Luis for wildlife use.

Musco Olive Products, Incorporated. In accordance with terms of a conveyance agreement with the Bureau, dated August 25, 2000, the Department conveyed 568 acre-feet of CVP water to Reach 2A of the California Aqueduct for Musco Olive Products, Inc.

The Bureau of Reclamation. Under an agreement, dated April 18, 2000, the Department conveyed 82,980 acre-feet of CVP water through the California Aqueduct to O'Neill Forebay to replace exports forgone at the Tracy Pumping Plant in January as a result of environmental protection action taken in 1999.

U.S. Department of Veterans Affairs. Under an annual agreement with the Bureau, dated August 25, 2000, the Department conveyed 33 acre-feet through SWP facilities to maintain the San Joaquin Valley National Cemetery near Santa Nella, California. The Department conveyed this water to Reach 2B of the California Aqueduct.

Westlands Water District. An agreement between the Department and Kern provided for the delivery of up to 20,000 acre-feet of Kern's 2000 approved Table A water to WWD, in exchange for a like amount of WWD's CVP water. A total of 20,000 acre-feet was conveyed to Kern and a total of 20,000 acre-feet was returned to WWD in 2000.

Westlands Water District. An agreement dated December 20, 2000, provided for the delivery of up to 4,167 acre-feet of Kern's 2000 approved Table A water to WWD, in exchange for a like amount of WWD's CVP water returned prior to December 2000. A total of 4,167 acre-feet was conveyed to Kern in 2000, and a total of 4,167 acre-feet was returned to WWD in 2000.

Westlands Water District. An agreement between the Department, Tulare, and WWD, provided for the delivery of up to 50,000 acre-feet of nonproject water from WWD to Tulare between

December 2000 and April 15, 2001, in exchange for a like amount of Tulare's Table A water during the period from 2001 through 2003. A total of 2,981 acre-feet was delivered to Tulare in December 2000.

Floodwater. Occasionally, during wet years, the Department accepts floodwater from the Kern River into the California Aqueduct through the Kern River-California Aqueduct Intertie under an *Agreement among the State of California, Kern County Water Agency, and the Kern River Interests for Diversions of Floodwaters through the Kern River-California Aqueduct Intertie*, dated November 18, 1975. In 2000, the Department did not accept any floodwater into the California Aqueduct.

Water Rights Water. Water in this category is transported through SWP facilities to long-term SWP contractors and other agencies according to terms of various local water rights agreements. Some water simply passes through SWP transportation facilities; a portion is stored in SWP reservoirs for release at a later time. In 2000, 1,101,481 acre-feet of water in this category were delivered to the Feather River and South Bay and Southern California areas.

Feather River Area. Nine Feather River water right settlement agencies received a total of 1,085,886 acre-feet. Those agencies are

- Last Chance Creek Water District, 13,502 acre-feet
- Thermalito Irrigation District, 2,478 acre-feet
- Oroville-Wyandotte Irrigation District, 6,625 acre-feet
- Western Canal Water District, 313,435 acre-feet
- Joint Water Districts Board, 719,957 acre-feet
- Oswald Water District, 546 acre-feet
- Tudor Mutual Water Company, 4,280 acre-feet
- Garden Highway Water Company, 14,006 acre-feet
- Plumas Mutual Water Company, 11,057 acre-feet

South Bay Area. In the South Bay area, 15,331 acre-feet of local water were delivered to Alameda-Zone 7 and Alameda County. These two South Bay Aqueduct contractors hold water rights to runoff from Lake Del Valle watershed.

Southern California. In Southern California, 264 acre-feet of local runoff from the Houston Creek watershed were stored and delivered to Crestline under local water rights. These local water rights have been signed over to the Department as part of the contractual arrangements for storing and delivering this local runoff for Crestline.

Annual Table A Water and Water Delivered Since 1962

Information about annual Table A water and water conveyed for the past 39 years is contained in Table 9-3. The following discussion of Table A water conveyed is arranged according to column numbers.

Annual Table A. Columns 1 through 7 of Table 9-3 show the amount of long-term contractor's annual Table A water by area for years 1962 through 2000 as specified in the Table A schedules of the long-term water supply contracts.

In some instances Table A schedules—projections of each contractor's need for water to 2035—have been amended to meet the needs of individual contractors. The amounts of annual Table A water each contractor may request for years 1962 through 2035 can be found in Table B-4 in Appendix B.

Water Delivered. Columns 8 through 16 show water delivered or conveyed, including initial fill water and operational losses and storage changes.

Approved Table A Water. Column 8 shows amounts of approved Table A water delivered each year from 1962 through 2000.

Article 21 Water. Article 21 water is water in excess of that required to meet all demands for

the year's approved Table A water and water to be stored in SWP reservoirs.

Column 9 shows amounts of Article 21 water, as defined under *SWP Deliveries*, and unscheduled water delivered from 1962 through 2000.

Column 10 includes amounts of water classified as other water delivered in 2000, including nonproject water conveyed through SWP facilities and regulated delivery of local supply.

In 2000, a total of 333,424 acre-feet of other water was delivered.

Feather River Diversions. Column 11 includes amounts of water from the Feather River delivered according to agreements for water rights water. In 2000, a total of 1,085,886 acre-feet in this category was delivered to agencies in the Feather River area.

Recreation Water. Column 12 shows water conveyed for recreational use or to provide water to improve water quality for fish and wildlife. In 2000, a total of 4,030 acre-feet of SWP water was conveyed for this purpose.

Initial Fill Water. The quantities listed in Column 14 represent the amounts used to initially fill the aqueducts and reservoirs south of the Delta to maximum operating capacities. Initial filling began in 1962 with the filling of the South Bay Aqueduct and was completed in 1979 when Lake Perris reached its maximum operating capacity of 127,000 acre-feet. In 1996 and 1997, the Coastal Aqueduct was initially filled.

Operational Losses. Column 15 includes the total amounts of water lost through evaporation and seepage, net storage changes in reservoirs south of the Delta, and amounts of inflow from local drainage areas, including inflows into San Luis Canal and from the Kern River Intertie.

Negative values are indicated for years when withdrawals and evaporation from reservoirs south of the Delta exceed the amounts of water added to the reservoirs.

Information for this chapter was provided by the State Water Project Analysis Office.

DWR's "Notices to State Water Project Contractors" 2000 to 2006

STATE OF CALIFORNIA • THE RESOURCES AGENCY • DEPARTMENT OF WATER RESOURCES

NOTICE TO STATE WATER PROJECT CONTRACTORS

NUMBER: 00-09

DATE: 4/20/00

SUBJECT: 2000 Entitlement Allocation Decrease

FROM: Signed by: Thomas Hannigan
Director, Department of Water Resources

Unusually dry conditions since mid-March have caused the Department of Water Resources to recalculate its projections for meeting State Water Project contractors 2000 Table A entitlement requests. Based on this dry hydrology and current SWP water supplies, the Department will reduce allocations from 100 percent to 90 percent of the long-term SWP contractor's entitlement requests, which equates to a reduction from 3.62 million-acre-feet to 3.41 million-acre-feet.

If you have any questions, please contact Dan Flory, Chief of DWR's State Water Project Analysis Office, at (916) 653-4313, or you may call Nancy Quan of his staff at (916) 653-9593.

Enclosure

2000 STATE WATER PROJECT ALLOCATION
(ACRE-FEET)

SWP CONTRACTORS	2000 ENTITLEMENT			
	TABLE A (1)	INITIAL REQUEST (2)	APPROVED ALLOCATION (3)	PERCENT APPROVED ALLOCATION (3)/(2) (4)
FEATHER RIVER				
County of Butte	2,890	2,890	2,601	90%
Plumas County FC&WCD	1,510	1,510	1,510 a)	100%
City of Yuba City	9,600	9,600	8,640	90%
Subtotal	14,000	14,000	12,751	
NORTH BAY				
Napa County FC&WCD	16,325	16,325	14,693	90%
Solano County WA	39,620	39,620	35,658	90%
Subtotal	55,945	55,945	50,352	
SOUTH BAY				
Alameda County FC&WCD, Zone 7	68,000	68,000	61,200	90%
Alameda County WD	42,000	42,000	37,800	90%
Santa Clara Valley WD	100,000	100,000	90,000	90%
Subtotal	210,000	210,000	189,001	
SAN JOAQUIN VALLEY				
Oak Flat WD	5,700	5,700	5,130	90%
County of Kings	4,000	4,000	3,600	90%
Castaic Lake WA	12,700	12,700	11,430	90%
Dudley Ridge WD	53,370	53,370	48,033	90%
Empire West Side ID	3,000	3,000	2,378 a)	79%
Kern County WA	1,020,730	1,020,730	918,657	90%
Tulare Lake Basin WSD	118,500	118,500	106,650	90%
Subtotal	1,218,000	1,218,000	1,095,878	
CENTRAL COASTAL				
San Luis Obispo County FC&WCD	25,000	25,000	22,500	90%
Santa Barbara County FC&WCD	45,486	45,486	40,937	90%
Subtotal	70,486	70,486	63,436	
SOUTHERN CALIFORNIA				
Antelope Valley-East Kern WA	138,400	138,400	124,560	90%
Castaic Lake WA	82,500	82,500	74,250	90%
Coachella Valley WD	23,100	23,100	20,790	90%
Crestline-Lake Arrowhead WA	5,800	5,800	5,220	90%
Dasert WA	38,100	38,100	34,290	90%
Littlerock Creek ID	2,300	2,300	2,070	90%
Mojave WA	75,800	75,800	68,220	90%
Metropolitan WDSC	2,011,500	1,507,136	1,507,136	100%
Palmdale WD	21,300	21,300	19,170	90%
San Bernardino Valley MWD	102,600	102,600	92,340	90%
San Gabriel Valley MWD	28,800	28,800	25,920	90%
San Gorgonio Pass WA	3,000	3,000	2,700	90%
Ventura County FCD	20,000	20,000	18,000	90%
Subtotal	2,553,200	2,048,836	1,994,665	
TOTAL	4,121,631	3,617,267	3,406,083	

a) Monterey amendment not signed

SWPAO
19-Apr-00

STATE OF CALIFORNIA RESOURCES AGENCY DEPARTMENT OF WATER RESOURCES

NOTICE TO
STATE WATER PROJECT CONTRACTORS

NUMBER: 01-15

DATE: August 16, 2001

SUBJECT: 2001 Entitlement Allocation Increase to 39 Percent

FROM: _____
DIRECTOR, DEPARTMENT OF WATER RESOURCES

The Department of Water Resources is increasing the 2001 allocation of entitlement water for long-term State Water Project contractors from 1.44 million acre-feet to 1.61 million acre-feet. Based on water in storage and the latest allocation study, SWP supplies are projected to meet 39 percent of most SWP contractors' 2001 Table A entitlements. A table reflecting the new 2001 SWP allocation of entitlement water is attached.

If you need additional information or would like to discuss this further, please contact Dan Flory, Chief of DWR's State Water Project Analysis Office, at (916) 653-4313, or you may call Nancy Quan of his staff at (916) 653-0190.

Attachment

2001 STATE WATER PROJECT ALLOCATION
(ACRE-FEET)

SWP CONTRACTORS	2001 ENTITLEMENT			
	TABLE A (1)	INITIAL REQUEST (2)	APPROVED ALLOCATION (3)	PERCENT APPROVED ALLOCATION (3)/(2) (4)
FEATHER RIVER				
County of Butte	3,500	3,500	1,365	39%
Plumas County FC&WCD	1,570	1,570	838	53%
City of Yuba City	9,600	9,600	3,744	39%
Subtotal	14,670	14,670	5,947	
NORTH BAY				
Napa County FC&WCD	20,725	20,725	8,083	39%
Solano County WA	45,836	45,836	17,876	39%
Subtotal	66,561	66,561	25,960	
SOUTH BAY				
Alameda County FC&WCD, Zone 7	78,000	78,000	30,420	39%
Alameda County WD	42,000	42,000	16,380	39%
Santa Clara Valley WD	100,000	100,000	39,000	39%
Subtotal	220,000	220,000	85,801	
SAN JOAQUIN VALLEY				
Oak Flat WD	5,700	5,700	2,223	39%
County of Kings	4,000	4,000	1,560	39%
Castaic Lake WA	12,700	12,700	4,953	39%
Dudley Ridge WD	53,370	53,370	20,814	39%
Empire West Side ID	3,000	3,000	101	3%
Kern County WA	1,000,949	1,000,949	390,370	39%
Tulare Lake Basin WSD	118,500	118,500	46,215	39%
Subtotal	1,198,219	1,198,219	466,237	
CENTRAL COASTAL				
San Luis Obispo County FC&WCD	25,000	25,000	9,750	39%
Santa Barbara County FC&WCD	45,486	45,486	17,740	39%
Subtotal	70,486	70,486	27,489	
SOUTHERN CALIFORNIA				
Antelope Valley-East Kern WA	138,400	138,400	53,976	39%
Castaic Lake WA	82,500	82,500	32,175	39%
Coachella Valley WD	23,100	23,100	9,009	39%
Crestline-Lake Arrowhead WA	5,800	5,800	2,262	39%
Desert WA	38,100	38,100	14,859	39%
Littlerock Creek ID	2,300	2,300	897	39%
Mojave WA	75,800	75,800	29,562	39%
Metropolitan WDSC	2,011,500	2,011,500	784,485	39%
Palmdale WD	21,300	21,300	8,307	39%
San Bernardino Valley MWD	102,600	102,600	40,014	39%
San Gabriel Valley MWD	28,800	28,800	11,232	39%
San Gorgonio Pass WA	4,000	4,000	1,560	39%
Ventura County FCD	20,000	20,000	7,800	39%
Subtotal	2,554,200	2,554,200	996,137	
TOTAL	4,124,136	4,124,136	1,607,570	

SWPAO
14-Aug-01

STATE OF CALIFORNIA • RESOURCES AGENCY • DEPARTMENT OF WATER RESOURCES

NOTICE TO STATE WATER PROJECT CONTRACTORS

NUMBER: 02-09

DATE: AUG 26 2002

SUBJECT: 2002 State Water Project Allocation Increase

FROM: DIRECTOR, DEPARTMENT OF WATER RESOURCES

The Department of Water Resources is increasing the allocation of 2002 State Water Project water for long-term contractors from 2.68 million acre-feet to 2.89 million acre-feet. This allocation is projected to meet 70 percent of most SWP contractors' 2002 Table A amounts. This increase is largely the result of the Department's ability to capture more water in the Sacramento-San Joaquin Delta than originally projected. The Department's new approval considered several factors, including existing storage in SWP conservation reservoirs, SWP operational constraints, and 2002 contractor's demands. A table reflecting the new 2002 SWP allocated water is attached.

To help contractors manage limited water supplies, a modified 2002 carryover program is available. The modified carryover program will allow contractors to carry over unused SWP water into 2003, provided their plans do not interfere with SWP project operations. The details of the program will be provided to contractors in a subsequent notice.

If you have any questions, please contact Dan Flory, Chief of DWR's State Water Project Analysis Office, at (916) 653-4313, or you may call Robert Cooke of his staff at (916) 653-5945.

Attachment

2002 STATE WATER PROJECT ALLOCATION INCREASE
(ACRE-FEET)

SWP CONTRACTORS	TABLE A (1)	INITIAL REQUEST (2)	APPROVED ALLOCATION (3)	PERCENT APPROVED ALLOCATION (3)/(2) (4)
FEATHER RIVER				
County of Butte	3,500	3,500	2,450	70%
Plumas County FC&WCD	1,630	1,630	1,269	78%
City of Yuba City	9,600	9,600	6,720	70%
Subtotal	14,730	14,730	10,439	
NORTH BAY				
Napa County FC&WCD	21,100	21,100	14,770	70%
Solano County WA	46,296	46,296	32,407	70%
Subtotal	67,396	67,396	47,177	
SOUTH BAY				
Alameda County FC&WCD, Zone 7	78,000	78,000	54,600	70%
Alameda County WD	42,000	42,000	29,400	70%
Santa Clara Valley WD	100,000	100,000	70,000	70%
Subtotal	220,000	220,000	154,000	
SAN JOAQUIN VALLEY				
Oak Flat WD	5,700	5,700	3,990	70%
County of Kings	4,000	4,000	2,800	70%
Castaic Lake WA	12,700	12,700	8,890	70%
Dudley Ridge WD	57,343	57,343	40,140	70%
Empire West Side ID	3,000	3,000	1,465	49%
Kern County WA	1,000,949	1,000,949	700,664	70%
Tulare Lake Basin WSD	111,527	111,527	78,069	70%
Subtotal	1,195,219	1,195,219	836,018	
CENTRAL COASTAL				
San Luis Obispo County FC&WCD	25,000	25,000	17,500	70%
Santa Barbara County FC&WCD	45,486	45,486	31,840	70%
Subtotal	70,486	70,486	49,340	
SOUTHERN CALIFORNIA				
Antelope Valley-East Kern WA	141,400	141,400	98,980	70%
Castaic Lake WA	82,500	82,500	57,750	70%
Coachella Valley WD	23,100	23,100	16,170	70%
Crestline-Lake Arrowhead WA	5,800	5,800	4,060	70%
Desert WA	38,100	38,100	26,670	70%
Littlerock Creek ID	2,300	2,300	1,610	70%
Mojave WA	75,800	75,800	53,060	70%
Metropolitan WDSC	2,011,500	1,800,167	1,408,050	78%
Palmdale WD	21,300	21,300	14,910	70%
San Bernardino Valley MWD	102,600	102,600	71,820	70%
San Gabriel Valley MWD	28,800	28,800	20,160	70%
San Gorgonio Pass WA	4,000	4,000	2,800	70%
Ventura County FCD	20,000	20,000	14,000	70%
Subtotal	2,557,200	2,345,867	1,790,040	
TOTAL	4,125,031	3,913,698	2,887,014	

STATE OF CALIFORNIA • RESOURCES AGENCY • DEPARTMENT OF WATER RESOURCES

NOTICE TO
STATE WATER PROJECT CONTRACTORS

NUMBER: 03-06

DATE: MAY 1 6 2003

SUBJECT: 2003 State Water Project Allocation Increase

FROM: Tom Flowers
DEPUTY DIRECTOR, DEPARTMENT OF WATER RESOURCES

The Department of Water Resources is increasing the allocation of 2003 State Water Project water for long-term contractors from 2.89 million acre-feet to 3.71 million acre-feet. Based on recent precipitation and the May 1 snow survey results, SWP supplies are projected to meet 90 percent of SWP contractors' 2003 Table A amounts, which total 4.13 MAF. A table reflecting the increased 2003 SWP allocated water is attached.

The Department's new approval considered several factors, including existing storage in SWP conservation reservoirs, SWP operational constraints, and 2003 contractor demands.

If you have any questions, please contact Dan Flory, Chief of the Department's State Water Project Analysis Office, at (916) 653-4313, or you may call Craig Trombly, of his staff at (916) 653-6250.

Attachment

2003 STATE WATER PROJECT ALLOCATION INCREASE

(ACRE-FEET)

SWP CONTRACTORS	TABLE A (1)	INITIAL REQUEST (2)	APPROVED ALLOCATION (3)	PERCENT APPROVED ALLOCATION (3)/(2) (4)
FEATHER RIVER				
County of Butte	3,500	3,500	3,150	90%
Plumas County FC&WCD	1,690	1,690	1,521	90%
City of Yuba City	9,600	9,600	8,640	90%
Subtotal	14,790	14,790	13,311	
NORTH BAY				
Napa County FC&WCD	21,475	21,475	19,328	90%
Solano County WA	46,756	46,756	42,080	90%
Subtotal	68,231	68,231	61,408	
SOUTH BAY				
Alameda County FC&WCD, Zone 7	78,000	78,000	70,200	90%
Alameda County WD	42,000	42,000	37,800	90%
Santa Clara Valley WD	100,000	100,000	90,000	90%
Subtotal	220,000	220,000	198,000	
SAN JOAQUIN VALLEY				
Oak Flat WD	5,700	5,700	5,130	90%
County of Kings	4,000	4,000	3,600	90%
Castaic Lake WA	12,700	12,700	11,430	90%
Dudley Ridge WD	57,343	57,343	51,609	90%
Empire West Side ID	3,000	3,000	2,700	90%
Kern County WA	1,000,949	1,000,949	900,854	90%
Tulare Lake Basin WSD	111,527	111,527	100,374	90%
Subtotal	1,195,219	1,195,219	1,075,697	
CENTRAL COASTAL				
San Luis Obispo County FC&WCD	25,000	25,000	22,500	90%
Santa Barbara County FC&WCD	45,488	45,488	40,937	90%
Subtotal	70,488	70,488	63,437	
SOUTHERN CALIFORNIA				
Antelope Valley-East Kern WA	141,400	141,400	127,260	90%
Castaic Lake WA	82,500	82,500	74,250	90%
Coachella Valley WD	23,100	23,100	20,790	90%
Crestline-Lake Arrowhead WA	5,800	5,800	5,220	90%
Desert WA	38,100	38,100	34,290	90%
Littlerock Creek ID	2,300	2,300	2,070	90%
Mojave WA	75,800	75,800	68,220	90%
Metropolitan WDSC	2,011,500	2,011,500	1,810,350	90%
Palmdale WD	21,300	21,300	19,170	90%
San Bernardino Valley MWD	102,600	102,600	92,340	90%
San Gabriel Valley MWD	28,800	28,800	25,920	90%
San Gorgonio Pass WA	5,000	5,000	4,500	90%
Ventura County FCD	20,000	20,000	18,000	90%
Subtotal	2,558,200	2,558,200	2,302,380	
Recreation/Fish & Wildlife	0	0	0	
TOTAL	4,126,926	4,126,926	3,714,233	

SWPAO
15-May-03

STATE OF CALIFORNIA • RESOURCES AGENCY • DEPARTMENT OF WATER RESOURCES

NOTICE TO STATE WATER PROJECT CONTRACTORS

NUMBER: 04-04

DATE: MAR 01 2004

SUBJECT: 2004 State Water Project Allocation Increase

FROM: Tom Glory
DEPUTY DIRECTOR, DEPARTMENT OF WATER RESOURCES

The Department of Water Resources is increasing the allocation of 2004 State Water Project water for long-term contractors from 2.06 million acre-feet to 2.68 million acre-feet. Based on recent water supply conditions, SWP supplies are projected to meet 65 percent of most SWP contractors' 2004 Table A amounts, which total 4.13 MAF. Attached is the revised 2004 SWP allocation table.

The Department's new approval considered several factors, including existing storage in SWP conservation reservoirs, SWP operational constraints, and 2004 contractor demands. The Department will revise allocations as the year's hydrologic and water conditions develop.

If you have any questions, please contact Dan Flory, Chief of the Department's State Water Project Analysis Office at (916) 653-4313, or you may call Craig Trombly of his staff at (916) 653-6250.

Attachment

2004 STATE WATER PROJECT ALLOCATION
(ACRE-FEET)

SWP CONTRACTORS	TABLE A (1)	INITIAL REQUEST (2)	APPROVED ALLOCATION (3)	PERCENT APPROVED ALLOCATION (3)/(2) (4)
FEATHER RIVER				
County of Butte	3,500	3,500	2,275	65%
Plumas County FC&WCD	1,750	1,750	1,138	65%
City of Yuba City	9,600	9,600	6,240	65%
Subtotal	14,850	14,850	9,652	
NORTH BAY				
Napa County FC&WCD	21,850	21,850	14,203	65%
Solano County WA	47,206	47,206	30,684	65%
Subtotal	69,056	69,056	44,886	
SOUTH BAY				
Alameda County FC&WCD, Zone 7	80,619	80,619	52,402	65%
Alameda County WD	42,000	42,000	27,300	65%
Santa Clara Valley WD	100,000	100,000	65,000	65%
Subtotal	222,619	222,619	144,702	
SAN JOAQUIN VALLEY				
Oak Flat WD	5,700	5,700	3,705	65%
County of Kings	9,000	9,000	5,850	65%
Castaic Lake WA	12,700	12,700	8,255	65%
Dudley Ridge WD	57,343	57,343	37,273	65%
Empire West Side ID	3,000	3,000	1,950	65%
Kern County WA	998,730	998,730	649,174	65%
Tulare Lake Basin WSD	96,227	96,227	62,548	65%
Subtotal	1,182,700	1,182,700	768,755	
CENTRAL COASTAL				
San Luis Obispo County FC&WCD	25,000	25,000	16,250	65%
Santa Barbara County FC&WCD	45,486	45,486	29,566	65%
Subtotal	70,486	70,486	45,816	
SOUTHERN CALIFORNIA				
Antelope Valley-East Kern WA	141,400	141,400	91,910	65%
Castaic Lake WA	82,500	82,500	53,625	65%
Coachella Valley WD	33,000	33,000	21,450	65%
Crestline-Lake Arrowhead WA	5,800	5,800	3,770	65%
Desert WA	38,100	38,100	24,765	65%
Littlerock Creek ID	2,300	2,300	1,495	65%
Mojave WA	75,800	75,800	49,270	65%
Metropolitan WDSC	2,011,500	2,011,500	1,307,475	65%
Palmdale WD	21,300	21,300	13,845	65%
San Bernardino Valley MWD	102,600	102,600	66,690	65%
San Gabriel Valley MWD	28,800	28,800	18,720	65%
San Gorgonio Pass WA	6,000	6,000	3,900	65%
Ventura County FCD	20,000	20,000	13,000	65%
Subtotal	2,568,100	2,568,100	1,669,915	
TOTAL	4,128,811	4,128,811	2,683,727	

SWPAO
02-Mar-04

STATE OF CALIFORNIA · RESOURCES AGENCY · DEPARTMENT OF WATER RESOURCES

NOTICE TO

STATE WATER PROJECT CONTRACTORS

NUMBER: 05-07

DATE: MAY 27 2005

SUBJECT: 2005 State Water Project Allocation Increase

FROM: Tom Glover
DEPUTY DIRECTOR, DEPARTMENT OF WATER RESOURCES

The Department of Water Resources (DWR) is increasing the allocation of 2005 State Water Project (SWP) water for long-term contractors from 3.30 million acre-feet (MAF) to 3.71 MAF. Based on recent hydrologic conditions which include an updated snow survey, SWP supplies are projected to meet 90 percent of most SWP contractors' 2005 Table A amounts, which total 4.13 MAF. Attached is the revised 2005 SWP allocation table.

DWR's new approval considered several factors, including existing storage in SWP conservation reservoirs, SWP operational constraints, and 2005 contractor demands. DWR will revise allocations as the year's hydrologic and water conditions develop.

If you have any questions, please contact Dan Flory, Chief of DWR's State Water Project Analysis Office, at (916) 653-4313, or you may call Dave Paulson, of his staff at (916) 653-9593.

Attachment

2005 STATE WATER PROJECT ALLOCATION
(ACRE-FEET)

SWP CONTRACTORS	TABLE A (1)	INITIAL REQUEST (2)	APPROVED ALLOCATION (3)	PERCENT APPROVED ALLOCATION (3)/(2) (4)
FEATHER RIVER				
County of Butte	1,200	1,200	1,080	90%
Plumas County FC&WCD	0	0	0	n/a
City of Yuba City	9,600	9,600	8,640	90%
Subtotal	**10,800**	**10,800**	**9,720**	
NORTH BAY				
Napa County FC&WCD	22,225	22,225	20,003	90%
Solano County WA	47,256	47,256	42,530	90%
Subtotal	**69,481**	**69,481**	**62,533**	
SOUTH BAY				
Alameda County FC&WCD, Zone 7	80,619	80,619	72,557	90%
Alameda County WD	42,000	42,000	37,800	90%
Santa Clara Valley WD	100,000	100,000	90,000	90%
Subtotal	**222,619**	**222,619**	**200,357**	
SAN JOAQUIN VALLEY				
Oak Flat WD	5,700	5,700	5,130	90%
County of Kings	9,000	9,000	8,100	90%
Dudley Ridge WD	57,343	57,343	51,609	90%
Empire West Side ID	3,000	3,000	2,700	90%
Kern County WA	998,730	998,730	898,857	90%
Tulare Lake Basin WSD	96,227	96,227	86,604	90%
Subtotal	**1,170,000**	**1,170,000**	**1,053,000**	
CENTRAL COASTAL				
San Luis Obispo County FC&WCD	25,000	25,000	22,500	90%
Santa Barbara County FC&WCD	45,486	45,486	40,937	90%
Subtotal	**70,486**	**70,486**	**63,437**	
SOUTHERN CALIFORNIA				
Antelope Valley-East Kern WA	141,400	141,400	127,260	90%
Castaic Lake WA	95,200	95,200	85,680	90%
Coachella Valley WD	121,100	121,100	108,990	90%
Crestline-Lake Arrowhead WA	5,800	5,800	5,220	90%
Desert WA	50,000	50,000	45,000	90%
Littlerock Creek ID	2,300	2,300	2,070	90%
Mojave WA	75,800	75,800	68,220	90%
Metropolitan WDSC	1,911,500	1,911,500	1,720,350	90%
Palmdale WD	21,300	21,300	19,170	90%
San Bernardino Valley MWD	102,600	102,600	92,340	90%
San Gabriel Valley MWD	28,800	28,800	25,920	90%
San Gorgonio Pass WA	6,500	6,500	5,850	90%
Ventura County FCD	20,000	20,000	18,000	90%
Subtotal	**2,582,300**	**2,582,300**	**2,324,070**	
TOTAL	**4,125,686**	**4,125,686**	**3,713,117**	

SWPAO
18-May-05

STATE OF CALIFORNIA • RESOURCES AGENCY • DEPARTMENT OF WATER RESOURCES

NOTICE TO STATE WATER PROJECT CONTRACTORS

NUMBER: 06-04 DATE: APR 18 2006

SUBJECT: 2006 State Water Project Allocation Increase

FROM: for RT
DEPUTY DIRECTOR, DEPARTMENT OF WATER RESOURCES

The Department of Water Resources (DWR) is increasing the allocation of 2006 State Water Project (SWP) water for SWP contractors from 3.30 million acre-feet (MAF) to 4.13 MAF. Based on recent water precipitation and current water supply conditions, SWP supplies are projected to meet 100 percent of SWP contractors' 2006 Table A amounts, which total 4.13 MAF. Attached is the revised 2006 SWP allocation table.

DWR's new approval considered several factors, including existing storage in SWP conservation reservoirs, SWP operational constraints, and 2006 contractor demands.

This is the first year since 1999 the allocation has been 100 percent. This is also the first year the allocation has been 100 percent since the SWP contractors have requested their full Table A amounts.

If you have any questions, please contact Dan Flory, Chief of DWR's State Water Project Analysis Office, at (916) 653-4313, or you may call Dave Paulson of his staff at (916) 653-9593.

Attachment

2006 STATE WATER PROJECT ALLOCATION
(ACRE-FEET)

SWP CONTRACTORS	TABLE A (1)	INITIAL REQUEST (2)	APPROVED ALLOCATION (3)	PERCENT APPROVED ALLOCATION (3)/(2) (4)
FEATHER RIVER				
County of Butte	1,200	1,200	1,200	100%
Plumas County FC&WCD	270	270	270	n/a
City of Yuba City	9,600	9,600	9,600	100%
Subtotal	**11,070**	**11,070**	**11,070**	
NORTH BAY				
Napa County FC&WCD	22,550	22,550	22,550	100%
Solano County WA	47,306	47,306	47,306	100%
Subtotal	**69,856**	**69,856**	**69,856**	
SOUTH BAY				
Alameda County FC&WCD, Zone 7	80,619	80,619	80,619	100%
Alameda County WD	42,000	42,000	42,000	100%
Santa Clara Valley WD	100,000	100,000	100,000	100%
Subtotal	**222,619**	**222,619**	**222,619**	
SAN JOAQUIN VALLEY				
Oak Flat WD	5,700	5,700	5,700	100%
County of Kings	9,305	9,305	9,305	100%
Dudley Ridge WD	57,343	57,343	57,343	100%
Empire West Side ID	3,000	3,000	3,000	100%
Kern County WA	998,730	998,730	998,730	100%
Tulare Lake Basin WSD	95,922	95,922	95,922	100%
Subtotal	**1,170,000**	**1,170,000**	**1,170,000**	
CENTRAL COASTAL				
San Luis Obispo County FC&WCD	25,000	25,000	25,000	100%
Santa Barbara County FC&WCD	45,486	45,486	45,486	100%
Subtotal	**70,486**	**70,486**	**70,486**	
SOUTHERN CALIFORNIA				
Antelope Valley-East Kern WA	141,400	141,400	141,400	100%
Castaic Lake WA	95,200	95,200	95,200	100%
Coachella Valley WD	121,100	121,100	121,100	100%
Crestline-Lake Arrowhead WA	5,800	5,800	5,800	100%
Desert WA	50,000	50,000	50,000	100%
Littlerock Creek ID	2,300	2,300	2,300	100%
Mojave WA	75,800	75,800	75,800	100%
Metropolitan WDSC	1,911,500	1,911,500	1,911,500	100%
Palmdale WD	21,300	21,300	21,300	100%
San Bernardino Valley MWD	102,600	102,600	102,600	100%
San Gabriel Valley MWD	28,800	28,800	28,800	100%
San Gorgonio Pass WA	7,000	7,000	7,000	100%
Ventura County FCD	20,000	20,000	20,000	100%
Subtotal	**2,582,800**	**2,582,800**	**2,582,800**	
TOTAL	**4,126,831**	**4,126,831**	**4,126,831**	

SWPAO
14-Apr-06

Sacramento County Trial Court's Order
(re: Monterey Settlement Agreement)

FILED
ENDORSED

03 JUN -6 PM 3:27

SACRAMENTO COURTS
DEPT. #53

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF SACRAMENTO

PLANNING AND CONSERVATION LEAGUE a California not for profit corporation, PLUMAS COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, a California public agency; CITIZENS PLANNING ASSOCIATION OF SANTA BARBARA COUNTY, INC., a California not for profit corporation, Plaintiffs and Petitioners, v. DEPARTMENT OF WATER RESOURCES, a California State Agency, et al., Defendants and Respondents.	Case No. 95CS03216 ORDER PURSUANT TO PUBLIC RESOURCES CODE SECTION 21168.9

On remand from the Third District Court of Appeal on May 20, 2003, in Department 53 of the Sacramento Superior Court, the Honorable Loren E. McMaster, presiding, this proceeding came on for a status report and joint motion. Petitioners and Plaintiffs, Planning and Conservation League, Plumas County Flood Control and Water Conservation District, and Citizens Planning Association of Santa Barbara County ("Petitioners"), appeared through Antonio Rossmann and Roger B. Moore. Respondent and Defendant, Central Coast Water Authority (CCWA), appeared through Susan F. Petrovich of the Law Firm of Hatch & Parent. Respondent and Defendant, Department of Water Resources (DWR), appeared through Deputy Attorney General Marian E. Moe.

Robert S. Draper of O'Melveny and Myers, LLP and Clifford W. Schulz appeared, respectively, on behalf of the Metropolitan Water District of Southern California and Dudley Ridge Water District, entities that submitted answers to the First Amended Complaint subsequent to the Court of Appeal's final determination in this action and prior to any further order of this Court on remand.

In light of the direction from the Third District Court of Appeal on remand in Planning and Conservation League v. Department of Water Resources (2000) 83 Cal.App.4th 892, this Court hereby makes the following findings:

1. The parties to this lawsuit and other public agencies have engaged in extensive settlement negotiations, mediated by retired Judge Daniel Weinstein of JAMS Dispute Resolution, with the intent to avoid further litigation and associated expenses, to provide for an effective way to cooperate in the preparation of a new environmental impact report (EIR), and to make other specified improvements in the administration and operation of the State Water Project.

2. The mediation has resulted in an executed Settlement Agreement for approval by this Court, attached to this Order as Exhibit A.

3. DWR as lead agency has commenced the preparation of the new EIR.

4. As part of the Settlement Agreement, DWR and the State Water Project (SWP) contractors who are signatories to the Settlement Agreement have agreed that, pending DWR's filing of a return in satisfaction of the Writ of Mandate and this Court's dismissal of the Writ of Mandate, they will not approve any new project or activity (as defined in section VII.A of the Settlement Agreement) in reliance on the 1995 Environmental Impact Report for the Implementation of the Monterey Agreement.

5. This Order is made pursuant to the provisions of Public Resources Code section 21168.9 and pursuant to this Court's equitable powers. This Court finds that the actions described in this Order, including actions taken in compliance with the Writ of Mandate, comprise the actions necessary to assure DWR's compliance with Division 13 of the Public Resources Code. This Court further finds that this Order includes only those

mandates necessary to achieve compliance with Division 13.

THEREFORE, IT IS HEREBY ORDERED as follows:

1. This Court's Final Judgment denying the petition for writ of mandate, entered August 15, 1996, is reversed in accordance with the directive of the Third District Court of Appeal's decision in Planning and Conservation League v. Department of Water Resources (2000) 83 Cal.App.4th 892.

2. This Court's order granting the summary adjudication on the fifth cause of action, entered June 10, 1996, is vacated.

3. The Settlement Agreement attached as Exhibit A is hereby approved.

4. A Peremptory Writ of Mandate directed to Respondents Central Coast Water Authority and DWR shall issue under seal of this Court in the form attached hereto as Exhibit B.

5. In accordance with the Settlement Agreement and this Order, pending DWR's filing of the return in compliance with the Peremptory Writ of Mandate and this Court's Order discharging the Writ of Mandate, DWR and CCWA shall not approve any new project or activity (as defined section VII.A of the Settlement Agreement) in reliance on the 1995 EIR for the Implementation of the Monterey Agreement.

6. In the interim, until DWR files its return in compliance with the Peremptory Writ of Mandate and this Court orders discharge of the Writ of Mandate, the administration and operation of the State Water Project and Kern Water Bank Lands shall be conducted pursuant to the Monterey Amendments to the State Water Contracts, as supplemented by the Attachment A Amendments to the State Water Contracts (as defined in the Settlement Agreement) and the other terms and conditions of the Settlement Agreement.

7. Plaintiffs and petitioners shall recover such costs and attorney's fees as provided in prior court orders and in an amount as determined in the arbitration procedures agreed to in the Settlement Agreement, or as otherwise agreed to by the parties.

8. Except as provided, the Peremptory Writ of Mandate shall not limit or constrain the lawful jurisdiction and discretion of DWR. This Court retains jurisdiction until DWR files a return that complies with the terms of the Writ of Mandate, and this Court issues an order discharging the Writ of Mandate.

IT IS SO ORDERED.

Dated: JUN - 6 2003, 2003

LOREN E. McMASTER

Judge of the Superior Court

Judgment Granting Peremptory Writ of Mandate
October 25, 2002

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SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF LOS ANGELES

FRIENDS OF THE SANTA CLARA RIVER,

Petitioner,

v.

CASTAIC LAKE WATER AGENCY,

Respondent.

Case No. BS 056954

JUDGMENT GRANTING PEREMPTORY WRIT OF MANDATE

On Remand from the Court of Appeal

10 14 02 02:32p Susan Brandt-Hawley 707-576-0175

The hearing on the merits of the petition for writ of mandate was held on June 12, 2000, before the Honorable David P. Yaffe. Petitioner Friends of the Santa Clara River (Friends) was represented by attorney Susan Brandt-Hawley and respondent Castaic Lake Water Agency (CLWA) was represented by attorneys Robert H. Clark and R. Bruce Tepper. The court considered the briefs filed by the parties, the arguments of counsel, and the administrative record of proceedings, and took the case under submission.

On August 16, 2000, judgment was entered denying the petition in its entirety. An appeal was timely filed on October 16, 2000. The Fourth Division of the Second District Court of Appeal issued a slip opinion in Civil Case Number 145283 on January 10, 2002, and at the request of the National Audubon Society and the American Planning Association certified the opinion for publication on February 6, 2002. (*Friends of the Santa Clara River v. Castaic Lake Water Agency* (2002) 95 Cal.App.4th 1373.) The Court of Appeal reversed the judgment and ordered that "the trial court shall issue a writ of mandate vacating the certification of the EIR, shall retain jurisdiction until respondent certifies an EIR complying with CEQA consistent with the views expressed in this opinion, and shall consider such orders it deems appropriate under [Public Resources Code] section 21168.9."

CLWA filed a petition for review with the California Supreme Court on February 19, 2002, in Case Number S 104550, which was summarily denied on April 17, 2002. The remittitur issued from the Court of Appeal on May 3, 2002.

On September 24, 2002, at 9:30 a.m., the parties' proposed forms of judgment and writ on remand were considered by the Honorable David P. Yaffe. Friends was represented by attorney Susan Brandt-Hawley and CLWA was represented by attorneys Robert H. Clark and R. Bruce Tepper. The court considered the briefs filed by the parties and the arguments of counsel, and,

WHEREFORE, GOOD CAUSE APPEARING,

Nov 14 02 02:32p Susan Brandt-Hawley 707-576-0175 p.3

IT IS ORDERED THAT THE TENTATIVE RULING IS ADOPTED:

1. The judgment of this court denying the petition for writ of mandate, signed and filed on August 16, 2000, is vacated.

2. A peremptory writ of mandate shall issue ordering respondent Castaic Lake Water Agency to set aside its certification, made on March 29, 1999, of the Final Environmental Impact Report published in February 1999.

3. The Court retains jurisdiction until respondent Castaic Lake Water Agency certifies an Environmental Impact Report that complies with the California Environmental Quality Act and is consistent with the views expressed by the Court of Appeal Opinion filed January 10, 2002, Case No. B145283.

4. The Court finds that petitioner is the prevailing party in this proceeding.

5. The Court is informed that petitioner and respondent have fully and finally settled the outstanding issue of petitioner's claim for attorney fees and costs incurred in this action to date both in this Court and in the Court of Appeal, pursuant to CCP § 1021.5 and on all other bases whatsoever, for the compromise sum of $215,000.00, and the Court accepts said settlement.

6. Petitioner requests that the Court also prohibit respondent from using any of the 41,000 acre feet of additional water allotted to it from the subject State Water Project. Petitioner contends that the said water will be used to approve new development that will not be able to be reversed if a Final Environmental Impact Report is not certified. Respondent contends that such a prohibition would prevent it from meeting the existing water needs in the area it services. Both contentions appear to be speculative at this time. Respondent will not be prohibited from using the water to which it is entitled, but petitioner may renew its application for such prohibition based upon evidence of the actual use of such additional water for purposes it considers improper.

Approved as to form:

Date: October 7, 2002

Susan Brandt-Hawley
Attorney for Petitioner

Approved as to form:

Date: October 8, 2002

Robert H. Clark
Attorney for Respondent

IT IS SO ORDERED.

Date: OCT 25 2002

David P. Yaffe
Honorable David P. Yaffe
Judge of the Superior Court

Nov 14 02 02:33p Susan Brandt-Hawley 707-576-0175 p.5

DWR Brief in the 41K litigation

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SUPERIOR COURT OF CALIFORNIA

COUNTY OF LOS ANGELES

PLANNING AND CONSERVATION LEAGUE, Petitioner, v. CASTAIC LAKE WATER AGENCY, Respondent. CALIFORNIA DEPARTMENT OF WATER RESOURCES, KERN COUNTY WATER AGENCY, WHEELER RIDGE-MARICOPA WATER STORAGE DISTRICT, Real Parties in Interest.	CASE NO. BS 098724 OPPOSITION OF REAL PARTY IN INTEREST DEPARTMENT OF WATER RESOURCES TO PETITIONERS' JOINT OPENING BRIEF ON THE MERITS Hearing date: January 5, 2007 Time: 9:30 a.m. Dept.: 13 Hon. James Chalfant
CALIFORNIA WATER IMPACT NETWORK, Petitioners, v. CASTAIC LAKE WATER AGENCY and DOES I through XX, inclusive, Respondents. CALIFORNIA DEPARTMENT OF WATER RESOURCES, KERN COUNTY WATER AGENCY, WHEELER RIDGE-MARICOPA WATER STORAGE DISTRICT, and DOES XXI - XC, Inclusive Real Parties in Interest.	

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I.

INTRODUCTION

In 1999, the Castaic Lake Water Agency (Castaic), a local water district, negotiated a series of voluntary agreements that culminated in the permanent transfer of 41,000 acre feet per year (afy) of water from Wheeler Ridge-Mariposa Water District (Wheeler Ridge) to Castaic, by way of the Kern County Water Agency (KCWA) (commonly known as the Kern-Castaic Transfer). The Kern-Castaic Transfer is one of several transfers made in accordance with the Monterey Amendment, an amendment to most of the water supply contracts between the California Department of Water Resources (DWR) and the State Water Project Contractors. The purpose of the Kern-Castaic Transfer is to meet the local water needs of the people within Castaic's service area. Recently, Castaic completed an environmental impact report (EIR), evaluating the potential environmental impacts from the transfer, as required by the California Environmental Quality Act.

The Monterey Amendment involves transferring 130,000 afy of water among several State Water Project Contractors, permanently retiring 45,000 afy of water previously delivered to agricultural contractors, and engaging in a host of other activities to improve the overall efficiency of the State Water Project. DWR is preparing an EIR for the Monterey Amendment.

Petitioners contend that Castaic, by preparing its EIR for its individual transfer ahead of DWR's EIR, is somehow usurping DWR's lead agency responsibility for conducting the environmental analysis of the Monterey Amendment. Further, petitioners contend that, because DWR approved Castaic's EIR, DWR has somehow delegated its lead agency responsibility.[1]

Petitioners' contentions stem from a flawed misunderstanding of the scope of each EIR and the requirements of CEQA. Castaic's EIR evaluates potential environmental impacts from an inherently local project, whereas DWR's EIR will evaluate potential environmental impacts from a project affecting the entire State Water Project. Nothing in CEQA, case law interpreting CEQA, nor the facts of this case suggest that Castaic's EIR usurps or supersedes DWR's EIR or

1. Petitioners' CEQA arguments on the adequacy of the EIR are not directed to DWR. Therefore, DWR will not separately respond to these arguments.

that DWR is precluded in any manner from completing its own EIR for the Monterey Amendment simply because Castaic has prepared an EIR for its individual transfer. Moreover, petitioners have failed to offer any evidence to suggest that DWR will not adequately analyze potential impacts from the Monterey Amendment simply because Castaic has prepared an EIR.

II.

FACTUAL BACKGROUND

To understand this case, it is important to put the Kern-Castaic Transfer into its proper context with regard to the State Water Project (SWP), the 1994 Monterey Agreement amending the SWP contracts, the Monterey Amendment, the Settlement Agreement with Planning and Conservation League (PCL) and other plaintiffs who challenged the environmental impact report (EIR) for the Monterey Agreement, and the DWR Monterey Amendment EIR.

A. The State Water Project

Managed by DWR, the SWP is one of the largest water supply, storage and conveyance, and power systems in the world. The SWP consists of 28 dams and reservoirs, 26 pumping and generating plants, and approximately 600 miles of aqueducts. (Wat. Code, § 12934, subd. (d); AR12:10146; Tab A).[2] The DWR operates the SWP to provide SWP water to 29 local water districts and agencies, known as the State Water Project Contractors or SWP Contractors, for delivery to domestic and agricultural end users. Essentially, DWR is the "wholesale" provider of water to the "retail" agencies which deliver water to end users. The multi-purpose SWP facilities deliver water supplies for agricultural and urban uses throughout the state; provide flood control; generate power; provide recreational opportunities; and enhance habitat for fish and wildlife. Approximately 23 million Californians receive a portion of their drinking water supply from the SWP, and about 750,000 acres of agricultural land, primarily in the San Joaquin Valley, is irrigated with water imported by the SWP. (AR 12:9848, 10120, 10146, 10259-10261, 10364-10366, 10396-10399, 10414; Tab A.)

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2. The Joint Administrative Record, Volumes 1-63, is referred to as AR and citations to the record are to volume and page numbers (i.e., AR XX:XXXX). In accordance with the court's instruction, citations to the record also include a corresponding Tab Number to an appendix with excerpted portions of the record. The appendix is filed concurrently herewith.

The SWP is financed by the California Water Resources Development Bond Act, also known as the Burns-Porter Act. (Wat. Code, § 12930 et seq.) The Burns-Porter Act was passed by the Legislature in 1959 and approved by the voters in November 1960. The Act authorized the issuance of general obligation bonds in the amount of $1.75 billion and appropriated funds to construct the SWP. (Wat. Code, § 12930 et. seq.) The SWP's principal facilities are defined in Water Code section 12934, subdivision (d), and include Oroville and San Luis Dams, Delta facilities, the California Aqueduct and the North and South Bay Aqueduct, and associated pumping and power generation facilities.

The Burns- Porter Act expressly authorizes the State of California to enter into long-term contracts with local water districts and agencies for the sale, delivery, or use of water made available to the SWP in return for payment of a major portion of the capital and operation costs of the SWP. The Metropolitan Water District of Southern California became the first SWP Contractor on November 4, 1960, and its contract served as a prototype for all subsequent long-term water supply contracts. (*Metropolitan Water District v. Marquardt* (1963) 59 Cal. 2d 159, 188.) (AR 12:10259-10261; Tab A.) Castaic, Kern and Wheeler Ridge are also among the SWP Contractors.

Since the Burns-Porter Act was approved in 1960, the Act and SWP contracts have provided the institutional structure supporting the operation and financing of the SWP. (Wat. Code, §§ 11450 et seq; Wat. Code, §§ 12930 et seq.)[3]

Each SWP contract contains provisions for both allocation of the amount of water available each year and costs among the contractors, including repayment of the bonds issued to finance the project. (Wat.Code, § 11455.) The basic premise for financing the SWP is that all costs are paid by those who benefit from the project. Each contract contains a Table A which sets forth the maximum amount of dependable SWP water that DWR agrees to deliver, if available for

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3. Annual SWP management bulletins published by DWR describe in detail the authorization by the California Legislature of the construction of the state water storage and delivery system known as the State Water Project. The court in *PCL* took judicial notice of the annual bulletins. (*PCL v DWR*, supra, 83 Cal. App. 4th. 892, 898 fn.2.) The bulletins included Cal. Dept. Water Resources, Management of the Cal. State Water Project. Bull. No. 132-95 (Nov. 1996) p. xxiii (referred to as "DWR, Bulletin No.") and DWR, Bull. No. 132-93 (Sept. 1994.)

delivery, to each SWP Contractor on an annual basis. DWR and the SWP Contractors also use Table A amounts to serve as the basis for determining the repayment of each SWP Contractor's proportionate share of the financing and maintenance of the SWP facilities.[4] Delivery of the Table A Amount is not assured, but rather provides the basis for proportional allocation of available supplies among the contractors. "Under the SWP, water contractors 'are obligated to pay for their contractual entitlements of water' from the project, 'whether the water is delivered or not.' (Pending Federal Actions (Apr. 1998) 8 Cal. Wat. L. & Policy Rptr. 144.)" (*Planning and Conservation League v. Department of Water Resources* (2000) 83 Cal. App. 4th 892, 899 ("*PCL v. DWR*"). The precise amount of SWP water received in any given year depends on hydrologic conditions and SWP operations. If SWP deliveries have not reached the total of Table A amounts held by all SWP contractors, the actual amount received in any given year by a particular contractor will be a **proportion** of the available water supplies. (AR12:10396-10399; Tab A.)[5]

B. The Monterey Agreement

During the early 1990's, following a seven-year drought, disputes arose among agricultural and urban contractors and DWR about how the limited amount of available supplies of water SWP should be distributed. The disputes arose from the interpretation of Article 18 of the SWP contracts. (RJN, Exh. 2, Notice of Preparation dated January 23, 2003;[6] AR 1: 17, Tab.B.) (*PCL v. DWR* 83 Cal.App. 4th 892, 899-900.)

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4. Prior to the settlement of the case related to *PCL v. DWR* (2000) 83 Cal.App. 4th. 892. ("PCL"), these Table A amounts were referred to as "entitlements." (See Request for Judicial Notice (RJN), Exh. 1 [Amendment No. 19 to CLWA Long Term Water Supply Contract].)

5. Originally, the maximum Table A amounts were anticipated to be a collective total of 4,230,000 acre feet per year by 2020. This number is also referred to as the minimum project yield. As a result of contract amendments in the 1980's and the Monterey Amendment in 1995, discussed infra, the current combined maximum annual Table A amount is 4, 172,686 acre feet. (AR12:9944-9948; 9992-9993: Tab C.) .

6. "Notice of Preparation Of Environmental Impact Report For the Monterey Amendment To The State Water Project Contracts (Including Kern Water Bank Transfer) And Other Contract Amendments And Associated Actions As Part Of A Proposed Settlement Agreement In Planning And Conservation League v. Department of Water Resources."

Specifically, Article 18 of the SWP contracts included two provisions intended to address short-term and permanent shortages. Article 18 (a) directed DWR to reduce deliveries to agricultural contractors by a percentage not to exceed 50 percent in any year in which a shortage occurred due to drought or other temporary outages that reduced Table A amounts up to an aggregate limit of 100 percent in any series of seven years before reducing water deliveries for other purposes. If additional reductions were needed, the contract specified that further reductions would be borne proportionally by all the contractors. Article 18 (b) dealt with permanent shortages and specified that, if a permanent shortage were threatened, DWR would reduce Table A amounts to all contractors until the Table A amount equaled the minimum project yield. These contract provisions are commonly referred to as the "agriculture first" provisions. (*PCL v. DWR, supra*, 83 Cal.App.4th at 900.) (AR3:2324-2544; Tab D.)

In 1994, DWR and certain representatives of the SWP contractors met in Monterey to "search for an answer to a single–but critical–problem in managing the SWP: How to allocate the water supply equitably during times of shortage. (DWR, Bull. No. 132-95, p. 5)." (*PCL v DWR, supra,* 83 Cal.App. 4th 892, 901.) But, "[s]oon after discussions began, the parties determined that the water allocation problem was far too complex to be effectively approached as a single-issue problem. Article 18 negotiations grew into an omnibus revision of the SWP long-term contracts and their administration–an endeavor to update management of the SWP. " (*Ibid.*)

After a series of exhaustive negotiating sessions, an agreement was reached on December 1, 1994 on a broad set of 14 principles, known as the "Monterey Agreement," to settle long-term water allocation disputes and to establish a new water management strategy for the SWP. (AR 1:17, Tab B.)[7] (*Ibid.*) One of the primary goals was to "increase water management flexibility, providing more tools to local water agencies to maximize existing facilities (DWR, Bull. No.

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7. The principles included: transferring control of the Kern Water Bank; providing for permanent sales of water among contractors, providing more flexibility in using certain reservoirs for local use; implementing a simpler program for interruptible water supplies, providing new rules for transportation of non-SWP water to contractors, and providing new rules for storing water outside a contractor's service area; retiring 45,000 afy of two agricultural contractors; voluntarily transferring about 130,000 afy from agricultural to urban contractors. (DWR, Bull. No. 132-95.) (*PCL v DWR, supra,* 83 Cal.App. 4th 892, 901.)

132-95, p. 7.)" (*Ibid.*)

The Monterey Agreement Statement of Principles resolved the allocation controversy by proposing revisions to the SWP contract to eliminate Article 18, the initial agricultural use cutbacks, and specifying that all SWP water was to be allocated in proportion to Table A amounts. The Monterey Agreement also developed measures to facilitate the more effective management of the more limited SWP water supplies anticipated to be available to them in the future. One of these measures provided for the permanent transfer of 130,000 acre feet of Table A amounts from willing agricultural contractors to willing urban contractors.[8] Many of the provisions of the Monterey Agreement, including the ability to make Table A transfers, merely clarified or restated existing provisions in the SWP contracts. The Monterey Agreement provided that the individual SWP contracts could be amended to conform to the Statement of Principles and that the potential environmental impacts from implementing the Monterey Agreement would be evaluated pursuant to the California Environmental Quality Act (CEQA).[9] (RJN, Exh. 2 "NOP"). (See also, *PCL v. DWR, supra*, 83 Cal. App. 4th. 892.)

Accordingly, the Central Coast Water Agency, a joint powers authority of two of the SWP Contractors, acting as lead agency, prepared an environmental impact report (EIR) on the Monterey Agreement. Following certification of the EIR in 1995, DWR and 27 of the 29 SWP Contractors incorporated most of the principles into a contract amendment to their SWP contracts. This contract amendment is commonly referred to as the "Monterey Amendment." (AR1:17; Tab B.) (See also, AR3:2478-2544; Tab D.)

After completion and certification of the Monterey Agreement EIR, PCL (and several other plaintiffs) filed a law suit in Sacramento County superior court, challenging the adequacy of the EIR. In September, 2000, the Third District Court of Appeal in *PCL v. DWR* (2000) 83 Cal. App. 4th. 892 set aside the EIR. The court found that DWR should have been the lead agency

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8. The urban SWP contractors are sometimes referred to as municipal and industrial, or M&I, contractors.

9. Codified at Public Resources Code, section 21000 et seq. The implementing regulations are found at Code of Federal Regulations, title 14, section 15000, et seq., and are commonly referred to as the CEQA Guidelines.

for that statewide project, holding that "DWR, the state agency charged with the statutory responsibility to build, manage, and operate the SWP, clearly retains the principal responsibility to execute amended long-term contracts, to convey the Kern Fan Element and to facilitate the water transfers allowed under the Monterey Amendment." (*PCL v. DWR, supra*, 83 Cal. App. 4th 892, 906.)

C. The Kern-Castaic Transfer

1. The Transfer

Castaic, one of the 29 SWP Contractors entered into a long term water supply contract with DWR on April 30, 1963, which has been amended numerous times. (AR Vol. 3:2324-2544; Tab D.) The original Table A amount in Castaic's SWP contract was 54,000 acre feet. (*Id.*)

Castaic is one of the 27 SWP Contractor's which amended its contract to implement the Monterey Agreement. (Amendment No. 17 to Castaic's SWP contract.) (AR 3:2478-2544; Tab D.) Subsequently, Castaic and real party in interest KCWA, agreed to permanently transfer 41,000 afy of Table A Amount from Wheeler Ridge, a member unit of KCWA, to Castaic. (AR 4:2552-2591; Tab H.) On March 31, 1999, Castaic entered into Amendment No. 18 to its SWP contract with DWR to permanently increase its Table A amount by 41,000 afy, from 54,000 to 95,000 afy. (Amendment 18 to Castaic's SWP contract.) (AR 3:2545-2551; Tab F.) Concurrently, KCWA entered into an amendment to its SWP contract with DWR to decrease its Table A amount by 41,000 afy.[10] (Amendment No. 28 to KCWA's SWP contract.) (AR 51: 40406-40413, Tab G.) Since 1999, DWR has made annual allocations (and determined its proportionate share of allocated costs) to Castaic based on its total Table A amount of 95,000 afy. That means that when the SWP cannot deliver Castaic's Table A amount, the amount delivered is based on 95,000 afy. For example, in May, 2002, the percentage allocation to

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10. Under Articles 15, 41 and 56 of the SWP contract, DWR must approve all delivery of SWP water for storage outside a contractor's service area, the use of the SWP facilities for conveyance of water, and the delivery schedules. (AR 3:2324-2544; Tab D.) The increases and decreases to the contractors' Table A amounts were made "in accordance with" Article 53(a) of the Monterey Amendment. The change, however, was made to Article 6(b), an article from the pre-Monterey amendment contract.

Castaic, as with all other State Water Project Contractors was approximately 65 percent. Thus, Castaic received approximately 65 percent of 95,000 afy. (AR1:685, Tab K.)

2. The *Friends I* and *II* Litigation

Following execution of the agreements necessary to effectuate the 41,000 afy transfer from KCWA to Castaic, Castaic prepared an EIR for the transfer. That EIR was challenged by Friends of the Santa Clara River (Friends) in Los Angeles County superior court. The trial court upheld the EIR and Friends appealed. While the appeal was pending, the Third District Court of Appeal decertified the Monterey Agreement EIR, as discussed above. As a result, the Second District Court of Appeal in *Friends of the Santa Clara River v. Castaic Lake Water Agency* (2002) 95 Cal. App. 4th 1373 ("*Friends I*") set aside the EIR for the permanent transfer of 41,000 acre-feet of Table A Amount solely because it "tiered" off the Monterey Agreement EIR, and remanded the matter to superior court with instructions to issue the writ. (AR 57:44797-44817; Tab P)

On October 25, 2002, in the *Friends I* case, the Los Angeles Superior Court issued a Judgment on Remand, granting the writ of mandate and retaining jurisdiction until "respondent Castaic Lake Water Agency certifies an Environmental Impact Report that complies with the California Environmental Quality Act and is consistent with the views expressed by the Court of Appeal Opinion filed January 10, 2002, Case No. B145283." (AR 58: 44894; Tab Q.) However, the court declined to prohibit Castaic from using the 41,000 acre-feet of additional Table A Amount from the SWP, stating that "[r]espondent will not be prohibited from using the water to which it is entitled, but petitioner may renew its application for such prohibition based upon evidence of the actual use of such additional water for purposes it considers improper." (*Ibid.*) The *Friends* petitioners appealed the Judgment On Remand. On December 1, 2003, in an unpublished decision, the Second District Court of Appeal affirmed the Judgment. (*Friends II.*) (AR58:45122-45140; Tab R.) Nothing in that case prohibits continuing use of the 41,000 afy of Table A water permanently transferred to Castaic in 1999 pending certification of a new EIR. (*Id.*) Similarly, the *PCL v. DWR* court also declined to stay implementation of the Monterey Amendments, including the permanent transfer of 130,000 afy from agricultural contractors to

urban contractors, and transfer of the Kern Fan Element. (*PCL v. DWR, supra*, 83 Cal.App.4th at 925, n. 16.)

D. The Monterey Amendment Settlement Agreement

As discussed above, after the *PCL v. DWR* court found that DWR should have been the lead agency for the Monterey Agreement EIR, the matter was remanded to the trial court, with instructions to issue a writ of mandate vacating the certification of the 1995 EIR and to retain jurisdiction over the mater until DWR, as the lead agency, certifies a new EIR and the superior court determines the EIR meets the substantive requirements of CEQA. (*PCL v. DWR, supra*, 83 Cal. App. 4th 892, 926.) Following the court of appeal's ruling, DWR, the SWP Contractors, and the *PCL* plaintiffs engaged in settlement negotiations, which culminated in a Settlement Agreement on May 5, 2003 that was approved by the court on June 6, 2003. (AR 63:48540-48621; Tab E.)

The Settlement Agreement provides a way for the SWP Contractors and *PCL* plaintiffs to advise DWR in the preparation of the new EIR (sometimes referred to as the Monterey Plus EIR or Monterey Amendment EIR) and commits DWR to a number of actions, including deleting reference to the term "entitlement" from the SWP contracts, developing a reliability report to be published every two years, and providing more opportunity for public involvement in SWP activities. (AR1:17-18; Tab B; AR 63:48540-48670, Tab E.) (RJN, Exh. 2("NOP").)

The Settlement Agreement provides that the Monterey Amendment's provisions remain in operation while DWR prepares the EIR.[11] Under the Settlement Agreement, DWR will "evaluate the potential environmental impacts of all changes to SWP operations incorporated in the Monterey Amendment and any additional provisions set forth in the Settlement Agreement." (AR1:18; Tab B; AR63:48540-48621; see also AR 63:48556, Tab E.) Notably, the Settlement Agreement does not change the substance of the Monterey Amendment, but addresses the process by which the new Monterey Amendment EIR will be prepared. (AR1:18, Tab B.)

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11. (RJN, Exh. 2.) A Joint Statement On The Monterey Amendments Litigation was prepared on February 27, 2003. (AR63:48628-48629; Tab I.)

The Settlement Agreement recognizes that a certain amount of the total 130,000 acre feet, already transferred prior to 2002, had completed their environmental analysis pursuant to CEQA, which analysis had not been subject to judicial challenge. These transfers are deemed "final." These transfers are identified in the Settlement Agreement as Attachment E Transfers. (AR63: 48540-48621; Tab E.)[12] With respect to the 41,000 afy Kern-Castaic transfer, the Settlement Agreement provides "the Parties recognize that such water transfer is subject to pending litigation in the Los Angeles Superior Court [i.e., *Friends I*, described above]. . . . The parties agree that jurisdiction with respect to that litigation should remain in that court and that nothing in this Settlement Agreement is intended to predispose the remedies or other actions that may occur in that pending litigation." (AR 63:48540-48621; Tab E.)[13]

The Settlement Agreement requires an analysis of the potential environmental effects relating to both the Attachment E Transfers and the Kern-Castaic transfer, "in each case as actions that related to the potential environmental impacts of approving the Monterey Amendments." (AR 63:48540-48621; Tab E.)[14] It did not make any distinction between the transfers considered "final" and the Kern-Castaic transfer in terms of how the EIR should address potential environmental impacts arising from the transfers.

E. The Castaic Lake Water Agency Supplemental Water Project Transfer of 41,000 Acre-Feet of State Water Project Table A Amount EIR (Kern-Castaic Transfer)

1. Description of Project

Castaic's project, the Kern-Castaic Transfer (or Project), is "the transfer of an existing 41,000 AF of SWP Table A Amount from KCWA and its member unit, Wheeler Ridge, to Castaic. The Transfer also includes the use of SWP facilities from northern California to Los Angeles County for the delivery of SWP to the Castaic service areas, and use of this water within the Castaic service area." (AR 1:15-16; Tab B.) The Transfer is "to authorize CLWA to use

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12. Article III.D.

13. Article III.E.

14. Article III.C.4

water delivered from the 41,000 AF of SWP Table A Amount for water demands of existing users and a portion of future water demand from anticipated growth within the CLWA service area." (AR 1:16; Tab B.)

In the preface to its EIR, Castaic explains that the Kern-Castaic Transfer was contractually completed in 1999, and imported water supply associated with the Transfer became available for use by Castaic starting in January 2000. (AR 1:13; Tab B.) Castaic states that "to the extent that land use decision-makers utilize or rely on this EIR to predict future CLWA water supplies, they are cautioned that although CLWA will implement all feasible measures to firm up its water supplies [parenthetical omitted], past water deliveries are not a guarantee of future delivery rates." (AR 1:13; Tab B.)

Castaic identifies itself as the "lead agency for preparation of the EIR and thus will evaluate, and if appropriate, certify this EIR, make CEQA findings, and approve the Project. (AR 1:13; Tab B.) Castaic "has the principal responsibility for carrying out and implementing the Project because 1) a substantial portion of the Project occurs within CLWA's jurisdiction and substantially affects CLWA; 2) CLWA has been the lead proponent of the Project and assumed the primary task of effectuating the SWP water supply contract amendment; 3) CLWA has the expertise to implement the Project; and 4) the Project, although requiring the use of SWP facilities, would involve transfers only between three agencies (CLWA, KCWA, and WRMWSD) within a limited geographic area and does not implicate the entire statewide water rights or supply framework." (AR 1:14; Tab B.) Castaic identifies DWR, KCWA, and Wheeler Ridge as responsible agencies under CEQA Guidelines section 15381 because they are public agencies other than the lead agency that have responsibility for carrying out or approving the project. (AR 1:14; Tab B.)

2. DWR's Comments As A Responsible Agency

DWR, acting as a responsible agency, reviewed the documentation in the record. On July 30, 2004, DWR submitted comments and found that the EIR "adequately and thoroughly discusses the proposed project and its impacts. Specifically, DWR stated:

> The DEIR discusses the effects of the project on the environment and State Water Project (SWP) and uses baseline conditions consistent with those being considered for inclusion in the DEIR. DWR is currently preparing for the Monterey Amendment to the State Water Project Contracts (including Kern Water Bank Transfer and Other Contract Amendments and Associated Actions as Part of a Proposed Settlement Agreement in Planning and Conservation League v. Department of Water Resources...referred to hereafter as "Monterey Plus." The DEIR provides a good discussion of the relationship between the 41,000 acre-feet Table A transfer and the current Monterey Plus process. DWR will analyze the effects of all Table A transfers that were part of the Monterey Amendment to the SWP contracts in the Monterey Plus EIR. The proposed CLWA 41,000 acre-feet Table A transfer will be included in this analysis.
>
> One of the tools being used by DWR to assess potential impacts associated with these Table A transfers is the CALSIM II model. DWR acknowledges that CLWA used an earlier model, DWRSIM, to analyze the effect of the 41,000 acre-feet transfer; however, DWR will use the next generation model, CALSIM II, to assess potential impacts associated with all Table A transfers in its DEIR for Monterey Plus. The use of CALSIM II may cause slight changes in results, which may lead DWR to different conclusions than the conclusions made by Castaic Lake Water Agency in the current DEIR.
>
> As final comments, DWR notes that this DEIR adequately discusses the reliability of the SWP, pre-and post Monterey Amendment conditions, future conditions and SWP operations.
>
> Coordination between DWR and CLWA is essential to produce accurate environmental documentation that leads to informed decision-making and full public disclosure as the California Environmental Quality Act mandates. DWR appreciates inclusion and consultation in the early stages of preparation of this DEIR. Please ensure that DWR's Division of Environmental Services and SWP Analysis Office receive copies of the Final EIR.

(AR 1:564-565; Tab N.)

In its Responses to Comments, Castaic notes that most of DWR's comments required no text revisions to the EIR. (AR 2:961-964; Tab M.) Castaic stated that "DWR, as a responsible agency for the [Draft]EIR and as lead agency for the new Monterey Amendment Program EIR, . . . refutes comments by members of the public which speculate that the DEIR will be inconsistent with the new Monterey Amendment Program EIR or that the DEIR fails to consider Project environmental effects which will be considered in the Monterey Amendment EIR." (AR 2:961; Tab M.) The Final EIR further states that "DWR's evidence refutes comments from other parties that speculate that the DEIR fails to adequately discuss SWP operations, SWP reliability, pre-and post Monterey Amendment conditions, and future conditions, and that speculate that such DEIR discussions are contrary to the discussions anticipated for the Monterey Amendment

EIR." (AR 2: 961-964; Tab M.) The Final EIR concludes that "DWR's evidence refutes comments from other parties that speculate that, without DWR as the lead agency, the DEIR will not have the benefit of DWR statewide authority and expertise. As requested, CLWA will provide to DWR's Division of Environmental Services and to DWR's SWP Analysis Office copies of the FEIR for the Project." (AR2:961-964; Tab M.)

In its Responses to Comments, Castaic explains that the agency used the DWRSIM model studies to assess potential future impacts of the Project because at the time the supply analyses were begun for the DEIR, no CALSIM II studies were publicly available. Moreover, Castaic concluded that the use of DWRSIM did not result in significantly different delivery reliability results than would have been obtained using the CALSIM II model. (AR1:961-964; Tab M.)

F. Project Description of the Monterey Amendment EIR

By contrast with the local nature of the transfer of 41,000 afy to Castaic's service area, the objective of the Monterey Amendment is to improve the overall management of SWP supplies and operations through contract amendments and associated actions as a part of the proposed settlement agreement in *PCL v. DWR*. (RJN, Exh. 2(NOP).) DWR's Monterey Amendment EIR will evaluate: "(1) in accordance with the court decision, the potential environmental effects of implementing the Monterey Amendment to the SWP water contracts with respect to allocation of SWP supplies among contractors, certain use of SWP facilities and other SWP operational matters to include financial matters as they may impact physical changes to the environment (Section 15131 of the CEQA guidelines); and (2) the potential environmental effects of additional actions which may be implemented through the settlement agreement." (RJN, Exh. 2.)

As described in the Notice of Preparation for the Monterey Amendment EIR, DWR will evaluate potential environmental impacts from, among other things: (1) changing the allocation of "all water supplies in proportion to each contractor's contract amount (Table A amounts)," and eliminating Articles 18 (a) and (b) from the SWP contracts; (2) permanently retiring 45,000 afy of agricultural Table A amounts, permanently transferring 130,000 afy from agricultural contractors to urban contractors, and transferring the Kern Fan Element to local control; (3)

enabling more efficient use of existing SWP facilities, providing for temporary groundwater storage of SWP water outside a contractor's service area, expanding contractor rights to store water in San Luis Reservoir, and specifying contractor rights to flexible storage; (4) using SWP funds to establish an SWP operating reserve and establishing a water rate management program; and (5) establishing a watershed forum in Plumas, implementing new procedures for disclosure of SWP delivery capabilities and provide funding to plaintiffs for various purposes. (NOP, RJN Exhibit 2.)

The Notice of Preparation also provides that "the location of the proposed project includes the SWP and service areas. The proposed project area is the entire SWP service area (including the Kern Water Bank lands) and the SWP contractors' service areas in Figure 1. In addition, depending on SWP Contractor actions under the proposed project, the area of influence could extend beyond the service areas." (RJN, Exh. 2.)

III.

STATUTORY AND REGULATORY FRAMEWORK

CEQA was enacted in 1970 for the primary purpose of informing the public and public agency decision makers about the environmental consequences of the public agency's actions. (See e.g. Pub. Resources Code, § 21000, 21001; *Friends of Mammoth v. Board of Supervisors* (1972) 8 Cal.3d 247, 254-256; *Mountain Lion Foundation v. Fish and Game Commission* (1997) 16 Cal.4th 105, 112.) CEQA applies to all public agencies in California "at all levels," including "local agencies," "regional agencies," and "state agencies." (Pub. Resources Code, §§ 21000, subd. (g).) Any time a public agency determines to approve a project, it is required to undertake review of the project to determine what impact, if any, the project will have on the environment. "It is state policy in California that 'the long-standing protection of the environment . . . shall be the guiding criterion in public decisions.'" (*Davidon Homes v. City of San Jose* (1997) 54 Cal.App.4th 106, 112 (quoting Pub. Resources Code, § 21001, subd. (d).)

The fundamental purpose of CEQA is to "'inform the public and responsible officials of the environmental consequences of their decisions before they are made.' [Citations.] The CEQA

EIR process 'protects not only the environment but also informed self-government.'" (*PCL v. DWR*, *supra*, 83 Cal.App.4th 892, 916, quoting *Stanislaus Natural Heritage Project v. County of Stanislaus* (1996) 48 Cal.App.4th 182, 195 [citations omitted in original].) The document primarily used to educate and inform the decision makers of potentially significant impact on the environment is the environmental impact report, or EIR. CEQA does not mandate that an EIR be perfect, merely that it make a good faith effort at full disclosure. (*Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 711-712.) Rather, on review, courts look for adequacy, completeness, and a good faith effort at full disclosure. (*Ibid.*, *Berkeley Kepp Jets Over the Bay Committee v. Board of Port Commissioners* (2001) 91 Cal.App.4th 1344, 1355.) Thus, an EIR will be upheld if the EIR is sufficient as an informational document; an abuse of discretion occurs only if the EIR fails to include relevant information which precludes informed decision making and informed public participation. (*Del Mar Terrace Conservancy, Inc. v. City Council* (1992) 10 Cal.App.4th 712, 729-230 (disapproved on other grounds in *Western States Petroleum Assoc. v. Superior Court* (1995) 9 Cal.4th 559, 570, fn. 2).)

IV.

STANDARD OF REVIEW

One of the fundamental principles of judicial review under CEQA is that the substantial evidence test applies to review of an agency's decision. In reviewing an agency's determination under CEQA, a court must determine whether the agency prejudicially abused its discretion. (Pub. Res. Code § 21168.5; 21168.) Abuse of discretion is established if the agency has not proceeded in a manner required by law or if the determination is not supported by substantial evidence. (Pub. Res. Code § 21168.5; *Western States Petroleum Assn. v. Superior Court* (1995) 9 Cal. 4th 559, 573.) All potential violations of CEQA are subject to this standard. Because the guidelines set forth the standards for exercising discretion with respect to lead agency decisions, the Court should afford "great weight to the Guidelines except when a provision is clearly unauthorized or erroneous under CEQA." *Laurel Heights Improvement Assn. v. Regents of Univ. of Cal.* (1988) 47 Cal. 3d 376, 391, fn. 2 citing *Rural Landowners Assn. v. City Council* (1983)

143 Cal. App. 3d 1013, 1022.) The court "may not set aside an agency's approval of an EIR on the ground that an opposite conclusion would have been equally or more reasonable." (*Rio Vista Farm Bureau Center v. County of Solano* (1992) 5 Cal.App.4th 351, 369, quoting *Citizens of Goleta Valley v. Board of Supervisors* (1992) 52 Cal.3d 553, 564.)

To the extent that petitioners have raised the issue of whether Castaic is the proper lead agency for the Castaic 2004 EIR at this time (i.e., before DWR has finalized the Monterey Amendment EIR) , the propriety of a lead agency designation is a question of law that the court reviews *de novo*. (*PCL v. DWR*, supra, 83 Cal. App. 4th at pp. 905-906.) Even utilizing the *de novo* standard of review requires "a critical consideration, in a factual context, of legal principles and their underlying values." (*Harustak v. Wilkins* (2000) 84 Cal. App. 4th 208, 212.) In the factual context of this case, the facts support an inference that this project is local, that Castaic is not precluded from preparing a stand-alone EIR, and that the project is to principally be carried out and approved by Castaic, rather than DWR.

V.

ARGUMENT

A. The Monterey Amendment Project EIR and the Kern-Castaic Transfer Project EIR Are Two Separate Projects

The petitioners unfortunately have conflated two separate projects in their challenge to the adequacy of Castaic's EIR for the Kern-Castaic transfer. While they appear to appreciate that the Monterey Amendment and Kern-Castaic Transfer are separate projects, petitioners nonetheless seem confused about the scope of analysis CEQA requires for each project.

1. The Monterey Amendment EIR Looks At The Broad Impacts of Permanently Transferring 130,000 Acre-Feet of Water from Agricultural Uses to Urban Uses.

As an initial matter, DWR does not dispute that it is the designated lead agency for analyzing potential environmental impacts from permanently transferring 130,000 acre-feet of water from agricultural contractors to urban contractors under the Monterey Amendment. DWR has not delegated that responsibility to any other agency.

As discussed above, the Monterey Amendment is described in the NOP issued by DWR on

January 23, 2003. (RJN, Exh. 2.) The project description states that the "basic objective of the proposed project is to improve the management of SWP supplies and operations through the Monterey Amendment and other contract amendments and associated actions as part of" the Settlement Agreement. The NOP states that the Monterey Amendment EIR will look at, among many other things, changing the allocation of "*all* water supplies," permanently retiring 45,000 afy of agricultural water, permanently transferring 130,000 afy among several SWP Contractors, establishing more efficient use of all the SWP facilities, and using SWP funds to establish an operating reserve and water rate management program for the entire SWP. The proposed project area is the *entire* SWP service area, which includes Castaic, and notes that the area of influence could extend beyond those service areas. (RJN, Exh. 2.)

As can be seen, the focus of the Monterey Amendment EIR is on the potential environmental impacts of the Monterey Amendment and Settlement Agreement in a very broad sense. This includes, among everything else, evaluating the potential environmental impacts of permanently transferring 130,000 acre-feet of water from agricultural to urban contractors and deleting from the SWP contracts the "agriculture first" provisions. As part of the analysis of the 130,000 acre-foot transfer, DWR will look (and is looking) at the individual transfers as they fit in the entirety of the Monterey Amendment to determine potential impacts on the environment. To that extent, the Kern-Castaic Transfer is "part of the 'overall larger scheme'" of the Monterey Amendment EIR. (*Friends I, supra,* 95 Cal.App.4th at 1384; POB at 4:4.)

However, as evidenced by the Settlement Agreement, it has never been the intent for DWR to consider each transfer individually. The Settlement Agreement provides that DWR include in its EIR an "analysis of the potential environmental effects relating to (a) the Attachment E Transfers and (b) the Kern-Castaic Transfer, in each case as actions that relate to the potential environmental impacts of approving the Monterey Amendments." (AR63:048558, Tab E.) The *only* distinction between the Attachment E Transfers and the Kern-Castaic Transfer is that, at the time the Settlement Agreement was reached, the EIR for the Kern-Castaic Transfer was the

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subject of a judicial challenge that had yet to be resolved.[15] (See, in particular, Article III.D and Article III.E of the Settlement Agreement, AR63:48559; Tab E.) Specifically, the parties merely acknowledged "that such water transfer is subject to pending litigation in the Los Angeles County Superior Court and agree that jurisdiction with respect to that litigation should remain in that court and that nothing in this Settlement Agreement is intended to predispose the remedies or other actions that may occur in that pending litigation." (AR63: 048559; Tab E.)[16]

Most important, for purposes of considering the potential environmental impacts from the transfers, the Settlement Agreement does *not* differentiate between the Attachment E Transfers and the Kern-Castaic Transfer. The Settlement Agreement certainly does not conclude that the Kern-Castaic Transfer is a "major component" of the Monterey Amendments, such that an environmental review by Castaic would be precluded until completion of the Monterey Amendment EIR. (POB, p. 1.) The Settlement Agreement merely provides that DWR will analyze those transfers "in each case as actions that relate to the potential environmental impacts of approving the Monterey Amendment." (AR 048558.)[17]

2. Castaic's 2004 EIR Looks at the Potential Environmental Impacts of Transferring 41,000 AF of Water.

Whereas the Monterey Amendment EIR will consider potential environmental impacts resulting from the transfers taken as a whole, the Kern-Castaic Transfer EIR looks at the potential

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15. DWR considers the Kern-Castaic Transfer to be final to the extent that the contracts necessary to effectuate the Transfer have been executed and the parties to the Settlement Agreement acknowledge that the Monterey Amendment, including the transfers approved thereunder, may be implemented pending the completion of the EIR. (See Article II of the Settlement Agreement, AR 63:48556; Tab E.) This Court similarly has found the contracts between DWR and the SWP Contractors to be valid contracts in its ruling on the demurrer filed on June 27, 2006. (page 7 of the Ruling.)

16. See also, DWR's letter dated June 17, 2004 confirming that DWR's treatment of the transfer of Table A amounts from Kern County Water Agency to Castaic Lake Water Agency will be governed by the Settlement Agreement. (AR 1:617; Tab N.)

17. DWR takes the position that the issue of lead agency can be resolved without interpreting the Settlement Agreement. If the Court determines otherwise, jurisdiction over the Settlement Agreement (which is a Court Order), including interpretation of any provisions, remains with the Sacramento Court. (AR63:48624:48627; Tab E.)

environmental impacts within its service area. As described in the NOP for the Kern-Castaic Transfer, the Project "is the transfer of 41,000 acre-feet (AF) of State Water Project (SWP) Table A amount from Kern County Water Agency (KCWA), and its member district the Wheeler Ridge-Maricopa Water Storage District" to Castaic, noticeably different from the project description for the Monterey Amendment EIR. (AR 1:350; Tab O.) In the Introduction, the 2004 EIR states that "[t]he Project is intended to meet water demands of existing users and a portion of future water demand from anticipated growth within the CLWA service area." (AR 1:35; Tab O.) Thus, the Kern-Castaic Transfer is inherently a local project and the EIR is looking at inherently local issues.

In addition, the 2004 EIR undeniably looks at broader potential impacts from the Project, but only to the extent the Project relies on SWP conveyance facilities. In other words, the 2004 EIR analyzes potential impacts to the environment resulting from the Project's reliance on the SWP. Thus, for example, the 2004 EIR notes that it will use SWP facilities, but concludes that the Project will not have a direct or indirect impact on agricultural resources. (AR 1:74; Tab O.) The 2004 EIR further notes that, while the Project will require a modest increase in the amount of electricity to operate the SWP pumping facilities, the SWP already is required to comply with "all ambient air quality standards and applicable air permit conditions" which have resulted in "minimal air emissions." (AR 1:84; Tab O.) Therefore, the 2004 EIR concludes, "implementation of the Project would have a less than significant impact to air quality as a result of increased pumping . . .." (*Id.*) As a further example, the 2004 EIR notes that the Project "would result in a slight increase in the amount of water transported in the California Aqueduct from southern Kern County to Castaic Lake" but that this change would not have an adverse impact on biological resources because it "would fall within the range of fluctuations present under both current and historic operations." (AR1:97; Tab O.) (See also AR1:103 [analysis of potential impacts on cultural resources]; AR1:105 [analysis of potential impacts on geology, soils and mineral resources]; AR1:122-000123 [analysis of potential impacts on noise]; Tab O.)

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3. The 2004 EIR Analysis of Impacts Resulting from the Project's Reliance on the SWP is not Tantamount to an Analysis of the Statewide Impacts of the Monterey Amendment, Nor Does it Usurp DWR's Role

Petitioners appear to believe that, because Castaic's 2004 EIR looks beyond strictly local impacts to the potential impacts of the 41,000 afy transfer on the environment resulting from its reliance on the SWP facilities, this somehow translates into Castaic's usurping DWR's responsibility for analyzing the broad environmental impacts of the Monterey Amendment, and/or that DWR's analysis of the potential environmental impacts from the entire Monterey Amendment is somehow compromised. This concern, however, is unsupported by case law, statutory law, the administrative record, and common sense.

DWR's role as lead agency for the Monterey Amendment EIR is not disputed and, as petitioner PCL is well aware, DWR currently is in the process of preparing that EIR. The Monterey Amendment EIR will look (and is looking) at the broad, statewide impacts of, among other things, permanently transferring 130,000 afy from agricultural contractors to urban contractors, whereas Castaic's "statewide" analysis is simply a proper analysis of the extent of potential impacts from its Project. Castaic's Project relies on the SWP conveyance facilities; therefore, it was entirely proper for Castaic to look at the potential environmental impacts of the Project from its reliance on those facilities.

As discussed above, the Monterey Amendment EIR will look at the Kern-Castaic Transfer along with all the other transfers, to evaluate potential environmental impacts from the 130,000 afy transfer from agricultural contractors to urban contractors. Quite simply, the contract amendments that effectuated the transfers under the Monterey Amendment do not preclude DWR in its choice of alternatives in the Monterey Amendment EIR or mitigation measures that may need to be imposed to reduce significant impacts to less than significant. Any contractual agreement to transfer SWP water from one contractor to another is always subject to possible changes or curtailments. For example, if water quality standards for fish reduce the amount of water that can be exported, it will affect the transfers. Likewise, it is possible that decisions made as a result of the Monterey Amendment EIR will affect the transfers. The choice of alternatives or mitigation measures could affect the reliability of the water delivered under the

transfers, but the transfers themselves do not circumscribe the consideration of alternatives or mitigation measures. This holds true equally for the Attachment E Transfers, whose environmental analysis has been completed, and the Kern-Castaic Transfer. Thus, Castaic has not usurped, and DWR has not delegated, DWR's role as lead agency in evaluating the Kern-Castaic Transfer as part of the Monterey Amendment.[18]

However, solely for the sake of discussion, even if Castaic had taken upon itself to look at potential impacts from implementation of the Monterey Amendment, this does not support a conclusion that Castaic has usurped DWR's lead agency role or that DWR has delegated its lead agency role to Castaic.

The EIR is an informational document. (*PCL v. DWR, supra*, 83 Cal.App.4th at 816.) The goal is to ensure that the public and decision maker have *enough* information on which to base their decisions. Nothing in case law or CEQA even hints at such a thing as *too much* information. Therefore, even if Castaic had engaged in a full-scale analysis of the Monterey Amendment, as long as its EIR provides enough information to the decision makers and the public regarding potential impacts to the environment from its Project, the EIR is adequate.

Further, even if Castaic had engaged in a full-scale analysis of the Monterey Amendment as part of its environmental analysis for its local transfer, or simply had conducted the environmental analysis of the Kern-Castaic Transfer that might more properly belong in the

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18. While petitioners argue that DWR "could . . . fundamentally change the disposition of the transfer and the assessment of its environmental consequences," there is nothing in the record other than petitioners' comments supporting that view. (POB, pgs 1-2.) Moreover, DWR specifically acknowledges in its comments to Castaic's 2004 EIR that "the use of CALSIM II may cause slight changes in results, which may lead DWR to different conclusions than the conclusions made by Castaic Lake Water Agency in the current DEIR." (AR1:564; Tab N.) However, this statement certainly does not suggest the dire consequences set forth in Petitioners' Opening Brief. Nor does it suggest that Castaic engaged in "rogue actions" or that there is a requirement in the Settlement Agreement for DWR's "prerequisite review." (POB, pgs 1-2) It is also important to note that PCL, as a party to *PCL v. DWR*, is on the "EIR Committee" identified in the Settlement Agreement. (AR63:48557; Tab E.) That section provides that "to effectuate the desire of the Parties that the New EIR be the product of a cooperative effort and comply with the requirements of CEQA and the direction of the courts in the underlying litigation, the EIR Committee has been formed to provide advice and recommendations to DWR in connection with the preparation of the draft and final versions of the New EIR." (AR63: 148557; Tab E.)

Monterey Amendment EIR, that would not preclude or prohibit DWR from performing its own analysis in the Monterey Amendment EIR. In fact, CEQA encourages reliance on other EIRs where feasible. (CEQA Guidelines, § 15153.) Thus, DWR could even rely on the Castaic EIR and incorporate it by reference, without abdicating its responsibilities as lead agency for the Monterey Amendment.[19]

4. Castaic's Project is Related to, but Independent of, the Monterey Amendment.

Although the Kern-Castaic Transfer is unquestionably related to the Monterey Amendment, insofar as it stems from the principles articulated in the Monterey Agreement regarding the allocation of water between agricultural contractors and urban contractors, it is essentially an independent project that affects users within Castaic's service area.

Castaic's decision to proceed with an EIR for it's local project before the Monterey Amendment EIR was completed is supported by case law. *Del Mar Terrace Conservancy, Inc. v. City Council* (1992) 10 Cal.App.4th 712 (disapproved on other grounds in *Western States Petroleum Assoc. v. Superior Court* (1995) 9 Cal.4th 559, 570, fn. 2) provides a close analogy. This case suggests that where a proposed site-specific project is independently justified, it is appropriate to view it as distinct and separate from a larger, albeit related, project.

In *Del Mar Terrace Conservancy*, a city was pursuing a 1.8 mile road widening project on a portion of State Route 56 in advance of an anticipated larger project involving the entire State Route 56 corridor. (*Del Mar Terrace Conservancy, supra*, 10 Cal.App.4th at 712, 721, 729.) The appellants claimed the city improperly piecemealed the 1.8 mile project from the larger corridor project. (*Id.* at pp. 721 and 729.) The Court disagreed, relying on the "independent utility" test in the National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA).[20]

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19. This discussion is purely for the sake of argument and it should be noted that DWR does not intend to rely on Castaic's EIR for any portion of the Monterey Amendment EIR.

20. Because CEQA is modeled on NEPA, "California courts have consistently treated judicial and administrative interpretation of [NEPA] as persuasive authority in interpreting CEQA." *Del Mar Terrace Conservancy, supra*, 10 Cal.App.4th at p. 732.

Due to the independent utility of the local portion of the road project, and the fact that the local project did not irretrievably commit resources to the entire road corridor, the Court found it was not necessary for the lead agency to put the local road project on hold, and wrap it into the EIR for the larger road corridor project. (*Id.* at pp. 732-735.) Thus, the Court found that the local road project could proceed ahead of the larger project. (*Ibid.*) The two projects, while related, were separate.

A similar situation exists here. The Kern-Castaic Transfer, while made possible by the Monterey Amendment, actually was contemplated much earlier as part of the Capital Program and Water Plan, including Acquisition of Supplemental Water and of a Proposed Second Plant Site Final EIR, as described in Castaic's 2004 EIR. (AR 1:35-36; Tab O.) It is important to keep in mind that the Monterey Amendment, allowing the permanent transfers from agricultural contractors to urban contractors, was voluntary. In other words, although the Monterey Amendment implemented the principles of the Monterey Agreement and DWR agreed to allow the transfers, none of the SWP contractors was obligated to amend its contract, as evidenced by the two contractors who opted not to enter into the Monterey Amendment. Each of the SWP Contractors always is entitled to amend its own contract, pursuant to Article 41 of their SWP contracts. (AR 3:2356; Tab D.) Thus, the Kern-Castaic Transfer could have occurred without the Monterey Amendment as long as the transferring contractors and DWR agreed. The issue is whether Castaic adequately disclosed the potential environmental impacts from a non-Monterey Amendment transfer.

Insofar as the Kern-Castaic Transfer did occur as part of the Monterey Amendment, Castaic's EIR does not preclude DWR from considering alternatives or mitigation measures in its own EIR for the Monterey Amendment. Provided Castaic's EIR adequately discloses potential impacts on delivery reliability, there is no reason Castaic should not proceed with its EIR before DWR.

Evidence in the record indicates Castaic thoroughly considered the question of reliability. As an initial matter, the whole purpose of the Monterey Amendment is to improve reliability to all SWP Contractors by transferring more water to urban contractors and eliminating the

"agriculture first" provisions. However, Castaic also acknowledges in its EIR that "annual allocations of SWP water made by DWR are based on that year's hydrologic conditions, the amount of water in storage in the SWP system, and Contractors' requests for SWP supplies." (AR1:16; Tab B.) As discussed above, Castaic further cautions land-use decision-makers relying on Castaic's EIR that "although CLWA will implement all feasible measures to firm up its water supplies . . ., past water deliveries are not a guarantee of future delivery rates" and directs the reader to specific sections dealing with water supply reliability. (AR 1:35; Tab O.) Thus, as section 1.3.1, Castaic notes that "[p]lanning for an adequate water supply to meet demands requires consideration of the reliability of SWP supplies, because historical and statistical analysis indicate that the full contracted Table A Amount will not be available for delivery to the SWP Contractors in some years. While CLWA's contract with DWR sets the specific maximum of CLWA's SWP Table A Amount, the amount of SWP water actually available for delivery to CLWA and other SWP Contractor agencies varies from year to year depending on hydrology, the amount of water in storage, the operational constraints and requirements imposed by regulatory agencies to meet environmental needs, the amount of water requested by other SWP Contractors, climatic conditions, and other factors." (AR 1:41; Tab O) (See also section 2.3 [AR 1:49-50], section 3.0 [AR 1:51-62], and Chapter 4 [AR 1:207-224]; Tab O.) As noted above, DWR in its comment letter on the Draft EIR concluded that "this DEIR adequately discusses the reliability of the SWP, pre-and post Monterey Amendment conditions, future conditions and SWP operations." (AR 1:564-565; Tab N.)

Because Castaic's EIR adequately discusses water supply reliability and DWR is not foreclosed by Castaic's EIR from considering alternatives or mitigation measures that may affect reliability, it was not improper for Castaic to complete its EIR before DWR had completed the EIR for the Monterey Amendment.

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B. Castaic Lake Water Agency Correctly Assumed the Duties of "Lead Agency" Pursuant to CEQA Statutes and Guidelines[21]

The lead agency under CEQA is "the public agency which has the *principal* responsibility for carrying out or approving a project which may have a significant effect upon the environment." (Pub. Res. Code § 21067 [emphasis added].) (*Planning and Conservation League v. Dept. of Water Res.* (2000) 83 Cal. App. 4th 892, 904; *City of Redding v. Shasta County Local Agency Formation Comm.* (1989) 209 Cal. App. 3d 1169, 1176); *City of Sacramento v. State Water Resources Control Board* (1992) 2 Cal. App. 4th 960, 973 ["best position to make such an assessment"].) Petitioners have failed to show that DWR is the public agency which has the principal responsibility for carrying out the Kern-Castaic Transfer. Instead, Castaic is the proper lead agency because, based upon the record, Castaic developed and is implementing the project.

1. Castaic Is The Public Agency Which Has The Principal Responsibility For Carrying Out Its Project

Castaic, in developing and implementing the project, correctly assumed the role of lead agency. Castaic was in the best position to assess its own water needs and demands in its service area, determine how to manage its various water supplies, including local supplies and imported SWP supplies to meet those demands, and how to weigh those demands against potential environmental impacts.

Castaic is the public agency with the principle responsibility to ensure that water available to it is managed in a way that is most beneficial to the water users in its service area. Castaic was created in 1962 to "...acquire water and water rights, including, but not limited to water from the

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21. This Court noted in its ruling on the Motion for Legal Determination that "Petitioners are bound by a concession in their briefs that Castaic may act as lead agency *at some point* for the EIR on the Kern water transfer." The court further stated that "[t]his concession is entirely consistent with the above [Petitioners'] argument that Castaic can act as lead agent on the Kern water transfer EIR tiered off a program EIR, but cannot do so for the Kern transfer without tiering off a program EIR." (page 7, fn.4.) To the extent that petitioners argue that DWR is the proper lead agency for this transfer, the following arguments are made to support DWR's position that Castaic, rather than DWR, is the proper lead agency *at any time* for this local project.

State of California under the State Water Resources Development system, and provide, sell, and deliver that water at wholesale only, of municipal, industrial, domestic, and other purposes, through a transmission system to be acquired or constructed by the agency." (See Castaic Lake Water Agency Law, Appendix 103 to the California Water Code section 103-115.) As such, Castaic has the unique responsibility to determine the water needs and demands in its service area and to take action to manage its water resources to meet those demands.

In determining how to proceed under CEQA, the CEQA Guidelines provide guidance by which the proper lead agency is determined *by the entities involved in the project*. Under CEQA Guidelines section 15051, subdivision (a), the criteria is very specific- "When two or more public agencies will be *involved* with a project, the determination of which agency will be the Lead Agency shall be governed by the following criteria: (a) If the project will be *carried out* by a public agency, that agency shall be the Lead Agency even if the project would be located within the jurisdiction of another public agency." (Emphasis added.) Guidelines section 15050, subdivision (a), provides: "Where a project is to be carried out or approved by more than one public agency, one public agency shall be responsible for preparing an EIR or negative declaration for the project. This agency shall be called the lead agency."

Under the facts presented in the administrative record, Castaic has principal responsibility for carrying out the project and is not precluded from proceeding ahead of DWR. Castaic is the proper lead agency because "1) a substantial portion of the Project occurs within CLWA's jurisdiction and substantially affects CLWA; 2) CLWA has been the lead proponent of the Project and has assumed the primary task of effectuating the SWP water supply contract amendment; 3) CLWA has the expertise to implement the Project; and 4) the Project, although requiring the use of SWP facilities, would involve transfers only between three agencies (CLWA, KCWA, and WRMWSD) within a limited geographic area and does not implicate the entire statewide water rights or supply framework." (AR 1:36: Tab O.) While DWR has an overall interest in promoting effective water management on a statewide basis, and will analyze the environmental impacts from the Kern-Castaic Transfer in the context of analyzing the impacts of all the actions required in the Monterey Amendments and the Monterey Settlement, including the

130,000 afy permanent transfer, it is not the agency with the principal responsibility to initiate or carry out a particular local project such as the transfer of 41,000 acre-feet between Castaic, KCWA and Wheeler Ridge.[22]

2. Castaic Was The Proper Lead Agency Because Water Supply Planning And Management In California is Within the Jurisdiction of Local Agencies and Is the Principal Responsibility of Local Agencies

The appropriateness of Castaic acting as lead agency is also demonstrated by a review of water supply and management in California and the respective roles of the State and local agencies in water management. Under California law, cities and counties–not the State–are responsible for and have authority over local land use planning.

California's water management is defined by the particular hydrologic, geologic, legal and institutional constraints applicable to each region. The SWP was not intended to serve as the exclusive source of water for any of the 29 contractors, but rather it was state policy that project water should only supplement local supplies. (*Metropolitan Water District. v. Marquardt*, 59 Cal.2d 159, 188 (1963).) Optimal use of water supplies requires local managers to draw on each source according to its specific benefits and choose among the various sources available, substituting one source for another in order to optimize the water supply. Because these water management decisions involve many variables under the control of the local water agency, it follows that the decisions about local water use can only be made at the local level, and not by the state, either through DWR or any other state agency.

One type of management tool used by local agencies are "water transfers" to manage their water supplies. The established policy of the state is to "facilitate" the voluntary transfer of water, and the legislature directed DWR to encourage voluntary transfers of water. (Wat. Code, § 109; see also Water Code, §§ 475 et seq. and 1810 et seq.) The policy does not direct DWR to conduct or implement water transfers, but rather to *facilitate* the voluntary transfer of water. The role as facilitator – rather than initiator of the project--is the only appropriate role for the state

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22. DWR was not the lead agency for any of the Attachment E transfers and the Settlement Agreement does not require or suggest that DWR be the lead agency for the Kern-Castaic transfer, no matter what the timing is for the preparation of Castaic's EIR. (AR63:4850-048627; Tab E.)

given the circumstances described above. In order to promote water transfers in accordance with this legislatively expressed policy, deference to local decision makers is required. (See also, Wat. Code § 380, which requires state agencies to defer to local decision making.) Transfers are possible only in the context of management of a variety of sources of water supply, as described above. It is through the interchanging of particular types of water supplies that opportunity for water transfers – and improved use of existing supplies – occurs. Since a variety of water sources are available only to local agencies, and not to the State (which holds water rights only for SWP purposes) it follows that effective decision making about water transfers must be made at the local level. DWR has facilitated the transfers involving conveyance in the SWP, both by providing the conveyance and approving the contract amendments necessary for the transfer, but it is not possible under the physical and institutional structures of water supply in California for DWR to initiate and carry out water transfers for augmenting local water supplies. It lacks authority over local sources of water, and without such authority, cannot appropriately make the necessary water management decisions.

Under these circumstances, the local agency under CEQA clearly has the "principal responsibility" for carrying out the project. The choice of lead agency should reflect the reality and the state policy in favor of water transfers. To hold otherwise would be contrary to the state's policy in favor of water transfers.

In addition to the above state policy regarding transfers, additional water supply planning and management is evidenced through other state laws. The primary vehicle for expressing each jurisdiction's policies for land use regulation in California is the general plan adopted by the city or county. (Gov. Code, § 65300 et seq; Curtin's California Land Use and Planning Law, (2000) p. 287.) As part of its mandate under general plan law, each local jurisdiction has adopted policies that provide the framework for ensuring that adequate public services are available for future land use over the long-term planning period. (Gov. Code, § 65302; *Concerned Citizens of Calaveras County v. Board of Supervisors* (1985) 166 Cal. App. 3d 90.)

In terms of water supply planning, certain additional requirements to ensure that local land use decisions are based on accurate water supply information apply. (Wat. Code, §§ 10910-

10915; Pub. Resources Code, § 21151.9; CEQA Guidelines § 15083.5; Wat. Code, § 10910, subd. (d); Wat. Code, § 10911, subd. (c).) Under the Urban Water Management Planning Act, urban water suppliers are required to adopt water management plans that describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. (Wat. Code, § 10610 et seq.) These plans are required to be updated every five years. (Wat. Code §§ 10621 (a).)

Notably, nothing in these water planning statutes or in the SWP contracts provides that the SWP contracts are designed to be used for land use planning purposes. To the contrary, these provisions consistently make it clear that it is the local agency, the city or county with the statutory authority to make the land use decisions within its jurisdiction, which has the responsibility for determining whether there is a sufficient water supply, as well as for considering the environmental impacts of providing that water supply. As indicated in *National Parks & Conservation Assn. v. County of Riverside* (1996) 42 Cal. App. 4th 1505, 1518-1519, land use approvals and environmental review of those approvals are generally conducted by the affected local agency. Likewise, the purposes of the Table A water allocation process in the SWP water contracts is distinct from the local government agency process for assessing environmental impacts of an individual water transfer.

Two of the cases cited in *PCL* reiterate the duty of local agencies to identify water sources and evaluate the environmental impacts of those water sources. While both of the cases involved "development projects", the cases are examples of a local agency conducting the environmental analysis for local land use and water supply decisions. (*Stanislaus Natural Heritage Project v. County of Stanislaus* (1996) 48 Cal. App. 4th 182; *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal. App. 4th 931.) Neither state law nor case law imposes a duty on DWR to substitute its authority for the planning and CEQA responsibilities of local jurisdictions. If the Legislature had intended for DWR to supervise and evaluate the environmental impacts of each transfer of water involved in the SWP water by local agencies, it would have specified its intent.

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The Kern-Castaic transfer was a local land use decision involving its water supply and Castaic had principal responsibility for the project. State law treats water supply planning as a local land use planning responsibility, not a SWP responsibility.

V.

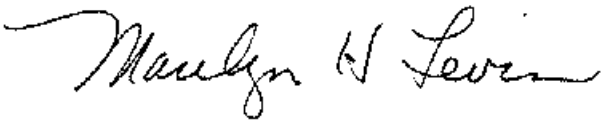
CONCLUSION

As demonstrated above, Castaic properly proceeded with preparing an EIR for the local transfer of 41,000 afy of water to meet the water needs of the people within its service area. Further, as demonstrated above, Castaic's EIR does not interfere with DWR's ability to prepare an EIR for the Monterey Amendment. Petitioners have failed to demonstrate by citation to any evidence that Castaic has usurped DWR's responsibility for preparing an EIR for the Monterey Amendment or that DWR has delegated its responsibility to Castaic by approving Castaic's EIR.

Petitioners' writ petition, alleging that Castaic has usurped DWR's role as lead agency, or that DWR has delegated that role to Castaic, for the Monterey Amendment, should be denied.

Dated: December 6, 2006

Respectfully submitted,
BILL LOCKYER
Attorney General of the State of California



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DWR Opposition brief 12-6-06

DECLARATION OF SERVICE BY U.S. MAIL and E-MAIL

Case Name: **PLANNING AND CONSERVATION LEAGUE v. CASTAIC LAKE WATER AGENCY, et al.**

CALIFORNIA WATER IMPACT NETWORK v. CASTAIC LAKE WATER AGENCY and DOES I through XX, inclusive

No.: **BS 098724**

I declare:

I am employed in the Office of the Attorney General, which is the office of a member of the California State Bar, at which member's direction this service is made. I am 18 years of age or older and not a party to this matter; my business address is 300 South Spring Street, Los Angeles, CA 90013.

On December 6, 2006, I served the attached

OPPOSITION OF REAL PARTY IN INTEREST DEPARTMENT OF WATER RESOURCES TO PETITIONERS' JOINT OPENING BRIEF ON THE MERITS

by placing a true copy thereof enclosed in a sealed envelope with postage thereon fully prepaid, in the United States Mail at Los Angeles, California, addressed as follows:

[SEE ATTACHED SERVICE LIST]

and by transmitting a true copy thereof to the following e-mail addresses:

[SEE ATTACHED SERVICE LIST]

I declare under penalty of perjury under the laws of the State of California the foregoing is true and correct and that this declaration was executed on December 6, 2006, at Los Angeles, California.

BLANCA CABRERA
Declarant

Blanca Cabrera
Signature

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California Water Impact Network, et al. v. Castaic Lake Water Agency,
Appellate Court 2d Civil No. B177978
(Second District Court of Appeal's unpublished decision)

Filed 3/23/06 California Water Network v. Castaic Lake Water Agency CA2/6

NOT TO BE PUBLISHED IN THE OFFICIAL REPORTS

California Rules of Court, rule 977(a), prohibits courts and parties from citing or relying on opinions not certified for publication or ordered published, except as specified by rule 977(b). This opinion has not been certified for publication or ordered published for purposes of rule 977.

IN THE COURT OF APPEAL OF THE STATE OF CALIFORNIA

SECOND APPELLATE DISTRICT

DIVISION SIX

CALIFORNIA WATER NETWORK et al., Plaintiffs and Appellants, v. CASTAIC LAKE WATER AGENCY, Defendant and Respondent; SEMITROPIC WATER STORAGE DISTRICT et al., Real Parties in Interest and Respondents; VALENCIA WATER COMPANY, Intervener and Respondent.	2d Civil No. B177978 (Super. Ct. No. 215327) (Ventura County)
CALIFORNIA WATER NETWORK et al., Plaintiffs and Appellants, v. CASTAIC LAKE WATER AGENCY, Defendant and Respondent.	2d Civil No. B181463 (Super. Ct. No. 215327) (Ventura County)

Appellants California Water Network and Friends of Santa Clara River (collectively "CWN") appeal from a judgment denying their petition for a writ of mandate. (Code Civ. Proc., § 1094.5.) CWN asserts the trial court erred in finding a negative declaration prepared by respondent Castaic Lake Water Agency (Castaic) for a groundwater banking project (the "Project") complies with the California Environmental Quality Act (Pub. Res. Code, § 21000 et seq.) (CEQA).[1] CWN contends that Castaic violated CEQA because it is not the proper lead agency and it prepared a negative declaration instead of an environmental impact report (EIR) for the Project. CWN also contends Castaic violated the Urban Water Management Planning Act (Water Code, § 10610 et seq.) and the public trust doctrine. CWN separately appeals a judgment awarding costs to respondent Castaic for preparing the administrative record. We affirm.

FACTS AND PROCEDURAL HISTORY

Castaic is a public water agency and water wholesaler that treats water and delivers it to water retailers. Castaic's service area covers approximately 192 square miles, including portions of the Santa Clarita Valley and unincorporated Ventura County. Respondent Valencia Water Company (Valencia) is a water retailer that receives water from Castaic. Under agreements with respondent Department of Water Resources (DWR), Castaic is entitled to annual water allotments from the State Water Project (SWP).[2]

Castaic determined that its 2002 SWP allotment would exceed by 24,000 acre-feet the amount needed to serve its customers. To preserve the excess water for use in years of drought, Castaic proposed to enter into a contract with respondent Semitropic Water Storage District (Semitropic) to deposit and store the excess water in Semitropic's groundwater storage bank. The contract requires Castaic to reclaim the entire 24,000 acre-feet within 10 years or forfeit the unused portion to Semitropic.

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[1] All statutory references are to the Public Resources Code unless otherwise specified.

[2] For a detailed history of the SWP, see *Planning & Conservation League v. Department of Water Resources* (2000) 83 Cal.App.4th 892, 897-902 (*PCL*).

On August 5 and 22, 2002, Castaic posted and published a notice of intent to adopt a negative declaration for the Project. Numerous individuals and entities, including CWN, submitted written comments and objections. On September 27, Castaic circulated its written responses to comments. On October 2, additional objections to the Project were submitted.

At a public hearing on October 3, further comments and objections were submitted. After the hearing, Castaic approved a resolution adopting the negative declaration and approving the Project. A notice of determination was filed October 8, 2002.

CWN filed a petition for writ of mandate naming Castaic as respondent and Semitropic and DWR as real parties in interest. Valencia was granted leave to intervene as a respondent.

The petition alleged the Project violates CEQA because DWR, not Castaic, is the appropriate lead agency; Castaic prepared an inadequate initial study; and an EIR rather than a negative declaration should have been prepared. The petition also alleged the Project violates the Urban Water Management Planning Act (Water Code, § 10610 et seq.) and the public trust doctrine. In addition, the petition asserted that three appellate decisions decertifying EIR's prepared for three other projects--the "Monterey Agreement," the transfer of 41,000 acre-feet of water from Kern County Water Agency to Castaic, and Castaic's 2000 Urban Water Management Plan (UWMP)--preclude Castaic from approving the Project.[3] Respondents filed opposition to the petition.

The trial court entered judgment against CWN on all causes of action. Castaic filed a memorandum of costs for preparing the administrative record in the amount of $40,667.49. CWN filed a motion to tax costs. The trial court awarded costs of $26,921.07. CWN appealed both judgments, and the appeals were consolidated. On appeal, CWN raises the same issues it raised in the trial court.

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[3] *PCL*, *supra*, 83 Cal.App.4th 892, *Friends of Santa Clara River v. Castaic Lake Water Agency* (2002) 95 Cal.App.4th 1373 (*Friends I*), and *Friends of Santa Clara River v. Castaic Lake Water Agency* (2004) 123 Cal.App.4th 1 (*Friends II*).

DISCUSSION

CEQA

A. Lead Agency Designation

Section 21067 defines a "lead agency" as "the public agency which has the principal responsibility for carrying out or approving a project which may have a significant effect upon the environment." The lead agency is responsible for preparing an EIR or negative declaration for a project subject to CEQA. (§ 21165; *City of Redding v. Shasta County Local Agency Formation Com.* (1989) 209 Cal.App.3d 1169, 1174.) A "responsible agency" is "a public agency, other than the lead agency, which has responsibility for carrying out or approving a project." (§ 21069.) Responsible agencies have the duty to review and comment on the draft environmental documents prepared by the lead agency. (§ 21153.)

The Guidelines[4] establish criteria for selecting a single lead agency among two or more contenders. If the project will be carried out by a public agency, that agency shall be the lead agency even if the project would be located within the jurisdiction of another public agency. (Guidelines, § 15051, subd. (a).) If more than one agency meets the lead agency criteria, the agency that is to act first on the project will be the lead agency. (Guidelines, § 15051, subd. (c).)

If two or more public agencies have a "substantial claim" to serve as lead agency for a project, the agencies may designate one agency as lead agency by agreement. (Guidelines, §15051, subd. (d).) However, an agreement cannot designate a lead agency contrary to CEQA. (*PCL, supra,* 83 Cal.App.4th at p. 903.)

Respondents agreed that Castaic would serve as lead agency, and DWR, Semitropic and Valencia were designated responsible agencies for the Project.

CWN asserts the Project has statewide impacts and that DWR, rather than Castaic, is the proper lead agency. The propriety of a lead agency designation is a question of law that we review de novo. (*PCL, supra,* 83 Cal.App.4th at pp. 905-906.)

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[4] The administrative regulations in title 14 of the California Code of Regulations are referred to as "Guidelines."

CWN relies primarily on *PCL* to support its argument. In *PCL*, the appellate court ordered that an EIR prepared for the Monterey Agreement be decertified. The Monterey Agreement reallocates SWP entitlements between agricultural and urban users. Despite the broad scope of the project and the involvement of all 29 of the state's local water agencies, one of the local agencies was selected as lead agency and prepared the EIR. The court held that DWR should have acted as lead agency because the project affects all SWP contracts and will have statewide impacts. (*PCL, supra,* 83 Cal.App.4th at p. 907.)[5] The court ordered that the EIR be decertified and a new EIR be prepared by DWR. (*Id.* at p. 926.) The court did not enjoin the parties from proceeding with the project during the preparation of the new EIR. (*Id.* at p. 926, fn. 16.)

PCL does not support CWN's argument. The Monterey Agreement is an "omnibus revision of the long-term contracts between the Department of Water Resources . . . and local water contractors governing the supply of water under the State Water Project." (*PCL, supra,* 83 Cal.App.4th at p. 897.) In contrast to the Monterey Agreement, the Project is narrow in scope and effect. It involves a single local water agency and a portion of that agency's SWP entitlement for one year. While DWR must approve the project, it has no jurisdiction over the management of Castaic's water supply--it merely responds to Castaic's request to schedule delivery by determining whether the times and amounts Castaic has requested are within the overall delivery capability of the California Aqueduct.

Castaic's designation as lead agency does not violate CEQA.

B. The Initial Study and Negative Declaration

An initial study is a preliminary analysis prepared by the lead agency to determine whether to prepare an EIR, a negative declaration or a mitigated negative declaration for a proposed project. (Guidelines, §§ 15162, 15153, subd. (d).) The initial study documents the factual basis for the lead agency's findings of environmental impact.

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[5] The court held the Monterey Agreement EIR also violated CEQA because it failed to discuss a "no project" alternative, an issue not involved here. (*PCL, supra,* 83 Cal.App.4th at p. 916.)

(*Citizens Assn. for Sensible Development of Bishop Area v. County of Inyo* (1985) 172 Cal.App.3d 151, 171.)

CEQA permits the initial study to be in the form of a checklist and provides a form to be used in the Guidelines. The lead agency must augment the checklist with a discussion of each environmental impact it finds to be potentially significant and explain the basis for its conclusions. (*Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 305.) An inadequate initial study does not automatically make an EIR necessary. (*Silveira v. Las Gallinas Valley Sanitary Dist.* (1997) 54 Cal.App.4th 980, 992.)

In preparing the initial study, the lead agency may use an EIR prepared and certified for an earlier project if the "circumstances of the projects are essentially the same." (Guidelines, § 15153, subd. (a).) Agencies are encouraged to reduce delay and paperwork by reusing a previously prepared EIR when it adequately addresses the impacts of the proposed project. (*Id.*, §§ 15006, subd. (f); 15084, subd. (d)(5).)

If a project falls within the scope of a previous EIR, the initial study is used to decide whether there are new impacts that were not discussed in the prior EIR and to focus on whether those new impacts warrant further environmental review. (§ 21094, subd. (c); Guidelines, § 15063, subd. (b)(1)(C); *Santa Teresa Citizen Action Group v. City of San Jose* (2003) 114 Cal.App.4th 689, 704, fn. 11 (*Santa Teresa*).)

A previous EIR may not be used for a later project if: (1) Changes in the project would result in new impacts not considered in the previous EIR, or (2) changes in the circumstances under which the project is undertaken lead to significant new impacts, or (3) new information is available that was not known and could not have been known when the previous EIR was certified. (§ 21166; Guidelines, § 15162.) The existence of any of these conditions requires preparation of a subsequent or supplemental EIR, rather than a negative declaration. (Guidelines, § 15162.)

A negative declaration is a written statement adopted by the lead agency if it concludes the project will not have a significant effect on the environment. (§ 21064; Guidelines, § 15371.) A negative declaration can be used in two ways. First, it can serve as the original CEQA document for a project, if there is no substantial evidence

supporting a fair argument that the project may have a significant effect on the environment. (*Laurel Heights Improvement Assn. v. Regents of University of California* (1993) 6 Cal.4th 1112, 1134-1135.) Second, a negative declaration can be used if a proposed project falls within the scope of an earlier EIR and the lead agency finds on the basis of the initial study that there is no substantial evidence that the project will have a significant effect on the environment. (*Ibid.*; Guidelines, § 15074, subd. (b).)

In preparing the initial study, Castaic relied on an EIR prepared and certified in 1994 by Semitropic for a groundwater banking program to store one million acre-feet of water for California water purveyors, including Castaic, in its groundwater banking facility. The 1994 EIR concluded that the project would increase the level of water in Semitropic's groundwater basin and generally improve groundwater quality. As a mitigation measure, the EIR requires that all deposits into the bank meet current water quality standards established by DWR.

Castaic concluded the Project would not have any significant environmental effects not already discussed in the 1994 EIR and prepared and circulated the initial study and a draft negative declaration for pubic review. After reviewing and responding to comments and objections submitted by CWN, other environmental groups, and the responsible agencies during the public comment period and at a public hearing, Castaic adopted a final negative declaration and findings of no significant environmental impact.

CWN's attorney submitted a letter objecting to the initial study and proposed negative declaration on the ground that the 1994 EIR is outdated because "profound changes in the environmental context of your proposed action have occurred, triggering the need for preparation of a subsequent or supplemental EIR or EIR addendum . . . ." Neither CWN nor any other member of the public submitted factual data supporting the assertion that information relied on by Castaic in the 1994 EIR was outdated.

Two recent cases rejected arguments similar to those made by CWN. In *Federation of Hillside & Canyon Assns. v. City of Los Angeles* (2004) 126 Cal.App.4th

1180, petitioner argued the city violated CEQA because it relied on an EIR prepared more than 10 years earlier in approving a statement of overriding considerations for a revised general plan. The court stated: "Petitioners cite no authority for their argument. They do not explain what more current information was available to the city, how that information differed from the projections that the city relied on, or how the more current information might have affected the city's decision." (*Id.* at p. 1206.) Most recently, in *Citizens for Responsible Equitable Environmental Development v. City of San Diego Redevelopment Agency* (2005) 134 Cal.App.4th 598 (*CREED*), the court held an agency's reliance on a 10-year-old EIR did not violate CEQA.

C. Standard of Review of a Negative Declaration

The parties dispute the standard of review to be applied in reviewing the negative declaration. CWN asserts the "fair argument" standard applies. Under this standard, an EIR must be prepared if there is substantial evidence sufficient to support a fair argument that there is a reasonable possibility that the project will have a significant effect on the environment. (Guidelines, § 15063.)

Respondents counter that the fair argument standard only applies when the negative declaration is the initial environmental document for a project. They assert that where, as here, a negative declaration relies on a previously prepared EIR, the more deferential substantial evidence test applies. We agree.

In *Laurel Heights*, our Supreme Court said: "[T]he 'fair argument' test has been applied *only* to the decision whether to prepare an original EIR or a negative declaration." (*Laurel Heights Improvement Assn. v. Regents of University of California*, *supra*, 6 Cal.4th at p. 1135; see also *Benton v. Board of Supervisors* (1991) 226 Cal.App.3d 1467, 1481-1483 [rejecting use of fair argument test to review whether second negative declaration proper for modified project]; *Bowman v. City of Petaluma* (1986) 185 Cal.App.3d 1065, 1071-1073 [rejecting use of fair argument test to review decision under § 21166].)

In *Santa Teresa*, the court explained: "When the public agency has already prepared an EIR, no SEIR [supplemental or subsequent EIR] is required unless there are

substantial changes in the project or the circumstances surrounding the project, or if new information becomes available. (§ 21166.) The reviewing court upholds an agency's decision not to require an SEIR if the administrative record as a whole contains substantial evidence to support the determination that the changes in the project or its circumstances were not so substantial as to require major modifications of the EIR. [Citation.] This deferential standard is a reflection of the fact that in-depth review has already occurred." (*Santa Teresa*, *supra*, 114 Cal.App.4th at p. 703; accord, *CREED*, *supra*, 134 Cal.App.4th at p. 610.) Most recently in *CREED*, the court stated: "[T]he fair argument standard does not apply to review of an agency's determination that a project's potential environmental impacts were adequately analyzed in a prior program EIR." (*Id.* at p. 611.)

Accordingly, we review the record to determine if substantial evidence supports Castaic's findings that the project will not have significant effects on the environment not discussed in the previous EIR.

D. Exhaustion of Administrative Remedies

Appellate review of an administrative decision requires exhaustion of administrative remedies. Exhaustion of administrative remedies is jurisdictional, not a matter of judicial discretion. (*Santa Barbara County Flower & Nursery Growers Assn. v. County of Santa Barbara* (2004) 121 Cal.App.4th 864, 876.)

The exhaustion doctrine is codified in section 21177. That section provides in part: "(a) No action or proceeding may be brought pursuant to Section 21167 unless the alleged grounds for noncompliance with this division were presented to the public agency orally or in writing by any person during the public comment period provided by this division or prior to the close of the public hearing on the project before the issuance of the notice of determination. [¶] (b) No person shall maintain an action or proceeding unless that person objected to the approval of the project orally or in writing during the public comment period provided by this division or prior to the close of the public hearing on the project before the issuance of the notice of determination." In other words, any person who objected to a project on CEQA grounds at an administrative

hearing may raise any ground asserted by any objecting party. (*Maintain Our Desert Environment v. Town of Apple Valley* (2004) 120 Cal.App.4th 396, 439.)

"The essence of the exhaustion doctrine is the public agency's opportunity to receive and respond to articulated factual issues and legal theories *before* its actions are subjected to judicial review." (*Coalition for Student Action v. City of Fullerton* (1984) 153 Cal.App.3d 1194, 1198.) The purposes of the doctrine are not satisfied if the objections are not sufficiently specific so as to allow the agency the opportunity to evaluate and respond to them. (*Park Area Neighbors v. Town of Fairfax* (1994) 29 Cal.App.4th 1442, 1447.)

CWN argues that it had no administrative remedy to exhaust, relying on *Tahoe Vista Concerned Citizens v. County of Placer* (2000) 81 Cal.App.4th 577, 590 (*Tahoe Vista*); *Fall River Wild Trout Foundation v. County of Shasta* (1999) 70 Cal.App.4th 482, 489 (*Fall River*); and *California Aviation Council v. County of Amador* (1988) 200 Cal.App.3d 337, 348 (*California Aviation*). These cases do not support CWN.

In *Tahoe Vista*, the court held that the trial court cannot consider issues not raised before the administrative body. Holding otherwise "would enable litigants to narrow, obscure, or even omit their arguments before the final administrative authority because they could possibly obtain a more favorable decision from a trial court. Such a result would turn the exhaustion doctrine on its head." (*Tahoe Vista*, *supra*, 81 Cal.App.4th at p. 594.)

CWN's reliance on *Fall River*, *supra*, 70 Cal.App.4th 482 and *California Aviation*, *supra*, 200 Cal.App.3d 337 is similarly misplaced. In *Fall River*, the court held that individual petitioners in a case challenging a negative declaration were not barred for failure to exhaust administrative remedies because the agency had not given legally required notice of the public's right to raise objections to a project. (*Fall River*, at pp. 489-490.)

In *California Aviation*, the court majority said: "[T]o be excused from their failure to exhaust administrative remedies plaintiffs here must show one of the following:

(1) one of the plaintiffs is an organization formed after the approval of the project and a member of the organization objected to the approval of the project orally or in writing (§ 21177, subd. (c)); (2) there was no public hearing prior to the approval of the project, or the public agency failed to give the notice required by law (§ 21177, subd. (e)); or (3) they are members of the public addressing a public wrong and no notice of the proceeding was given them in any form." (*California Aviation*, *supra*, 200 Cal.App.3d at p. 343.)

CWN cannot and does not argue that it was an organization formed after the Project was approved or that there was no public hearing or that it failed to receive the notices required by law. Therefore, it was required to exhaust administrative remedies.

Not every comment submitted before or at an administrative hearing satisfies the exhaustion requirement. To fulfill the exhaustion requirement, public comment must meet several criteria. Generalized environmental comments are not sufficient. (*Tahoe Vista*, *supra*, 81 Cal.App.4th at p. 594.) A project opponent cannot make a skeletal showing during the administrative process and then obtain a hearing on expanded issues in a reviewing court. (*City of Walnut Creek v. County of Contra Costa* (1980) 101 Cal.App.3d 1012, 1019-1020.)

Comments by members of the public must be supported by an adequate factual foundation. An adequate foundation may be established by relevant personal observations. (*Oro Fino Gold Mining Corp. v. County of El Dorado* (1990) 225 Cal.App.3d 872, 875.) Members of the public may provide opinion evidence in appropriate circumstances. (See *Ocean View Estates Homeowners Assn., Inc. v. Montecito Water Dist.* (2004) 116 Cal.App.4th 396, 402.) But information asserted to be common knowledge does not satisfy the doctrine if it is not based on personal observation or experience. (*Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1417; *Newberry Springs Water Assn. v. County of San Bernardino* (1984) 150 Cal.App.3d 740, 749-750.) In other words, public controversy is not a substitute for substantial evidence. (§ 21082.2, subd. (b); see *Leonoff v. Monterey County Bd. of*

Supervisors (1990) 222 Cal.App.3d 1337, 1359 [public controversy cannot trigger an EIR if record does not contain substantial evidence that project may have significant effect].)

Complaints, fears, suspicions and speculation about a project's potential environmental impact do not satisfy the exhaustion requirement. (*See San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1996) 42 Cal.App.4th 608, 624-625 [conclusory statement about cumulative impacts]; *Lucas Valley Homeowners Assn. v. County of Marin* (1991) 233 Cal.App.3d 130, 154-155 [expressions of generalized concerns and fears about traffic and parking impacts and anecdotal statements about parking problems at another facility]; *Leonoff v. Monterey County Bd. of Supervisors*, *supra*, 222 Cal.App.3d at p. 1352 [subjective concerns and unsubstantiated opinions about dangerous traffic conditions]; *Perley v. Board of Supervisors* (1982) 137 Cal.App.3d 424, 434-435 [unsubstantiated fears and concerns about project's impacts]; *Friends of Davis v. City of Davis* (2000) 83 Cal.App.4th 1004, 1020 [assumption of competitive impact from retail tenant speculative]; *Pala Band of Mission Indians v. County of San Diego* (1998) 68 Cal.App.4th 556, 580 [comment letter submitted by counsel for opponents consisting almost exclusively of "mere argument and unsubstantiated opinion"]; *Citizen Action To Serve All Students v. Thornley* (1990) 222 Cal.App.3d 748, 757 [speculation and generalizations about traffic, parking, economic effects and earthquake safety].)

Respondents assert CWN failed to exhaust administrative remedies concerning many of the issues raised in its petition either by failing to raise the issue at all or making only general comments unsupported by a factual foundation during the administrative process. As indicated below, we agree that many of CWN's objections do not satisfy the exhaustion doctrine and thus are not proper subjects of appeal.

E. Allegations of Significant Impact

CWN asserts the project will have significant impacts on water quality, urban growth, traffic congestion, air quality, biological resources, noise, public services, aesthetics, and utilities and service systems not discussed in the 1994 EIR. "'We independently review the administrative record. [Citation.] We resolve reasonable

doubts in favor of the administrative decision. [Citation.] "We do not judge the wisdom of the agency's action in approving the Project or pass upon the correctness of the EIR's environmental conclusions. [Citations.] Our function is simply to determine whether the agency followed proper procedures and whether there is substantial evidence supporting the agency's determination that the changes in the Project (or its circumstances) were not substantial enough to require an SEIR." [Citation.]'" (*CREED*, *supra*, 134 Cal.App.4th at p. 615.)

(1) Water Quality

During the public review period, CWN correctly observed that some of the wells in Semitropic's water facility are contaminated with perchlorate. CWN asserts the project will cause the perchlorate to spread beyond the area of the contaminated wells and ultimately result in degrading the quality of water in the California Aqueduct. Neither CWN nor any other opponent provided factual support for these assertions.

The initial study/negative declaration acknowledges the contamination and states the perchlorate can be removed by several approved methods used successfully by Orange County and the Jet Propulsion Laboratory. In addition, the initial study/negative declaration contains the following discussion of groundwater quality submitted by DWR as a responsible agency for the project:

"The IS/ND [initial study/negative declaration] recognizes the issue of water quality of the California Aqueduct. Before introducing the stored groundwater in the Aqueduct, [Kern County Water Agency] and Semitropic must comply with the existing agreement allowing the introduction of local or banked water into the Aqueduct. The quality and quantity of groundwater introduced into the Aqueduct may not interfere with the operation of the SWP and must meet the Department's then current water quality criteria in effect at the time of delivery. [Castaic], at its expense, shall pay all costs for water quality sampling and analysis associated with monitoring the input of groundwater into the Aqueduct."

In *California Oak Foundation v. City of Santa Clarita* (2005) 133 Cal.App.4th 1219 (*California Oak*), opponents of a proposed residential development

raised a similar objection to an EIR prepared for the project. Although ultimately finding the EIR violated CEQA, the court determined the EIR's discussion of perchlorate contamination complied with CEQA. The court said:

"The draft EIR did not mention perchlorate contamination. However, it relied upon UWMP 2000's projections of water supply and usage. UWMP 2000 identified the discovery of perchlorate in Southern California as a water quality problem that could affect groundwater supply availability, stated that perchlorate can be treated and removed from groundwater, and mentioned two possible treatment programs. UMWP 2000 concluded: 'The few wells affected have been shut down, effective treatment technologies have been developed, and a plan is being worked out to remove the contamination from the groundwater.' [Petitioner's] comments on the draft EIR asserted the Saugus Formation could not be relied on until it is remediated, and observed that the UWMP 2000 was in litigation 'due to the over-statement of water supply and understatement of demand.' [Petitioner] also submitted expert testimony, reports and memoranda which extensively discussed the contamination.

"The City's response acknowledged that perchlorate has been a concern since its discovery in 1997, and stated that operation of the four contaminated wells was suspended, testing for perchlorate was continuing in all active wells, and treatment technologies were currently available. . . . [T]he City and the public were fully informed. While we may not agree with the City's decision to rely on the conclusions in the UWMP 2000 rather than the conclusions flowing from [Petitioner's] evidence, this court's inquiry extends only to the EIR's sufficiency as an informative document, not to the correctness of its environmental conclusions. . . .

"[Petitioner] points out that Castaic's UWMP 2000 was recently invalidated by the court of appeal in *Friends II, supra,* 123 Cal.App.4th at pp. 14-15, and suggests that we remand the case to the City for re-evaluation of its analysis. [Petitioner] is mistaken. It is well-established that once a project is approved, new information does not require reopening the approval." (*California Oak, supra,* 133 Cal.App.4th at pp. 1242-1243.)

The discussion of groundwater quality in the environmental documents for the Project is sufficient. Substantial evidence in the record supports the finding that the Project will not have a significant impact on water quality.

(2) Urban Growth

CWN asserts that the Project will have growth-inducing impacts that were not discussed adequately in the environmental documents.

The initial study/negative declaration states that the groundwater will not be used for new development. The negative declaration also points out that the water cannot be relied on by developers proposing future projects because the contract between Semitropic and Castaic permits the water to be stored for no longer than 10 years and applicable building regulations require a developer to demonstrate the availability of a 20-year water supply for new development.

In addition, the initial study/negative declaration contains the following comment by DWR:

"The draft IS/ND makes conflicting statements regarding whether the proposed project would increase reliability of water supply, have a growth inducing effect, and/or enable [Castaic] to use its full Table A allocation when it otherwise would not. The proposed project would provide for storage in a single year, and the Department assumes return of the water would be over a period of up to 10 years (this is consistent with other similar arrangements approved by the Department). The project description in the IS/ND should clarify the length of the proposed return period. Based on a 10-year return period, it appears that [Castaic] could conclude that the project will produce a short-term increase in reliability and no growth-inducing impacts, but this issue should be clarified in the IS/ND. Any proposal for a long-term program for storage of [Castaic] Table A allocations in Semitropic over multiple years, with a longer return period, will require additional environmental review."

In response to DWR's comment about the length of the proposed return period, Castaic modified the initial study/negative declaration to clarify that the project

involves a 10-year return period. Castaic's response reiterated that all water returned to the California Aqueduct would be tested to ensure it met current DWR standards.

This information is sufficient to support a finding that the Project will not cause significant growth-inducing impacts. (See *Sierra Club v. West Side Irrigation Dist.* (2005) 128 Cal.App.4th 690, 702-703 ["The initial study clearly states the water was to be assigned only to those areas already subject to the City's general plan. . . . The discussions of growth-inducing impacts in the general plan EIR were properly incorporated into the initial studies, and that was sufficient under these circumstances"].)

(3) Air Quality

CWN alleges the Project will have significant impacts on air quality. The initial study/negative declaration noted it was possible an "air quality effect from the project would occur from the indirect impact of air emissions due to the generation of project electricity demands. The proposed project would result in a shift in the timing of electrical energy usage for groundwater pumping within [Semitropic]. Specifically, the project would reduce energy use for pumping along the [SWP] when water is stored in [Semitropic] and increase energy use when the water is returned to [Castaic]. The net project effect would be an increase in the use of electricity needed to inject and recover the stored water at [Semitropic], compared to the direct delivery of this water to [Castaic]."

The initial study concludes this shift in energy use would have less than significant impacts on air quality because the small amount of air emissions from generating any extra electricity would not cause the air quality in the San Joaquin Valley air basin to exceed ambient air quality standards. In any event, power plants are required to effectively mitigate air emissions under the conditions of their operating permits.

Guidelines, section 15064, subdivision (h)(3) specifically authorizes Castaic to rely on this mitigation measure: "A lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program which provides specific requirements that will avoid or substantially lessen the

cumulative problem (e.g. . . . air quality plan[s] . . .) within the geographic area in which the project is located." (See *Gentry v. City of Murrieta*, *supra*, 36 Cal.App.4th at p. 1394 [an agency may rely on another agency's regulations and standards if it has "meaningful information" that would reasonably justify an "expectation of compliance"].) The initial study's discussion of air quality was adequate.

Moreover, CWN does not challenge the initial study's basic conclusion on the air quality issue. Instead, CWN complains the initial study did not go into sufficient detail to support its analysis. However, complaining that the initial study is not sufficiently detailed does not meet a petitioner's burden of providing a sufficient factual basis to refute Castaic's conclusion. (See *Citizen Action to Serve All Students v. Thornley*, *supra*, 222 Cal.App.3d at p. 755 [agency could disregard expert's opinion because it addressed ultimate issue of whether specified increase in traffic should be treated as "significant" and merely disagreed with city's standard of significance].)

(4) Other Impacts

CWN's remaining contentions, that the Project will cause impacts on traffic congestion, biological resources, noise, public services, aesthetics, and utilities and service systems, are based on the faulty premise that the Project would induce urban growth and were not raised with the specificity required by CEQA. Further discussion is unnecessary.

F. The Decisions in PCL, Friends I and Friends II

CWN contends that the decisions in *PCL*, *supra*, 83 Cal.App.4th 892, *Friends I*, *supra*, 95 Cal.App.4th 1373, and *Friends II*, *supra*, 123 Cal.App.4th 1, preclude Castaic from approving the Project.

As discussed above, in *PCL*, the appellate court ordered that an EIR prepared for the Monterey Agreement be decertified because environmental review should have been conducted by DWR as lead agency.

In *Friends I*, the appellate court ordered an EIR decertified that was prepared for the purchase by Castaic of SWP water entitlements from Kern County Water

Agency. The court found the EIR defective because it tiered off the decertified EIR for the Monterey Agreement.[6]

In *Friends II*, the appellate court ordered that approval of an UWMP prepared for parts of the Santa Clarita Valley pursuant to the Urban Water Management Planning Act, Water Code section 10610 et seq., be vacated because it contained an inadequate discussion of the time needed to implement methods for treating contaminated groundwater and for ensuring the reliability of the groundwater supply during the implementation period.

In approving the initial study/negative declaration, Castaic did not rely on the EIR for the Monterey Agreement. While it did rely on information contained in the 2000 UWMP, the information relied on by Castaic was held to be adequate in *Friends II*. The decertification of the EIR for the Monterey Agreement and invalidation of the 2000 UWMP does not preclude use of information in those documents. (See *California Oak*, *supra*, 133 Cal.App.4th at pp. 1242-1243.)

Urban Water Management Planning Act

CWN asserts the Project violates the Urban Water Management Planning Act because Castaic's approval of the Project is based "on an unlawful UWMP that fails to adequately address known contamination of Castaic's water supplies." This assertion of error is substantially similar to that asserted in connection with CWN's CEQA challenge and with an argument raised by petitioner in *California Oak*, *supra*, 133 Cal.App.4th 1219.

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[6] CEQA permits "tiering." Tiering refers to "the coverage of general matters in broader EIRs (such as on general plans or policy statements) with subsequent narrower EIRs or ultimately site-specific EIRs incorporating by reference the general discussions and concentrating solely on the issues specific to the EIR subsequently prepared." (Guidelines, § 15385.)

For the reasons stated in our previous discussion of water quality impacts and those stated in *California Oak*, we reject CWN's argument.

Public Trust Doctrine

CWN contends the Project violates the pubic trust doctrine. We disagree.

The public trust doctrine holds that the state, as sovereign, owns all of the navigable waterways and the lands lying beneath them "'as trustee of a public trust for the benefit of the people.'" *(National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419, 434.) "Under the public trust doctrine, the state has title as trustee to all tidelands and navigable lakes and streams and is charged with preserving these waterways for navigation, commerce, and fishing, as well as for scientific study, recreation, and as open space and habitat for birds and marine life. [Citation.] . . . [T]he doctrine has no direct application to groundwater sources." (*Santa Teresa*, *supra*, 114 Cal.App.4th at p. 709; see also *Golden Feather Community Assn. v. Thermalito Irrigation Dist.* (1989) 209 Cal.App.3d 1276, 1284-1285 [public trust doctrine does not extend to nonnavigable waterways in the absence of some impact on navigable waters].)

No further discussion is required as CWN's challenge in this respect is founded upon Castaic's alleged failure to address environmental effects under CEQA. We have already discussed, and dismissed, those allegations as unsupported by the record.

Cost Award (Case No. B181463)

CWN argues that Castaic is not entitled to recover any costs because it prepared the administrative record without responding to CWN's requests that the parties discuss its preparation.

Section 21167.6[7] governs preparation of the administrative record in CEQA cases. Statutory construction is a question of law that we review de novo. (*Fishback v. County of Ventura* (2005) 133 Cal.App.4th 896, 902.) "Section 21167.6 authorizes only three ways to prepare a CEQA record . . . . The three alternatives are (1) that the public agency prepare and certify the record; (2) that the petitioner prepare the record, subject to certification by the public agency; or (3) that the parties agree to an alternative method of preparing the record, subject to certification by the public agency." (*Hayward Area Planning Assn. v. City of Hayward* (2005) 128 Cal.App.4th 176, 183.)

Generally, the law requires a petitioner for a writ of mandate to bear the cost of preparing the administrative record. (§ 21167.6, subd. (b)(1); Code Civ. Proc., §§ 1094.5, subd. (a), 1094.6, subd. (c).) The burden is on the petitioner because "taxpayers . . . should not have to bear the cost of preparing the administrative record in a lawsuit brought by a private individual or entity." (*River Valley Preservation Project v. Metropolitan Transit Development Bd.* (1995) 37 Cal.App.4th 154, 182 (*River Valley*).) Ordinarily, the agency approving the project prepares the administrative record. (§ 21167.6, subd. (b)(1).) CEQA provides that a petitioner may elect to prepare the record if it notifies the agency of its election within 10 days of filing the petition. (*Id.*, subd. (b)(2).)

The record contains no evidence that CWN notified Castaic that it elected to prepare the administrative record within 10 days of filing its petition or at any time at

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[7] Section 21167.6 states in part: "(a) At the time that the action or proceeding is filed, the plaintiff or petitioner shall file a request that the respondent public agency prepare the record of proceedings relating to the subject of the action or proceeding. . . . [¶] (b)(1) The public agency shall prepare and certify the record of proceedings not later than 60 days from the date that the request specified in subdivision (a) was served upon the public agency. . . . The parties shall pay any reasonable costs or fees imposed for the preparation of the record of proceedings in conformance with any law or rule of court. [¶] (2) The plaintiff or petitioner may elect to prepare the record of proceedings or the parties may agree to an alternative method of preparation of the record of proceedings, subject to certification of its accuracy by the public agency, within the time limit specified in this subdivision. . . . [¶] (f) In preparing the record of proceedings, the party preparing the record shall strive to do so at reasonable cost in light of the scope of the record."

all. We agree with the trial court that Castaic is not precluded from recovering reasonable costs for preparing the administrative record.

In the alternative, CWN contends that Castaic is entitled to recover only the cost of preparing one copy of the administrative record for filing with the court. "Whether a particular cost to prepare an administrative record [is] necessary and reasonable is an issue for the sound discretion of the trial court. [Citations.] Discretion is abused only when, in its exercise, the court 'exceeds the bounds of reason, all of the circumstances being considered.' [Citation.] The appellant has the burden of establishing an abuse of discretion." (*River Valley*, *supra*, 37 Cal.App.4th at p. 181.)

In *River Valley*, the court rejected the contention that section 21167.6 permits recovery of photocopying and transcription costs only. "[A] commonsense reading of section 21167.6, subdivision (b)(1) requires time spent to prepare the record be included. An interpretation such as that urged by [petitioner] allowing reimbursement for only photocopying and transcription costs would defeat the purpose of the statute by shifting the financial burden to the public agency preparing the record." (*River Valley*, *supra*, 37 Cal.App.4th at p. 182.)

The *River Valley* court also said: "The history and complexity of this case required a complete, organized and adequately indexed administrative record for the court's proper review, necessitating the expense of physical and organizational skills to accomplish this result. [The agency] was entitled to select the appropriate personnel to perform the particular task. Having done so, it was then for the trial court to determine whether the costs were necessarily incurred and reasonable." (*River Valley, supra,* 37 Cal.App.4th at p. 181; see also *Citizens for Quality Growth v. City of Mt. Shasta* (1988) 198 Cal.App.3d 433, 447-448 [court impliedly approved a public agency's use of its own private law firm to prepare the record, subject to review for reasonableness].)

The trial court awarded the costs it found necessarily incurred and reasonable. The court did not abuse its discretion.

The judgment denying the petition for writ of mandate and the order awarding costs are affirmed. Costs on appeal are awarded to respondents.

NOT TO BE PUBLISHED.

PERREN, J.

We concur:

GILBERT, P.J.

YEGAN, J.

Henry J. Walsh, Judge

Superior Court County of Ventura

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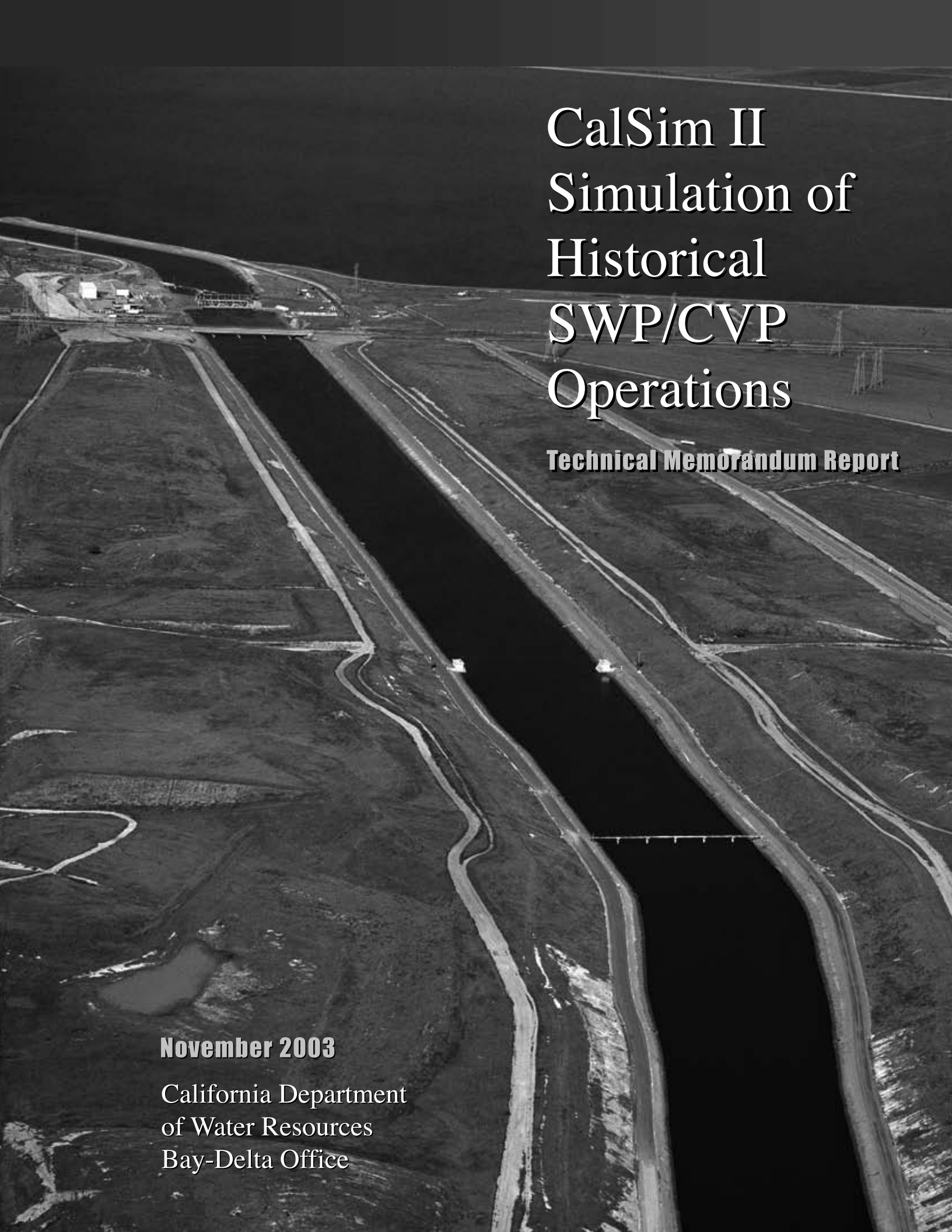
CalSim II: Simulation of Historical SWP-CVP Operations,
Technical Memorandum, DWR Bay-Delta Office
November 2003



CalSim II Simulation of Historical SWP/CVP Operations

Technical Memorandum Report

November 2003

California Department
of Water Resources
Bay-Delta Office

Clifton Court Forebay and Skinner Fish Facility
Courtesy of DWR PhotographicLaboratory

CalSim II Simulation of Historical SWP-CVP Operations

Technical Memorandum Report

November 2003

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List of Abbreviations/Acronyms

ANN	Artificial Neural Network
BO	Biological Opinion
CALFED	State and federal agencies participating in the Bay-Delta Accord
CDFG	California Department of Fish and Game
COA	Coordinated Operations Agreement
CU	Consumptive Use
CUAW	Consumptive Use of Applied Water
CVGSM	Central Valley Groundwater Surface water Model
CVP	Central Valley Project
DSA	Depletion Study Area
DWR	Department of Water Resources
EBMUD	East Bay Municipal Utility District
FERC	Federal Energy Regulatory Commission
FRSA	Feather River Service Area
IEP	Interagency Ecological Program
LOD	Level of Development
NMFS	National Marine Fisheries Service
OCAP	Operating Criteria and Plan
SWP	State Water Project
SWRCB	State Water Resources Control Board
USFWS	United States Fish and Wildlife Service
WQCP	Water Quality Control Plan

CalSim II Historical Operations Study

EXECUTIVE SUMMARY

1 CALSIM II MODEL

CalSim is a generalized water resources planning tool developed jointly by the Department of Water Resources (DWR) and the US Bureau of Reclamation Mid-Pacific Region (Reclamation). CalSim II is the application of the CalSim software to model the State Water Project (SWP), the federal Central Valley Project (CVP) and areas tributary to the Sacramento-San Joaquin Delta (Delta). The primary purpose of the CalSim II model is to evaluate the water supply reliability of the CVP and SWP, 1) at current or future levels of development, 2) with and without various assumed future facilities and, 3) with different modes of facilities operations.

2 OBJECTIVE OF STUDY

The purpose of the *Historical Operations Study* is to evaluate the ability of CalSim II to represent CVP and SWP operations, in general, and the delivery capability of the projects, in particular, through the monthly simulation of recent historical conditions. The Historical Operations Study is part of a larger CalSim II evaluation process. Other components of the evaluation include a survey of the water community to gather their views and opinions of the model, a model peer review by leading academics and practitioners, and a sensitivity analysis on model inputs. It is hoped that this effort, to assess the quality and limitations of CalSim II, will lead to a wider debate about critical model issues, help direct model development in both the near and long term, and eventually lead to greater public confidence and acceptance of the model.

3 STUDY DESCRIPTION

The period of simulation for the Historical Operations Study is water years 1975 to 1998. This 24-year period includes the 1976-77 and 1987-92 droughts, as well as the driest (1977) and the wettest (1983) years on record. The version of CalSim II used for this study is the benchmark study dated 30 September 2002, but with some inputs changed to reflect the historically changing conditions rather than a fixed level of development. Model inflows correspond to the historical flow from gage records, or estimated from a hydrologic mass balance, or stream-flow correlation. Land use-based demands are calculated for annual varying land use, as determined from DWR's land surveys and county commissioners' reports. The operational logic has been revised to reflect the changing regulatory environment. The historical regulations have been simplified into three periods:

- October 1974 – September 1992: represented by State Water Resources Control Board (SWRCB) Water Right Decision 1485 (D-1485),
- October 1992 – September 1994: represented by D-1485 and the 1993 National Marine Fisheries Service (NMFS) winter-run chinook salmon biological opinion

(minimum carryover storage in Lake Shasta, and temperature related minimum instream flows downstream of Keswick Reservoir),

- October 1994 – September 1998: represented by SWRCB Water Right Decision 1641 (D-1641) and the 1993 winter-run biological opinion.

The Historical Operations Study is limited in geographical scope to a dynamic operation of the Sacramento Valley, the Delta, and the CVP-SWP facilities south of the Delta. Delta inflows from the San Joaquin Valley and East Side streams are constrained to their historical values. Imports from the Trinity River system are similarly constrained.

4 RESULTS AND DISCUSSION

The key performance measures in evaluating CalSim II are considered to be SWP and CVP deliveries, project storage operations, and stream flows. During the study period of water years 1975-1998, SWP demands were historically much lower than current or projected level of demands. Simulation of historically wet years, when the system was not supply constrained, may therefore be a poor indicator of the model's ability to accurately simulate future levels of development. Particular attention is therefore placed on model results during the six-year drought of 1987-1992. Results for four key performance parameters are summarized in the table below. Table 7 in the main report presents results for a more complete list of performance parameters.

The table below shows that simulated SWP Table A and CVP south-of-Delta deliveries during the drought are *less* than historical values. Differences are, however, within 5 percent. Comparison of Sacramento Valley inflow to the Delta (flow at Freeport) is a good measure of how well the Sacramento Valley hydrology is simulated by Calsim II. Simulated Delta inflows are 0.3 percent greater than historical. Comparison of the Net Delta Outflow Index, a measure of how well the Sacramento-San Joaquin Delta is represented by Calsim II, appears favorable. Simulated values are 3.5 percent less than historical during the 1987-1992 period. The table also shows that simulated long-term (1975-1998) average deliveries compare quite well and are within 7 percent of historical values.

Performance Parameter	Dry-period average 1987-1992				Long-term average			
	Simulated	Historical	Difference		Simulated	Historical	Difference	
	taf/yr	taf/yr	taf/yr	%	taf/yr	taf/yr	taf/yr	%
SWP south-of-Delta Table A deliveries	1,930	2,030	-100	-4.9	1,810	1,790	20	1.1
CVP south-of-Delta deliveries	2,230	2,320	-90	-3.9	2,650	2,490	160	6.4
Sacramento Valley inflow to the Delta	9,700	9,670	30	0.3	19,830	19,920	-90	-0.5
Net Delta Outflow Index	5,270	5,090	180	3.5	19,070	19,690	-620	-3.1

The total volume of surface water to be held in storage or routed through the model network is the same as historical. Model inflows to the Delta can deviate from historical due to three reasons: storage regulation, groundwater pumping to supplement surface water diversions, and stream-aquifer interaction.

Differences in Delta inflows are primarily caused by differences in project storage regulation (i.e. Lake Shasta, Lake Oroville and Folsom Lake). Storage operations in CalSim II

are driven by two sets of rule curves. The first set of rule curves determines how much of the available project water will be held as carryover storage and how much will be delivered to meet contractors' current-year demands. The second set of rule curves determines when and how-much water will be transferred from north of Delta storage to San Luis Reservoir. These two sets of rule curves are fixed throughout the period of simulation. The rule curves have been determined in prior simulations of CalSim II. They are subjective in nature, but balance the conflicting objectives to maximize long-term average annual deliveries, to maintain water deliveries during the critically dry period 1928-34, and to keep water levels in project reservoirs above minimum levels while meeting minimum flow requirements. Secondly, differences in Delta inflows are due to differences in upstream surface water diversions and return flows. The historical consumptive water demand must be met by the model. Differences in Delta inflow, after accounting for differences in upstream storage regulation, therefore reveal how well CalSim II matches the historical mix of surface water and groundwater to meet demands. Lastly inflows to the Delta are influenced by the stream-aquifer interaction.

For a given south-of-Delta demand and a given Delta inflow, differences in model and historical project exports are indicative of how well the model represents the regulatory operating constraints to which the projects must comply, and how the model simulates storage operations in the San Luis Reservoir.

Conclusions from the study can be framed in the form of answers to some frequently asked questions about CalSim II.

Does Calsim II overestimate the projects' ability to export water from the Delta?

For the supply constrained years 1987-1992 model exports from the Delta average 4,450 taf/yr compared to a historical six-year average of 4,460 taf/yr. This suggests that CalSim II's simulation of the Delta operations is representative of actual historical conditions.

Does CalSim II overestimate the availability of surface water in the Delta by meeting Sacramento Valley in-basin use through excessive groundwater pumping?

The mix of surface water and groundwater used by the model to meet Sacramento Valley consumptive demands depends primarily on project water allocation decisions and levels of minimum groundwater pumping that are specified in the model. Over the 24-year period average annual net groundwater extraction in CalSim II as compared to estimates based on the Central Valley Groundwater Surface water Model (CVGSM) is lower by 378 taf. The average annual net stream inflow from groundwater in CalSim II is 190 taf greater than estimated by the CVGSM for the same period. The combined effect of dynamically modeling groundwater operations in CalSim II (pumping, recharge and stream-aquifer interaction) leads to 188 taf/yr less water being available to the Delta. For the 1987-1992 period the combined effect results in 46 taf/yr additional water being available to the Delta.

How well does CalSim II represent stream flows?

Differences in long-term average annual flows at key stream locations are typically 1.2 percent or less. It is noted that differences are larger for the Sacramento River at the Ord

Ferry gage. At this location a proportion of the water diverted upstream returns downstream so that simulated river flows are sensitive to assumed model water use efficiencies.

How well does Calsim II simulate the Sacramento Valley system?

The net Sacramento Valley accretion is calculated as the Sacramento Valley Delta inflow less releases from Whiskeytown Reservoir, Keswick Reservoir, Lake Oroville and Folsom Lake. The historical 24-year average annual net accretion is 5,950 taf/yr compared with a model value of 5,920 taf/yr.

Do different reservoir operating rules in CalSim II translate into differences in project deliveries?

Simulated month-to-month and year-to-year model results can vary significantly from historical operations. This is primarily due to differences in storage operations. However when averaged over a longer period, model operations (stream flows and deliveries) are very close to historical.

CalSim II Historical Operations Study

1 INTRODUCTION

1.1 CalSim II Model

CalSim is a generalized water resource planning tool developed jointly by the Department of Water Resources (DWR) and the US Bureau of Reclamation Mid-Pacific Region (Reclamation). CalSim II is the application of the CalSim software to model the State Water Project (SWP), the federal Central Valley Project (CVP) and areas tributary to the Sacramento-San Joaquin Delta (Delta). The primary purpose of the CalSim II model is to evaluate the performance of the CVP and SWP systems at current or future levels of development. Comparative analysis of model results can be used to assess the water supply impacts of any proposed expansion of project facilities, changes in regulatory requirements, changes in operating criteria, or many other "what-if" scenarios.

All models have limitations. CalSim II is primarily a mass balance accounting model. Results are dependent upon the quality of the inflow hydrology and the estimated demands. Results also depend on the model operational logic and assigned priorities. Operational decisions must be formalized into mathematical algorithms even when they are in reality subjective in nature. Other limitations are imposed by the spatial and temporal resolution of the model. This report describes the Historical Operations Study undertaken by DWR's Bay-Delta Office as part of a comprehensive evaluation of CalSim II.

1.2 Objective of Study

CalSim II is central to CVP and SWP planning and management, and to many other federal, state, regional and local water related planning activities. The model is either currently being used or will be used to support analysis for the California Water Plan Update, CALFED's Integrated Storage Investigations and Conveyance Programs, South Delta Improvement Program (SDIP), development of the CVP Operating Criteria and Plan (OCAP) and the FERC relicensing of Oroville. Given the wide scope and important nature of these planning activities, accurate estimates of future water supply reliability are crucial. However model estimates of future project exports from the Delta have proved controversial. The purpose of the Historical Operations Study is to evaluate the ability of CalSim II to estimate the delivery capability of the CVP and SWP systems through the simulation of recent historical conditions. Model results should be consistent with past performance or reasons for differences clearly identified. The Historical Operations Study is part of a larger CalSim II evaluation process. Other components of the evaluation include a survey of the water community to gather their views and opinions on CalSim II, a model peer review by leading academics and practitioners, and a model sensitivity analysis. It is hoped that this effort, to assess the quality and limitations of CalSim II, will lead to a wider debate about critical model issues, help direct model development in both the near and long term, and eventually lead to greater public confidence and acceptance of the model.

1.3 Traditional Model Calibration and Verification

The traditional model calibration and verification process is difficult to apply to planning models, such as CalSim II, that predict operations and water supplies for a fixed current or future

level of land use. Continuing development of new supplies, changes in demand and changes to regulatory requirements have resulted in considerable changes to the management of the CVP and SWP over the last 35 years. Projected operations to meet future demands are often predicated on future storage and conveyance facilities and are necessarily different from historical operations. Planning models cannot capture the details of historical operations that are influenced by many short-term events. Instead they aim to represent *long-term* system performance.

1.4 Previous Model Evaluation

DWR's previous planning model, DWRSIM was used by DWR for nearly 20 years. In 1992 as part of an evaluation of DWRSIM, historical Delta inflows were compared to those generated by the model. A specific operations study for normalized 1995 conditions was compared with historical flows for the period 1922-1991. Due to land use changes and the construction of storage and conveyance facilities for the CVP-SWP there were, as expected, substantial differences between model and historical Delta inflows. However, for the period 1982-1991 the average annual inflow differed by only 0.05 percent.

The first application of the CalSim software to the CVP-SWP system was named CalSim I. This model successfully mimicked DWRSIM and was regarded as 'proof of concept' of the new model engine (a mixed integer linear programming solver). CalSim II incorporates many improvements over CalSim I. These include revised hydrology, dynamic groundwater operation, revised project and non-project demands, dynamic allocation of deficiencies on project deliveries and improved modeling of flow-salinity relationships in the Delta.

2 OVERVIEW OF CALSIM II

2.1 Documentation

The following sections give an overview of the main components of the CalSim II model. These components include the inflow hydrology, agricultural and urban demands, contract entitlements, delivery allocation logic, and Delta operational constraints. For a more detailed description of modeling assumptions and procedures the reader is referred to the report prepared on the benchmark studies, dated September 30, 2002, and available from the DWR modeling home page (http://modeling.water.ca.gov). The September 30 version of the benchmark study is an update of the May 17, 2002, version that was used as a basis for the simulation runs in "The State Water Project Delivery Reliability Report," released in 2002.

2.2 Period of Simulation

Typically CalSim II simulates operation of the CVP-SWP system for a 73-year period using a monthly time-step. The model assumes that facilities, land use, water supply contracts and regulatory requirements are constant over this period, representing a fixed level of development (e.g. 2001, 2020 or 2030). The historical flow record October 1921 - September 1994, adjusted for the influence of land use change and upstream flow regulation, is used to represent the possible range of water supply conditions. Implicitly it is assumed that the past is a good indicator of future hydrologic conditions.

2.3 Representation of Surface Water System

CalSim II represents all areas that contribute flow to the Delta. The geographical coverage includes: the Sacramento River Valley, the San Joaquin River Valley, the Sacramento-San Joaquin Delta, the Upper Trinity River, the CVP and SWP deliveries to the Tulare Basin, and the SWP deliveries to the central and south coast regions. A network of nodes and arcs are used to represent this water resource system. Nodes, or control points, represent facilities or key points within the system being modeled. Storage nodes represent surface reservoirs or groundwater basins. Non-storage nodes represent flow junctions within the system such as a stream confluence or a diversion location. Arcs connect nodes and represent stream and canal reaches, pipelines, tunnels or other conveyance facilities. They also may represent an aggregation of flow components, e.g. total stream diversions within a region. As far as possible, the CalSim II network is physically based so that nodes and arcs have physical counterparts. Figure 1 shows the location of the principal CVP and SWP facilities. Figure 2 shows the geographical area represented by CalSim II. Figure 3 shows the system network used for the Historical Operations Study (this is a modified version of the standard CalSim II network ; some portions of the standard network schematic that represent river systems for which fixed historical input is used have been eliminated).

2.4 Representation of Groundwater System

The current representation of groundwater in CalSim II is only a first step towards developing a fully integrated groundwater surface water model. DWR is continuing development of the Central Valley Groundwater Surface water Model (CVGSM) with the long-term goal of dynamically linking this model to CalSim II. The current groundwater implementation in CalSim II is only used to calculate the stream-aquifer interaction.

Within the Sacramento Valley floor, groundwater is explicitly modeled in CalSim II using a multiple-cell approach based on depletion study area boundaries. There are a total of 12 groundwater cells. Stream-aquifer interaction, groundwater pumping, recharge from irrigation and sub-surface flow between groundwater cells are calculated dynamically. All other groundwater flow components are preprocessed and represented in CalSim II as a fixed time series. In areas of high groundwater, CalSim II calculates groundwater inflow to the stream as a function of the groundwater head and stream stage. In areas of low groundwater elevation where the groundwater table lies below the streambed, CalSim II assumes a hydraulic disconnect between the stream and aquifer. In this case seepage is only a function of stream stage.

2.5 Depletion Study Areas

In order to develop the input hydrology for CalSim II and its predecessor DWRSIM, DWR developed a set of depletion study areas (DSAs) that divide the Central Valley and the surrounding watersheds into 37 regions. The boundaries were chosen to facilitate the calculation of a water balance. Typically, their delineation follows drainage lines and watershed boundaries in the foothills and a combination of drainage and water service areas within the Central Valley floor. The lowest elevation of the principal stream in a DSA is called the “outflow point.” These points usually correspond to the location of stream gages where the historical flow is known. The DSAs are depicted in Figure 4. The DSA defines the spatial resolution of the CalSim II model in the Sacramento Valley. Water supplies and the majority of the demands are aggregated by DSA. Seven DSAs represent the Sacramento Valley floor; two additional DSAs represent the Delta.

2.6 Inflow Hydrology

2.6.1 General

All inflows to the model are preprocessed and are input as fixed monthly time series. Surface water inflows can be categorized as rim flows or as valley floor accretions. The rim flows represent streams that cross the boundary of the physical system being modeled and typically are inflows to the major foothill reservoirs or inflows from minor unregulated streams. Valley floor accretions represent surface water that originates within the boundary of the region being modeled from direct runoff. Preprocessed groundwater inflows include recharge from precipitation and subsurface groundwater inflow from the surrounding foothills.

2.6.2 Accretions

Accretions are calculated for each of the seven DSAs in the Sacramento Valley floor. They represent direct runoff from precipitation plus any inflow from rim basins or canal/stream imports that are not explicitly represented elsewhere in the model. The resulting accretions represent an aggregate flow and cannot be associated with any particular stream.

The historical accretions are calculated as the closure term of a hydrologic mass balance performed for each DSA. The historical depletion of surface water and groundwater supplies within the developed area is calculated using DWR's Consumptive Use (CU) model based on historical estimates of land use. Historical groundwater pumping, recharge and stream gains are taken from the historical run of CVGSM. Historical imports, exports, stream inflows and outflows are based on historical gage data.

2.6.3 Land Use Change Adjustment

To represent a fixed level of development, historical surface water inflows must be adjusted to account for the impact of land use change. Urbanization results in greater storm runoff. Clearing of native vegetation reduces the depletion of precipitation through evapotranspiration stored as soil moisture. The effects of land use change on direct runoff and groundwater recharge are calculated by simulating soil moisture conditions over the 73-year historical period. Changes in the consumptive use of precipitation are added (or subtracted) to the historical inflows/accretions.

2.7 Demands

2.7.1 General

Demands are preprocessed independent of CalSim II and may vary according to the specified level of development (e.g. 2001, 2020) and according to hydrologic conditions. They are typically input to the model as a monthly time series. Demands are classified as CVP project, SWP project, local project or non-project. CVP and SWP demands are separated into different classes based on contract type.

2.7.2 Agricultural Demands

Demands in the Sacramento River Basin (including the Feather and American River basins) and Delta are determined based on land use and vary by month and year according to

hydrologic conditions. Land use-based demands are calculated using the CU model. The model simulates soil moisture conditions for 13 different crop types over the historical period. Irrigation demand is triggered when soil moisture falls below a specified minimum. The CU model calculates the crop consumptive use of applied water. The consumptive use is subsequently multiplied by water use efficiency factors to obtain a regional water requirement to be met from stream diversions or groundwater pumping. Agricultural demands in the Delta are represented more simply as an overall mass balance between precipitation and crop evapotranspiration.

CVP and SWP agricultural demands south of the Delta are based on contract amounts. CVP demands south of the Delta are assumed fixed at maximum contract amount and do not vary year to year. SWP agricultural demands in the San Joaquin Valley are capped to the full Table A amount, but are reduced in wetter years using an index developed from annual Kern River inflows to Lake Isabella. (Note: "Table A" refers to an exhibit to the water supply contracts between SWP contractors and DWR).

2.7.3 M&I Demands

Sacramento Valley M&I demands are not fully addressed in CalSim II. In general, indoor urban water use is considered non-consumptive and is ignored by the model. Outdoor urban water use is treated as an irrigation demand and is combined with the agricultural demands. M&I diversions, although not entirely consumptive, can have a large influence on reservoir operations. Both indoor and outdoor M&I surface water diversions have therefore been included in CalSim II for the American and Lower Sacramento River as they partially determine the operation of Folsom Lake. Outdoor urban demand is calculated by the CU model. The irrigated area is a fixed fraction of the total urban area as measured by DWR in land use surveys.

CVP and SWP south of Delta M&I demands are contract based. CVP demands are set to maximum contract amount and do not vary. SWP M&I demands south of the Delta are split into Metropolitan Water District of Southern California (MWDSC) and others. MWDSC demands are defined by the agency through a process of iteration between CalSim II and MWDSC's integrated resource planning simulation (IRPSIM) model, and vary from year to year. Other SWP M&I contractors' demands are fixed at their full Table A amount.

2.7.4 Water Use Efficiency in Sacramento Valley

Part of the water supply is consumed through crop evapotranspiration, part returns to the surface or groundwater system, and part is depleted or lost through canal evaporation and use by riparian vegetation. In CalSim II these non-recoverable losses are assumed to be 10 to15 percent of the crop consumptive use of applied water. Demands are input to CalSim II in the form of a regional diversion/pumping requirement to be met from either surface water or groundwater. Conveyance losses are not represented explicitly; efficiency and non-recoverable loss factors are used to determine the portion of the supply that will return to the system as surface return flow or as deep percolation to groundwater. Efficiency factors may vary by month and by year. Table 2 expresses the regional water use efficiency as the long-term average ratio between crop consumptive use of applied water and the diversion/pumping requirement. Where indoor urban water use is explicitly modeled, it is assumed that there is a 100 percent return flow to the surface water system.

2.7.5 Project/Non-Project Split

The CU model is used to estimate the aggregate demands for each DSA. Demands are subsequently disaggregated in CalSim II into project demands and non-project demands. Project demands are subject to reduced water allocations based on CVP and SWP contract provisions, while non-project demands are satisfied from sources other than project storage and project conveyance facilities and are reduced as a function of water availability in the absence of project operations. For each DSA, project demands are calculated as a fixed percentage of the total land use-based demand. The percentages are given in Table 2. The split between project and non-project demands was determined by comparing project acreage within each DSA to the total crop acreage within the DSA. The split is based on cropped acreage weighted by unit crop-specific CUAW values.

2.8 Contract Entitlements

2.8.1 Representation

Arcs representing surface water diversions in the Sacramento Valley are composed of a set of sub-arcs, one for each contractor type within the DSA (south of the Delta arcs represent a single contractor type) and one representing non-project diversions. An upper bound is placed on the flow through the project contractor arcs, which is the minimum of the land use-based demand or the maximum contract amount less any imposed deficiencies. Demand for individual project contractor types is calculated assuming that the land use-based demand is in proportion to the contract entitlement.

2.8.2 CVP Contractors

CVP contracts in the Sacramento Valley, excluding the American River basin, consist of settlement contracts, agricultural water service contracts, urban water service contracts, and refuge requirements. CVP contracts south of the Delta consist of exchange contracts, agricultural service contracts, and M&I service contracts. Table 3 lists the maximum contract amounts for each contract category.

If the Shasta index is critical then deliveries to the settlement contractors, exchange contractors, and refuges are reduced to 75 percent of contract amount. Allocation to these contractors is not affected by water availability, and they receive full allocation in all non-Shasta critical years. Water allocation to agricultural service contractors and M&I service contractors are accomplished using a tiered allocation. In the first tier, agricultural service contractors are reduced to 75 percent of contract amount while M&I allocations are not reduced. In the second tier, both M&I and agricultural service contractors are reduced by equal percent of allocation until M&I is reduced to 75 percent and agricultural service is reduced to 50 percent. In the third tier, M&I remains at 75 percent and agricultural service contractors are reduced to 25 percent of contract. In the fourth and final tier, M&I and agricultural service contractors are reduced on an equal percentage basis until M&I reaches 50 percent and agricultural service contractors are reduced to 0 percent.

2.8.3 SWP Contractors

Twenty-nine agencies have contracts for a long-term water supply from the SWP totaling about 4.2 million acre-feet annually, of which about 4.1 million acre-feet are for contracting agencies with service areas south of the Sacramento-San Joaquin Delta. About 70 percent of this amount is the contract entitlement for urban users and the remaining 30 percent for agricultural users. CalSim II allocations are set per the Monterey Agreement criteria, which imposes any deficiencies equally between agricultural and M&I requests as a percentage of the Table A amounts.

SWP demands north of the Delta are located entirely on the Feather River. Of the three Feather River area contractors, only County of Butte and City of Yuba City are represented in CalSim II; Plumas County FCWCD is located upstream and outside of the modeled area. The SWP has additional obligations to meet water demands of Feather River senior water right holders. The Feather River settlement contractors are entitled to approximately 1.0 maf/yr diversion from the Feather River. Typically their contracts with DWR specify that deliveries may be reduced during low flow conditions to Lake Oroville by no more than 50 percent in any one year, no more than 100 percent in any seven consecutive years, and not more than the reduction imposed on SWP contractors. However certain amounts of entitlement are not subject to deficiencies.

2.8.4 American River

Urban demands on the lower American River are based on the Sacramento Water Forum Agreement. In order to achieve the correct operation of Folsom Lake and the American River, CalSim II represents the full urban demand, both indoor and outdoor (i.e. both non-consumptive and consumptive).

2.9 Operational Priorities

Simulation models have traditionally required the user to formulate detailed operating rules that guide system operation in all eventualities. The operation rules are gradually adjusted based on model results until the desired outcome is achieved. Defining the initial set of operating rules is problematic and their subsequent adjustment time consuming. CalSim's use of a mixed integer linear programming solver allows the separation of system objectives from the details of how to achieve them. Objectives are implemented using a mix of weights and constraints. User specified weights represent priorities for allocating flow and storage. The weights are relative and indicate the order in which goals are to be attained. The relative size of the assigned weights requires that high-order priorities must be optimized before lower-order goals can be considered. The trading of a small degradation of a high-order priority for a large improvement in a low-order priority is effectively prevented. The use of single-step optimization reduces, rather than obviates, the need for operating rules. Strategic rules are still required in CalSim II to guide decisions with long-term consequences, e.g. target carryover storage, and transfer of project storage from north to south of the Delta.

2.10 Project Allocation Logic

Allocation of CVP and SWP water for a given year is based primarily on four variables: forecasted inflows, the volume of water in storage, projected carryover storage requirements, and

in-basin and Delta regulatory requirements. CalSim II determines deliveries to CVP and SWP contractors based on runoff forecast information and standardized rule curves. Updates of delivery levels occur monthly from January 1 through May 1 for the SWP and March 1 through May 1 for the CVP as water supply forecasts become more reliable. SWP deliveries are determined based upon spring storage conditions at Lake Oroville and the SWP portion of San Luis Reservoir, forecasted runoff available to the SWP, and carryover storage targets. The CVP deliveries are similarly determined using water supply parameters, but for south-of-Delta deliveries additional conveyance capacity constraints are considered.

2.11 Non-Project Allocation Logic

Non-project demands are associated with riparian water rights, ground water pumping, or private storage projects. Project demands may be met from storage releases from CVP and SWP reservoirs, but no additional releases are made to satisfy non-project demands. CalSim II keeps separate track of stream flows unimpaired by project storage operations and diversions. Available water for non-project demand includes return flows from non-project diversions.

2.12 Groundwater Pumping Logic

Within the Sacramento Valley demand is met from a mix of surface water and groundwater. Farmers and urban municipalities may have access to either one or both of these supplies. Minimum groundwater pumping is specified in CalSim II to represent those demands that only have access to groundwater. The CalSim II operation logic is written so that demands are first met by groundwater pumping, up to the minimum specified volume. It is subsequently met by surface water diversions up to the contract amount for project demands and up to its availability for non-project demands. Any unmet demand is met by additional groundwater pumping so no shortages occur. Minimum groundwater pumping volumes are based on the historical Central Valley Groundwater Surface water Model (CVGSM) run. The minimum groundwater pumping is split into project and non-project groundwater pumping using the project non-project split described earlier.

2.13 Flow-Salinity Relationships in the Delta

The State Water Resources Control Board (SWRCB) specifies water quality standards for the Delta. Currently the CVP and SWP share the obligation to meet these standards as defined by the Coordinated Operation Agreement. Salinity standards must be translated into flow equivalents to be modeled in CalSim II. However flow-salinity relationships in the Delta are non-linear. CalSim II uses an external module to estimate the salinity at four water quality stations within the Delta. The module consists of an artificial neural network (ANN), trained using a one-dimensional hydrodynamic finite difference model of the Delta’s channel system. CalSim II passes antecedent (previous month) flow conditions and known (or estimated) current month flows to an ANN dynamic link library (DLL). The DLL returns coefficients for a linear constraint that binds Sacramento River Delta inflows to Delta exports based on a piecewise linear approximation of the flow-salinity relationship.

3 REVIEW OF HISTORICAL PROJECT OPERATIONS

In addition to changing facilities and the year-to-year hydrologic variation, management of the CVP-SWP has been affected by the release of SWRCB water quality control plans and water right decisions, state and federal biological opinions relating to Sacramento River and Delta native fish species, and discretionary agreements with other regulatory agencies. Summarized below are the major historical events that have affected the operation of the projects over the last four decades.

1960: SWP Water Supply Contracts

- MWDSC signs first of SWP water supply contracts.

1962: SWP South Bay Aqueduct

- First deliveries to Santa Clara County and Alameda County.

1963: CVP Trinity River Division

- First export of water from Trinity River to Whiskeytown Lake. Annual required minimum flow release from Lewiston Lake to Trinity River set at 120.5 taf.

1967: Water Right Decisions 1275 and 1291 (D-1275 and D-1291)

- D-1275, revised by D-1291, authorizes issuance of water right permits to DWR for the SWP. D-1275 includes agricultural salinity standards for the Delta.

1968: SWP Deliveries

- Lake Oroville fills for the first time. First water delivered to SWP San Joaquin Valley contractors.

1971: Water Right Decision 1379 (D-1379)

- D-1379 establishes new water quality standards for the Delta and Suisun Marsh to be met jointly by the CVP and SWP, rescinding previous requirements of D-1275 and D-1291. D-1379 later stayed by the courts as a result of litigation.

1972: SWP Deliveries

- First water delivered to SWP contractors in Southern California.

1976: Drought

- Start of two-year drought.

1977: Drought

- Water-year 1977 is driest year of record. SWRCB twice amends regulations for the Delta temporarily easing water quality standards.

1978: SWRCB Water Quality Control Plan (WQCP)

- 1978 WQCP establishes revised water quality objectives for flow and salinity in the Delta and Suisun Marsh.

1978: Water Right Decision 1485 (D-1485)

- D-1485 issued by SWRCB rescinds D-1275, D-1291 and D-1379.
- D-1485 introduces a four-river-index, water-year-type dependent standards for Delta water quality and outflow requirements and fishery protections. Export reductions imposed on projects; 3,000 cfs in May and June for both Tracy and Banks pumping plants, 4,600 cfs in July for Banks. Authorized SWP wheeling for CVP to redress impact of export restrictions in May and June.

1981: Trinity River Flow Evaluation

- USDI Secretarial Decision (January 16) directs minimum annual flow releases to the Trinity River of 340 taf in normal and wet years, 220 taf in dry years and 140 in critically dry years.

1986: Coordinated Operation Agreement (COA)

- Agreement between Reclamation and DWR defines sharing formula for meeting in-basin use and for partition of surplus flows. COA also provides for the CVP to wheel water through SWP facilities. COA replaces a system of year-to-year agreements that were in place since 1971.

1987: Suisun Marsh Preservation Agreement

- DWR, Reclamation and DFG sign Suisun Marsh Preservation Agreement, which provides water quality standards and provides details on implementing the plan.

1987: Drought

- Beginning of six-year drought begins, ends in 1992.

1988: SWP

- DWR completes North Bay Aqueduct pumping plant and the Suisun Marsh salinity control gates and establishes the Kern Water Bank for groundwater conjunctive use.

1989: Listing of Winter-run Salmon

- Sacramento River winter-run chinook salmon listed as threatened species by NMFS and endangered by CDFG, requiring operational changes in the CVP and SWP.

1991: Trinity River Flows

- USDI Secretarial Decision (May 8) specifies minimum annual flow releases to the Trinity River of 340 taf for water year 1992-1996.

1991: SWP Operations

- DWR expands capacity at Banks pumping plant to 10,300 cfs.
- Drought Water Bank Program created and activated to alleviate major cutbacks to contractors.

1992: Central Valley Project Improvement Act (CVPIA), Title XXXIV of PL 102-575

- CVPIA, passed by Congress, addresses several issues for improving water quality and ecosystem health, sets new guidelines for contracts and transfers, and dedicates 800 taf for fish and wildlife purposes in addition to Reclamation refuge water supplies.

1992: Drought Water Bank Program
- Drought water bank program activated to alleviate major cutbacks to contractors.

1992: Winter-run Chinook Salmon Biological Opinion (BO)
- A one-year BO issued by NMFS (February 14) on winter-run Chinook salmon specifies minimum flows below Keswick Dam to provide temperature control and requires the Red Bluff diversion dam gates to remain open for a longer period.

1992: Relaxation of Standards
- Salinity standards at Emmaton relaxed in June to maintain sufficient cool water supplies in north-of-Delta reservoirs for salmon spawning (in preference of not violating the Contra Costa Canal standard); Contra Costa Canal Intake standard of 155 days below 150mg/l relaxed in November-December (with restrictions on Banks/Tracy exports).

1993: Winter-run Chinook Salmon Biological Opinion (BO)
- Long-term BO released by NMFS (February 12) for the Sacramento River winter-run Chinook salmon. Requirements include 1.9 maf carryover storage in Lake Shasta, Sacramento River minimum flow requirement downstream of Keswick Dam, Qwest requirements to eliminate reverse flow, and constraints on the Delta cross-channel operations. BO limits incidental total take to less than 1 percent of the out-migration population.

1993: Delta Smelt Biological Opinion (BO)
- Delta smelt declared a federally threatened species. USFWS issues one-year BO (May 26). Incidental take requirements limit combined project exports to 4,000 cfs in May and 5,000 cfs in June. Additional Qwest standard specified.

1994: Drought Water Bank Program
- Drought water bank activated to alleviate major cutbacks to contractors.

1994: Delta Smelt Biological Opinion (BO)
- Second one-year BO released by USFWS (February 4). CVP-SWP operations found likely to jeopardize continued existence of Delta smelt. Reasonable and prudent alternative defines X2 estuarine habitat standard, adds additional net Delta outflow criteria and minimum flows for the San Joaquin at Vernalis.

1994: Monterey Agreement

- Monterey Agreement between DWR and SWP contractors (signed December 1) provides for greater flexibility in water operations. Provisions include permanent water transfers, creation of a turn-back pool, storage of water outside of SWP service area, and use of SWP facilities for transfer of non-SWP water. During shortages water to be allocated in proportion to contractors' Table A amounts.

1994: Bay-Delta Accord

- Bay-Delta Accord signed (December 15) by state and federal agencies.
- Agreement contains a set of standards that include export: inflow (E:I) restrictions on project pumping, X2, periods of closure for the Delta cross channel gate, minimum flows in the San Joaquin River at Vernalis and export limits during the April/May 30-day pulse-flow period.
- Compliance with take provisions of biological opinions under ESA to be achieved at no additional water cost to projects through adjustment of export pumping limits.

1994: SWRCB Draft Water Quality Control Plan (WQCP)

- Draft 1994 WQCP issued by SWRCB, developed concurrently with the Bay-Delta Accord.

1995: SWRCB Water Quality Control Plan (WQCP)

- WQCP defines new water quality objectives for the Delta. The WQCP contains revised EC and chloride standards and Delta outflow requirements. X2 standard specified. An export: inflow ratio limits total project pumping. Exports during the April 15 – May 15 San Joaquin pulse flow period limited to the greater of 1,500 cfs or the San Joaquin River flow at Vernalis.

1995: SWRCB Order WRO 95-6

- Temporary 3-year approval of CVP-SWP joint point of diversion.

1995: Delta Smelt Biological Opinion (BO)

- USFWS issues (March 6) long-term BO for Delta smelt, revising take limits at project export pumps.

1995: Winter-run Chinook Salmon Biological Opinion (BO)

- NMFS issues amendments (May 17) to 1993 BO to conform to Bay-Delta Accord, revising operation of the Delta cross channel, Qwest requirements and take limits at the project export pumps.

1998: SWRCB Order WRO 98-9

- Extends temporary conditional approval of CVP-SWP joint point of diversion.

1999: SWRCB Water Right Decision 1641 (D-1641)

- D-1641 implements objectives of the 1995 Water Quality Control Plan.
- Replaces D-1485 as modified by WRO 98-9.
- Amends CVP and SWP permits.

- Adopts the Vernalis Adaptive Management Program (VAMP).
- Conditional approval of joint point of diversion.

2000: SWRCB Order WR 2000-02
- Order denies petitions for reconsideration of D-1641. Amends several conditions of D-1641.

2000: Draft Trinity River EIS/EIR
- Preferred alternative specifies annual minimum flow releases of 369-815 taf/yr, depending on water year classification, and a minimum carryover of 600 taf.

2000: CALFED
- Framework for Action for proposed CALFED long-term plans signed.
- Release of final Programmatic EIS/EIR for the Bay-Delta Program.
- Record of Decision (ROD) signed implementing proposals listed in the Framework. ROD establishes the Environmental Water Account.

4 HISTORICAL OPERATIONS STUDY MODELING ASSUMPTIONS

4.1 Study Description

For the Historical Operations Study, the study period was selected to be water years 1975 to 1998. This 24-year period includes the 1976-77 and 1987-92 droughts, as well as the driest (1977) and the wettest (1983) years on record. Input to the current CalSim II model has been changed to reflect the historically changing rather than fixed conditions as is the case for studies at a specific level of development. Model inflows correspond to the historical flow from gage records, or estimated from a hydrologic mass balance, or stream-flow correlation. Land use-based demands are calculated for annual varying land use, as determined from DWR's land surveys and county commissioners' reports. Project contracts and entitlements have been changed to their historical level. The operational logic has been revised to reflect the changing regulatory environment, such as the release of the NMFS 1993 winter-run Chinook salmon biological opinion, and the release of the SWRCB 1995 Water Quality Control Plan.

The Historical Operations Study is limited in geographical scope to a dynamic operation of the Sacramento Valley, the Delta, and the CVP-SWP facilities south of the Delta. The study is derived from the Benchmark Study released on September 30, 2002, available at http://modeling.water.ca.gov. Changes to the Benchmark Study have been kept to a minimum so as to maintain the essence of the CalSim II model used for the estimate of projected water supply reliability at a specific level of development. The following sections describe the differences between the Historical Operations Study and the Benchmark Study.

4.2 Fixed Operations

Several decision variables that are dynamically determined in the CalSim II Benchmark Study are fixed at their historical level in the Historical Operations Study. These are described in the following sections.

4.2.1 Trinity River Exports to the Sacramento Valley

Minimum instream flows for the Trinity River are required to insure the preservation and propagation of fish and wildlife. Release requirements from Lewiston Lake have varied over the 24-year period of simulation as a result of USDI Secretarial Decisions and CDFG and CVPIA requests. To reduce the number of variables and focus on evaluating model's performance in simulating the Sacramento Valley's hydrology and the operation of the major upstream storage facilities, the Trinity system's imports to the Sacramento River Basin were constrained to their historical values based on the records provided to DWR by Reclamation. Figure 5 shows the historical flows for the 1975-1998 period.

4.2.2 San Joaquin River Flow at Vernalis

The CalSim II representation of the east side of the San Joaquin Valley is currently being substantially revised. This part of the system is operated independently of the SWP and other elements of the CVP. It was therefore decided to exclude the dynamic operation of the east San Joaquin Valley from the Historical Operations Study, and constrain San Joaquin River flows at Vernalis to their historical value. Figure 6 shows the historical flow at Vernalis, obtained from DAYFLOW (DAYFLOW is a historical database of daily average flows at various locations in the Sacramento San-Joaquin Delta maintained by DWR). The flow at Vernalis is relatively small, averaging about 3.7 maf/yr, as compared to the average annual flow of the Sacramento River at Freeport of approximately 16.8 maf/yr.

4.2.3 Mendota Pool Inflow

The Delta Mendota Canal deliveries to CVP exchange contractors in the San Joaquin Valley are made via the Mendota Pool. The Mendota Pool also serves water service contractors and the Mendota Wildlife Management Area. Flood control releases from Millerton Lake may be used to satisfy portions of the refuge and contractors' demands. Millerton Lake operations are coordinated with operations of the Delta Mendota Canal in the Delta Division so as to use all available Millerton Lake flood control releases before additional water is delivered to Mendota Pool. During wet hydrologic periods, overflow from the Kings River may enter the San Joaquin River Basin at the Mendota Pool through the Fresno Slough. This water is also used to meet demands at Mendota Pool. Flood control releases from Millerton Lake that exceed the requirements of the San Joaquin River Exchange contractors are diverted into the Chowchilla Bypass until flows in the Chowchilla Bypass reach its capacity of 6,500 cfs. This diversion of flow helps avoid flooding of agricultural lands located in the floodplain along the San Joaquin River below Gravelly Ford.

For the Historical Operations Study the inflow to the Mendota Pool is set equal to the combined flow of the San Joaquin River below the confluence of the Chowchilla Bypass and the inflow from the Fresno Slough. The average annual historical inflow to the Mendota Pool for the 24-year simulation period is 407 taf.

4.2.4 Delta Inflow from the East-Side Streams

The East-Side Streams is the collective name for a group of streams located between the American River and Stanislaus River that flow into the eastern Delta (Cosumnes, Mokelumne, Calaveras, and minor creeks). The watershed is represented by DSA 59. It includes New Hogan

Reservoir on the Calaveras River and Pardee and Camanche reservoirs on the Mokelumne River. No land use-based hydrology has been developed for DSA 59. For the 2001 and 2020 LOD model studies, demands are based on contract entitlement and recent historical deliveries. At a current or projected LOD, operation of the Mokelumne system is constrained to mimic output from EBMUD's simulation model EBMUDSIM. Rather than develop historical agricultural and urban demands for the area, and historical reservoir operation logic, it was decided to not model DSA 59 dynamically but constrain Delta inflow from DSA 59 to its historical level as estimated by DWR Hydrology and Operations Section. Figure 7 presents the historical data used in the simulation run for the inflow from the East-Side Streams.

4.2.5 American River M&I Deliveries

Various urban municipalities divert water from Folsom Lake. Rather than calculate a historical demand for the urban diversions from the American River, diversions have been constrained to the historical deliveries provided to DWR by Reclamation.

4.2.6 Wildlife Refuge Deliveries

Refuge demands in the Sacramento Valley comprise the National Wildlife Refuge complex (Sacramento NWR, Delevan NWR, Colusa NWR and Sutter NWR) and the Gray Lodge Wildlife Management Area. For the Benchmark Study, refuge demands are set at Level 2, as identified by Reclamation in their refuge water supply investigations. Level 2 corresponds to the recent historical average annual water delivery. For the Historical Operations Study refuge demands are set equal to Level 2.

4.2.7 Sacramento Valley Inflows

Sacramento Valley inflows and Valley floor accretions, including Sacramento River inflow to Lake Shasta, Feather River inflow to Lake Oroville, American River inflow to Lake Folsom, and local flows to Sacramento River from Cottonwood Creek, Paynes Creek, Thomes Creek, Stony Creek, Butte Creek, and inflow to Feather River from the Yuba-Bear river system, have been fixed at their historical level as estimated by DWR Hydrology and Operations Section. The total annual volume of these historical flows is shown in Figure 8. The Figure also shows the historical import from the Trinity River system, which averages about five percent of the total natural inflow to Sacramento River.

4.2.8 Delta Inflows

Inflows to the Delta other than from the Sacramento River and from the Yolo Bypass are fixed at their historical levels. Figure 9 shows the relative scale of the inflow to the Delta from the combined San Joaquin River and Eastside Streams as compared to the total inflow from the Sacramento River Basin.

4.3 Demands

4.3.1 Land-use Based Demands

As for the Benchmark Study, all agricultural and outdoor demands in the Sacramento Valley and Delta are land use based. Table 1 gives the estimated historical land use data in the

Sacramento Valley. Table 2 gives the corresponding consumptive use demand, the diversion/pumping requirement and, for comparison, the estimated maximum contract amount.

4.3.2 CVP Demands

As for the Benchmark Study, CVP annual contract entitlement serves as an upper bound on CVP deliveries both north and south of the Delta. It is assumed that the current contract amounts have been in place for the full 24-year period of simulation, with the exception of the San Felipe Unit that commenced deliveries in 1987. In the Historical Operations Study, like the Benchmark Study, CVP demands south of the Delta are set equal to the full contract amount (i.e. prior to any imposed deficiencies). Table 3 gives the assumed historical CVP demand and contract amounts provided to DWR by Reclamation.

4.3.3 SWP Demands

Table A

SWP long-term contractors submit their initial requests for Table A deliveries to DWR in December before the start of the contract year. These initial requests are made with no knowledge of the coming water year hydrologic conditions and therefore tend to be conservative. In wet years contractors typically revise requests downward depending on local wetness conditions and the availability of local supplies. The historical request data are available from SWPAO.

Table 4 lists the annual historical deliveries for the SWP, along with the contractors' requests and the approved allocations. Table A deliveries are subdivided into south-of-Delta (col. 2) and north-of-Delta (col. 3). The table also gives Article 12d, Article 14b, Article 21, and Turnback Pool Water. Column 12 of the table ('CalSim Format Table A Delivery') represents annual delivery adjusted to match the way that deliveries are represented in CalSim II. Deliveries made under Article 21 (interruptible deliveries) have been removed, and deliveries under Article 12d, Article 14B, and carryover are adjusted so that they are added to the previous year's delivery, the year that they were pumped from the Delta. Under historical conditions these deliveries were made in the following year.

In the Historical Operations Study the adjusted historical deliveries (Table 4, Col. 12) were used as SWP south-of-Delta contractors' demands in wet and above-normal years, when there was usually more than sufficient water available for making deliveries and the operation of the system was driven by contractors' demands. In the below-normal, dry and critical years, when the operation was supply driven, the annual demands were set at the initial contractors' requests. Table 5 lists the resulting demands for the south-of-Delta contractors used in each year of the study. North-of-Delta SWP contractors' demands are relatively small, and were held constant every year at the full Table A amount.

Water Rights

The Feather River Service Area is part of DSA 69. Demand for the FRSA is land use based and is calculated as 70 percent of the total DSA demand. Deliveries to water right holders within the FRSA are limited by the terms of their contracts with DWR. In the Historical Operations Study the contractual conditions are kept constant and are as provided by DWR's

State Water Project Analysis Office (SWPAO). In non-drought years the FRSA water rights holders are entitled to their full contract entitlement. In 'drought' years (1977, 1988 and 1991) part of their contract entitlement is subject to a reduction of up to 50 percent.

Article 21

Article 21 of the contracts permits delivery of surplus water in addition to Table A deliveries. Article 21 water is delivered directly from Banks Pumping Plant; it is not stored in San Luis Reservoir for later delivery to contractors. Article 21 deliveries do not impact Table A allocations. For the 2001 LOD Benchmark Study, Article 21 demand is set at 134 taf/month. Modeling of Article 21 water has little effect on the rest of the system, although changes in flows through the Delta may impact the flow-salinity relationship. For the Historical Operations Study it was decided not to model Article 21 water. Similarly, CalSim II does not model delivery of non-SWP water or deliveries made under the drought water bank program.

4.4 Monterey Agreement

The Monterey Agreement, signed by DWR and the State Water Contractors in December 1994, laid out principles for amending the water supply contracts. Prior to the agreement, shortage provisions in the contracts favored M&I contractors. Principle 2 of the Agreement states that each contractor will be allocated part of the total available project supply in proportion to the Table A amounts, irrespective of type of use. For the Historical Operations Study the SWP allocation procedure is based on the Monterey Agreement for the entire period of simulation. Given that San Luis Reservoir reregulates Delta exports, it is considered that total annual SWP model deliveries south of the Delta are not significantly affected by the allocation mechanism between agricultural and urban contractors.

4.5 Regulatory Baseline

Simulation of historical conditions rather than a fixed level of development requires accounting for the changing regulatory baseline to which project operations must adhere. For the Historical Operations Study the historical regulations have been simplified into three periods.

- October 1974 – September 1992: represented by State Water Resources Control Board (SWRCB) Water Right Decision 1485 (D-1485),
- October 1992 – September 1994: represented by D-1485 and the 1993 National Marine Fisheries Service (NMFS) winter-run chinook salmon biological opinion (minimum carryover storage in Lake Shasta, and temperature related minimum instream flows downstream of Keswick Rservoir),
- October 1994 – September 1998: represented by SWRCB Water Right Decision 1641 (D-1641) and the 1993 winter-run biological opinion

While this does not fully account for all the changes in project and system-wide operational criteria, especially export curtailments due to fish entrainment, it is considered a reasonable approximation for the current analysis. A more detailed description of the regulations modeled in each of these three periods is given in Table 6.

4.6 Initial Conditions

For the Historical Operations Study, initial reservoir storage conditions are set to historical September 1974 end-of-month storage.

4.7 Mass Balance Errors

The CalSim II accretions are closure terms in a hydrologic mass balance, and therefore include the sum of errors associated with the other terms. These include stream gage measurement errors, errors in estimating consumptive use of applied water (CUAW) and non-recoverable losses, as well as errors in estimating the historical net contribution of groundwater The advantage of using a hydrologic mass balance to estimate accretions is that many of these errors cancel out. For example, an over-estimation of historical CUAW will result in an over-estimate of the accretion. During model simulation the additional accretion is available to meet the over-estimated CUAW. Errors are introduced when the assumed model land use at a projected level of development varies from the historical land use. For this reason the CalSim II hydrology is less reliable for the earlier period of simulation. It can be shown that the additional model outflow to the Delta, Q_m, is:

$$\Delta Q_m = \left(\hat{Q}_h - \overline{Q}_h\right) + \left(GW_m - \hat{G}W_h\right)$$

where $\hat{Q}_h$ is the estimated historical outflow, $\overline{Q}_h$ is the actual historical outflow, GW_m is the net groundwater contribution (including the stream-aquifer interaction), and $\hat{G}W_h$ is the estimated groundwater contribution. Historical stream-aquifer interaction is estimated from CVGSM. Whether correct or not this estimate is built into the calculation of valley floor accretions, so that any departure from the *assumed* values will cause a difference in inflow to the Delta.

5 RESULTS

5.1 Historical Versus Simulated Operations

The performance of CalSim II in simulating historical conditions is presented in this section by focusing on how closely the model is able to reproduce project operations during the long-term (water years 1975-1998) and during the critically dry period (drought of 1987-1992). The results are summarized in Table 7. It is noted that the simulated month-to-month, and sometimes year-to-year, operation of the system may vary greatly from the actual historical operation, whilst long-term average flows and deliveries are typically close. Some of the factors that could contribute to these differences, subjectively listed in decreasing significance, are:

- Delivery versus carry-over storage rules
- Delta outflow requirements to comply with SWRCB standards
- South-of-Delta demand assumptions
- Level of north-of-Delta groundwater pumping
- Rule curves to transfer water from north of Delta reservoirs to San Luis Reservoir
- Crop consumptive use (of applied water) and agricultural water use efficiency

- Assumptions on historical land use, and project vs non-project demands
- Stream-aquifer interaction
- Historical operations based on daily decisions as opposed to simulated operation based on monthly decisions
- Implementation schedule of regulatory decisions
- Export curtailments due to fish take limits
- CVP reservoir balancing north-of-Delta (Shasta/Folsom)
- Compliance with the provisions of the Coordinated Operations Agreement (COA)
- Project export of surplus water and non-project water
- Flood control operations
- System scheduled and unscheduled outages
- Hydropower operations
- Drought water bank and water transfers

5.2 SWP Operations

5.2.1 South-of-Delta Deliveries

In order to simulate the historical conditions, SWP target deliveries were capped by the annual historical deliveries or contractors' requests, depending on the hydrologic conditions as described in section 4.3.3. Resulting annual deliveries for the period of 1975 through 1997 are shown in Figure 10. Simulated deliveries in 1981 and 1985 are lower than historical deliveries due to the lower initial contractors requests used as demands for those years according to the rules discussed in Section 4.4.3. The higher historical deliveries, however, indicate probable requests for higher deliveries subsequent to the submission of initial requests. Due to the particular interest in the delivery capability of the system in the 1987-1992 dry period, this period is highlighted in Figure 10, and presented separately in Figure 12.

Annual SWP deliveries are partly determined by reservoir carryover storage targets. Rules for establishing carryover storage have varied historically. In contrast to historical operations CalSim II uses a fixed procedure, that tends to be more conservative (i.e. assigns larger carryover storage targets) in dry years. To better compare year-by-year simulated and historical deliveries during the 1987-1992 dry period, the simulated values of deliveries shown in Figure 12 were adjusted to account for differences in storage utilization. This was done by adding to, or subtracting from the simulated annual deliveries, the difference between the simulated and the historical annual change in storage. If more storage was used in making the historical delivery, the additional storage was added to the simulated delivery, and if there were less storage utilization in the historical case, the simulated values were reduced by that storage difference (see the listing of the historical storage and drawdown, along with the corresponding values from the simulation run and the resulting adjustments to the simulated deliveries in Figure 13).

5.2.2 Surface Storage Operation

Lake Oroville on the Feather River is the only major SWP conservation facility in the Sacramento Valley. Storage withdrawals from Lake Oroville are made to meet the minimum flow requirements along the Feather River, the state share of obligations at the Delta, and project exports at Barker Slough for the North Bay Aqueduct as well as at the Banks Pumping Plant. Part of the water released by Lake Oroville and pumped at Banks Pumping Plant is transferred to San Luis Reservoir and stored in the SWP portion of that Reservoir when demands by the contractors along the California Aqueduct are lower than the allowable pumping. This stored water south of the Delta helps to meet a portion of the SWP deliveries during the periods when deliveries exceed the allowable pumping at Banks. Figure 11 compares the historical and simulated total storage in the SWP system reservoirs at the end of the water year. Figure 13 compares the total end-of-month storage in SWP system during the dry period of 1987-1992. The end-of-month storage for the same period in Lake Oroville and the SWP portion of San Luis Reservoir are compared in Figures 14 and 15.

5.2.3 North-of-Delta Deliveries

Figure 16 shows a comparison between the historical and simulated SWP deliveries to the FRSA for the period of 1975-1997. The deliveries include all of the senior water rights holders downstream of Lake Oroville (i.e. Joint Water District Board, Western Canal Water District, Garden Highway Mutual Water Company, Plumas Mutual Water Company, Thermalito Irrigation District, Tudor Mutual Water Company, and Oswald Water District). Diversions from Lake Oroville to the Oroville-Wyandotte Irrigation District via the Palermo Canal are not included. The historical 24-year average annual delivery to these water rights holders is 840 taf/yr compared to a simulated value of 880 taf/yr. However, the simulated values include a 43 taf/yr diversion to the Gray Lodge Wildlife Management Area. Historically up to 12 taf/yr of refuge water has been provided by the Biggs-West Gridley Water District which obtains water from the Feather River and Thermalito Afterbay. Additional refuge water may be provided by the CVP as part of an exchange agreement with the SWP. Any exchange water is not included in the historical SWP deliveries to the FRSA.

The contract entitlement in CalSim II for the FRSA water rights holders downstream of Lake Oroville is 948 taf/yr in non-drought years. This can drop to 630 taf/yr when deficiencies of up to 50 percent are imposed in “drought” years on some parts of the contract amount. CalSim II imposes 50 percent deficiencies in 1977, 1988 and 1991. In non-drought years the land use-based demand is usually significantly less than the contract entitlement (see Table 2).

5.3 CVP Operations

5.3.1 South-of-Delta Deliveries

Due to the limited availability of data, historical CVP annual south-of-Delta deliveries, shown in Figure 17, are limited to the 1982 -1997 period, with the 1987-1992 dry period highlighted. Figure 19 focuses on the dry period deliveries. Similar to the comparison bar chart for the SWP deliveries, the effect of storage utilization in the dry period was removed from the simulated values of delivery in Figure 19. This was done by adding to or subtracting from the simulated annual deliveries the annual change in storage used to make those deliveries in each year of the dry period. If more storage was used in making the historical delivery, the additional

storage was added to the simulated delivery, and if there were less storage utilization in the historical case, the simulated values were reduced by that storage difference (see the listing of the historical storage and drawdown, along with the corresponding values from the simulation run and the resulting adjustments to the simulated deliveries in Figure 20).

5.3.2 Surface Storage Operation

The major CVP surface storage facilities in the Sacramento Valley are Shasta Reservoir, Keswick Reservoir, and Folsom Lake. Trinity Lake is not dynamically modeled in this study. Model imports to the Sacramento Basin made through the Andrew Carr's Tunnel are constrained to their historical value. Storage withdrawals from the Sacramento Valley reservoirs are made to meet the CVP in-basin demands, CVP requirements at the Delta, including the demands at the Tracy Pumping Plant, and minimum flow requirements along the way on the Sacramento River and the American River. Part of the water released by the CVP's upstream reservoirs and pumped at Tracy Pumping Plant is transferred to San Luis Reservoir and stored in the CVP portion of that reservoir when demands by the contractors along the Delta Mendota Canal and the joint use portion of the California Aqueduct are lower than the allowable pumping. Banks Pumping Plant also wheels a portion of the CVP's storage withdrawals to store in San Luis Reservoir when unused capacity is available at Banks Pumping Plant. Figure 18 compares storage in the CVP system reservoirs at the end of the water year. As mentioned above in the discussion of the CVP allocation logic (section 2.10), target carryover storage for the end of the water year is one of the factors that determine the allocation of water for making deliveries to the CVP contractors. Figures 20 through 23 compare the end-of-month storages at the CVP's surface storage facilities for the dry period of 1987-1992.

5.3.3 North-of-Delta Deliveries

Figure 24 shows the CVP contract-year (March-February) total deliveries north of the Delta in the Sacramento Valley for the period of 1982-1997.

5.4 Delta Exports

Figures 25 through 30 present comparisons between the simulated and historical CVP and SWP exports from the south Delta facilities. Historical values for exports by the CVP and SWP were obtained from DAYFLOW average daily data, and as such included all types of diversions, project and non-project, made at the Banks and Tracy pumping plants. Since the simulated values of the Delta exports by Banks Pumping Plant do not include any Article 21 water, or any non-project water transfers, the values obtained from DAYFLOW for the historical exports were adjusted to be more comparable to the simulated values. The adjustments included the subtraction of the Article 21 water, and exports that were made to transfer drought water bank supplies. Due to lack of data availability no other adjustments for non-project pumping were made.

5.5 Sacramento and Feather River Flows at Key Locations

Figures 31 through 34 provide a comparison of the historical and simulated flows at the four major gaging stations along the Sacramento River and at the mouth of the Feather River. The historical flow in the Feather River is estimated from a hydrologic mass balance.

5.6 Sacramento Valley Delta Inflow

The combined Sacramento River and Yolo Bypass flows represent the integration of the inflow hydrology, upstream reservoir operations in the Sacramento Valley, stream diversions and returns, and the net effect of the groundwater operations. The differences in simulated and historical flows are due to differences in the surface storage operations, net groundwater extraction, and stream-groundwater interaction. Figure 35 shows the comparison between the simulated and historical outflow from the Sacramento Valley to the Delta for the period of 1975-1998.

5.7 Sacramento Valley Net Depletion

For operational studies the Sacramento Valley can be regarded as a 'black box'. The input is the combined releases and diversions (if any) from Whiskeytown Reservoir, Keswick Reservoir, Lake Oroville and Lake Natomas plus diversions from Folsom Lake. The output is the flow into the Delta via the Sacramento River and Yolo Bypass. The difference between the input and output represents the net depletion by the system. The net accretion is the combined effect of inflows, diversions, return flows, evaporation, seepage and groundwater inflow. The historical and model net accretion are compared in Figure 36.

5.8 Net Delta Outflow Index

Direct measurement of net Delta outflow is impractical because of huge tidal effects. However, since net outflow is one of the primary factors in controlling Delta water quality, a calculated value known as the Net Delta Outflow Index was developed. It is an approximation of freshwater flowing seaward past Chipps Island. Historical values of the net Delta outflow were obtained from DAYFLOW, which estimates this variable by performing a water balance at the boundary of the Sacramento-San Joaquin Delta, taking Chipps Island as the western limit.

$$Q_{OUT} = Q_{TOT} + Q_{PREC} - Q_{GCD} - Q_{EXPORTS} - Q_{MISDV}$$

Where:

- Q_{OUT} is the net Delta outflow at Chipps Island.
- Q_{TOT} is the total Delta inflow, consisting of inflows from the Sacramento River at Freeport, the Yolo Bypass, and the Eastside Streams, including San Joaquin River.
- Q_{PREC} is the Delta precipitation runoff.
- Q_{GCD} is the Delta gross channel depletion.
- $Q_{EXPORTS}$ is the total Delta exports and diversions, consisting of the diversions by the CVP at Tracy Pumping Plant, Contra Costa Water District diversions at Rock Slough, State Water Project diversions at Banks Pumping Plant, and the diversions at Barker Slough for the North Bay Aqueduct.
- Q_{MISDV} is the flooded island and island storage diversions, if any.

Figure 37 presents a comparison between the historical and simulated values of NDOI.

5.9 Groundwater Operations

5.9.1 Groundwater Pumping

Net groundwater pumping is the sum of groundwater pumping less deep percolation from irrigation. Table 8 compares CalSim II and CVGSM historical values for the seven DSAs of the Sacramento Valley. Over the 24-year period of simulation CalSim II extracts 378 taf/yr less groundwater than historical (as estimated by CVGSM). This difference is relatively small compared to the total Sacramento Valley demand of approximately 6.0 maf. During the 1987-1992 period CalSim II extracts 62 taf/yr less than historical. The lower groundwater pumping in CalSim II translates into greater use of surface water to meet demand, with resulting less inflow to the Delta.

5.9.2 Stream-Aquifer Interaction

CVGSM and CalSim II estimates of the stream-aquifer interaction are compared in Table 9. The results show that the multi-cell groundwater model implemented in CalSim II is unable to mimic the stream-aquifer interaction as simulated by CVGSM. This is probably due to the coarse nature of the multi-cell model. Poor representation of groundwater in CalSim II results in an over-estimate of stream gains from groundwater of 190 taf/yr. During the 1987-1992 dry-period the model over-estimate of stream gains falls to 108 taf/yr. Although the multi-cell model in CalSim II is currently undergoing some refinement, it is unlikely that modeling of the stream-aquifer interaction can be significantly improved without replacement of the multi-cell model with a dynamically linked CalSim-CVGSM and the recalibration of CVGSM based on the new IGSM 2 code developed by DWR.

5.9.3 Implications

The net effect of the dynamic groundwater operations in CalSim II (pumping, recharge from deep percolation, and the stream-aquifer interaction) is to reduce the available surface water flow to the Delta by 188 taf/yr over the 24-year period. However during the 1987-1992 dry-period, groundwater operations result in a slightly greater flow to the Delta of 46 taf/yr.

6 OTHER CALSIM II EVALUATION STUDIES

6.1 Overview

The following sections describe additional modeling activities that are part of the overall CalSim II evaluation. They consist of two additional supporting studies and a model sensitivity analysis. The two supporting studies isolate a component of the CalSim II model for further analysis. Boundary flows between the isolated component and the rest of the system are fixed at the historical level.

6.2 Delta Flow-Salinity Relationship

Separate historical evaluations of the ANN model are being conducted by DWR and Reclamation as part of a review of the flow-salinity modeling in CalSim II. A “stripped-down” version of CalSim II will be developed containing only the necessary input files and code logic to simulate Delta flow conditions and salinity calculations. Initial conditions and input flow data for the sub-model will be fixed at the historical level. Historical flow data will be taken from

DAYFLOW. Historical electrical conductivity data will be taken from the Inter-Agency Ecological Program website. The CalSim II sub-model will simulate Delta flow and salinity conditions for the period 1965-2000. A technical report of the ANN evaluation will be published.

6.3 Daily vs. Monthly Time-step

CalSim II simulates the CVP-SWP system using a monthly operational time-step during which time flows are assumed to be constant. This study will evaluate the errors introduced by using a monthly time-step. The study will compare project exports from CalSim II to the daily Delta model developed by DWR. In the first part of the study the daily model will be run with the daily Delta inflow set equal to the average monthly inflow as determined by the CalSim II historical run, i.e. with no day-to-day flow variation. In the second part of the study the daily model will be re-run, but imposing a daily fluctuating flow pattern on the Delta inflow. This two-stage approach will distinguish between the impacts of modeling Delta regulations at a daily time scale to the impacts due to the varying daily flow pattern. A technical report of this evaluation will be published.

6.4 Sensitivity Analysis

Sensitivity analysis is the process of changing the value of model inputs, one at a time, over a range of values, to determine the marginal change in output. The analysis is used to identify the parameters that most influence model results. Sensitivity analysis can also be used to check the model response is appropriate for the input being varied.

Sensitivity analysis for CalSim II requires identifying what output should be used as performance measures. This may depend on the parameter being varied, but would typically be north of Delta deliveries, project exports from the Delta and flows in environmentally sensitive parts of the system, both long-term and for the drought periods. The purpose of the sensitivity analysis is two-fold: to provide confidence limits on model results; and to direct future work on refining values of the key parameters. Sensitivity analysis will be conducted on hydrologic inputs related to supply and demand, and required flows to meet water quality standards in the Delta. The sensitivity analysis will be performed using the latest benchmark study for a 2001 level of development. A technical report of this evaluation will be published.

Tables

Table 1. Sacramento Valley Estimated Historical Land Use 1975-1998 (acres)

Year	Pasture	Alfalfa	Sugar Beets	Field Crops	Rice	Truck Crops	Orchard	Grain	Tomatoes	Vineyard	Citrus/ Olives	Cotton	Total Ag	Urban
1975	216,600	118,100	101,500	387,800	435,700	66,600	283,400	326,600	145,200	5,500	14,100	0	2,101,100	226,200
1976	215,200	109,000	109,400	429,700	407,900	58,200	284,100	381,700	146,900	5,900	14,000	0	2,162,000	237,500
1977	201,700	116,100	91,300	436,400	335,700	53,800	286,600	391,900	168,800	6,000	14,300	0	2,102,600	244,500
1978	206,900	107,300	88,300	401,700	400,200	59,500	284,600	386,400	163,100	6,300	14,400	0	2,118,700	253,800
1979	206,800	105,300	85,500	381,600	442,500	59,800	287,900	384,300	146,100	7,000	14,500	0	2,121,300	261,700
1980	209,400	107,900	94,300	350,800	488,100	65,400	293,700	343,700	134,000	6,600	15,300	0	2,109,200	269,210
1981	204,100	104,400	97,400	346,500	475,900	66,500	289,900	391,000	133,000	7,200	15,100	0	2,131,000	283,994
1982	201,700	99,300	66,500	391,400	508,400	68,500	296,000	262,600	131,500	7,300	15,600	0	2,048,800	299,600
1983	199,700	100,700	71,100	258,400	421,900	49,400	286,500	195,500	125,700	7,600	15,900	0	1,732,400	314,442
1984	197,700	110,000	96,500	330,600	446,500	72,200	279,800	249,800	129,500	7,800	16,300	0	1,936,700	329,269
1985	196,400	115,300	100,100	297,400	402,900	72,600	290,100	316,000	122,300	8,300	16,500	0	1,937,900	337,258
1986	195,500	119,100	82,000	229,200	382,600	75,900	297,500	305,900	117,400	8,500	16,600	0	1,830,200	344,887
1987	194,700	129,900	98,400	202,400	389,600	75,600	305,600	289,900	115,000	8,700	16,800	0	1,826,600	352,597
1988	194,400	137,200	100,800	200,500	451,900	77,100	307,500	304,600	123,800	9,000	17,000	0	1,923,800	360,056
1989	187,400	138,300	86,500	227,200	446,200	81,800	313,200	409,100	142,100	9,900	17,400	0	2,059,100	368,401
1990	177,200	140,400	75,200	253,600	413,300	86,000	312,300	409,300	148,700	11,000	17,000	0	2,044,000	376,300
1991	177,100	140,400	75,200	253,700	413,400	86,100	313,000	407,800	148,700	11,000	16,400	0	2,042,800	386,800
1992	177,100	140,400	75,200	253,700	413,400	86,100	313,000	407,800	148,700	11,000	16,400	0	2,042,800	399,659
1993	190,658	140,328	95,910	275,629	504,679	82,629	319,126	349,779	149,420	11,290	16,079	8,900	2,144,427	412,635
1994	177,338	140,620	75,536	253,700	413,400	88,290	314,680	410,905	153,296	11,000	16,400	8,900	2,064,065	425,265
1995	177,741	136,900	35,900	389,700	499,300	76,800	328,900	160,043	198,200	13,100	28,400	4,200	2,049,184	420,046
1996	171,784	138,800	18,600	392,800	490,940	79,710	347,550	246,262	199,100	18,700	29,100	4,400	2,137,746	425,219
1997	168,345	139,400	22,300	415,270	522,680	74,970	336,620	195,289	154,300	24,100	28,900	8,500	2,090,674	430,397
1998	168,505	156,100	16,400	368,460	492,700	75,450	364,300	142,244	160,000	27,500	29,000	8,700	2,009,359	435,566

Note: Table includes Delta land use

Table 2. CalSim II Historical North of Delta Demands and Contract Entitlements

DSA	Total Land Area (000 ac)	Crop Consumptive Use of Applied Water varies (taf/yr)	Regional Water Use Efficiency varies	Total Diversion/Pumping Requirement varies (taf/yr)	Minimum Groundwater Pumping (taf/yr)	Project Fraction of Demand	Project Diversion/Pumping Requirement varies (taf/yr)	Project Minimum Groundwater Pumping (taf/yr)	Net Project Diversion Requirement varies (taf/yr)	Maximum Contract Amount: Shasta Critical Year (taf/yr)	Maximum Contract Amount: Shasta Non-Critical Year (taf/yr)
58	1,603	72 - 147	0.59	122 - 249	36	0.90	110 - 224	32	77 - 192	205	255
10	755	285 - 426	0.63	450 - 672	348	0.19	86 - 128	66	19 - 62	41	43
12	914	690 - 1,009	0.59 - 0.63	1,155 - 1,663	29	0.75	866 - 1,247	22	845 - 1,226	1,009	1,250
15	351	366 - 708	0.67 - 0.69	548 - 1,040	54	0.66	362 - 686	36	326 - 651	598	797
65	592	368 - 615	0.82 - 0.84	440 - 749	130	0.12	53 - 90	16	37 - 74	68	90
69	910	844 - 1,195	0.57 - 0.71	1,406 - 2,023	302	0.70	984 - 1,416	211	773 - 1,205	630[10]	1,020
70	492	332 - 540	0.60	551 - 896	120	0.38	209 - 340	46	164 - 295	119[11]	158[11]

Notes:

1. The crop consumptive use of applied water is the portion of applied water that is used to meet crop evapotranspiration or is stored as soil moisture in the root zone.
2. The regional water use efficiency is the ratio of the crop consumptive use of applied water to the combined volume of stream diversion and groundwater pumping.
3. The diversion/pumping requirement is the combined volume of stream diversion and groundwater pumping required to meet the irrigation demand.
4. The minimum groundwater pumping is the volume of pumping that must occur before surface water is used to meet demand.
5. The project fraction of demand is the fraction of the total demand that is attributable to CVP or SWP water service contractors and settlement contractors.
6. The project diversion/pumping requirement is the combined volume of stream diversion and groundwater pumping required to meet the irrigation demand of CVP/SWP contractors.
7. The project minimum groundwater pumping is the volume of pumping by CVP/SWP contractors that must occur before surface water is used to meet CVP/SWP demands.
8. The net project diversion requirement is the required stream diversions to meet the CVP/SWP demands, i.e. after accounting for the project minimum groundwater pumping.
9. The maximum contract amount is the sum of CVP and SWP contractors' entitlement. In Shasta critical years, settlement contractors are subject to a 25% cut.
10. Assuming "drought" conditions for the Feather River Service Area and a 50% imposed reduction.
11. Does not include CVP contracts on the American River.

Table 3. CalSim II Historical CVP Annual Contract Entitlement

Type	Maximum Contract Entitlement (taf/yr)
North-of-Delta[1]	
Settlement contractors	2,219
Urban water service contractors	19
Agricultural water service contractors	361
Wildlife Refuge Areas[2]	177
Total North-of-Delta	2,716
South-of-Delta	
Urban water service contractors	144
Agricultural water service contractors	1,841
Exchange contractors	875
Wildlife refuge areas	288
Losses[3]	184
Total South-of-Delta	3,332
Grand Total	6,048

Notes:

1. CVP contracts on the American River are not included.
2. Corresponds to the level 2 refuge demands for the Sacramento, Delevan, Colusa and Sutter National Wildlife Refuges and the Gray Lodge Wildlife Management Area. Includes 15% conveyance losses for the west-side wildlife refuges, 10% for Sutter NWR and 17% for Gray Lodge WMA.
3. Associated with the Delta Mendota Canal.

Table 4. Historical SWP Deliveries, Contractors Requests, Approved Allocations 1962 – 2003 (af)

Year	Table A South of Delta	Table A North of Delta	Art. 12D	Art. 14B	Art. 21 or Surplus	Turnback	Carryover	Total	Total Table A	Total* Table A South of Delta	CALSIM ** Format Table A Delivery	Contractor's Request	Approved Allocation
1962	-	-	-	-	-	-	-	-	-	-	-	-	-
1963	-	-	-	-	-	-	-	-	-	-	-	-	-
1964	-	-	-	-	-	-	-	-	-	-	-	-	-
1965	-	-	-	-	-	-	-	-	-	-	-	-	-
1966	-	-	-	-	-	-	-	-	-	-	-	-	-
1967	36,171	-	-	-	-	-	-	36,171	36,171	36,171	36,171	83,634	83,634
1968	182,389	-	-	-	110,854	-	-	293,243	182,389	182,389	182,389	191,500	191,500
1969	193,020	-	-	-	72,397	-	-	265,417	193,020	193,020	193,020	267,395	267,395
1970	233,923	70	-	-	131,848	-	-	365,841	233,993	233,923	233,923	252,787	252,787
1971	357,084	256	-	-	294,581	-	-	651,921	357,340	357,084	357,084	375,590	375,590
1972	611,110	691	-	-	422,322	-	-	1,034,123	611,801	611,110	611,110	594,054	594,054
1973	692,156	732	-	-	294,916	-	-	987,804	692,888	692,156	692,156	929,445	929,445
1974	873,300	775	-	-	412,453	-	-	1,286,528	874,075	873,300	873,300	959,335	959,335
1975	1,223,332	658	-	-	620,685	-	-	1,844,675	1,223,990	1,223,332	1,223,332	1,287,960	1,287,960
1976	1,372,093	909	-	-	531,685	-	-	1,904,687	1,373,002	1,372,093	1,377,958	1,368,462	1,368,462
1977	594,536	1,009	-	-	323,415	-	5,865	924,825	601,410	600,401	789,556	1,157,424	1,157,424
1978	1,289,752	857	139,034	-	16,215	-	55,986	1,501,844	1,485,629	1,484,772	1,497,356	1,828,624	1,828,624
1979	1,451,661	631	200,604	7,000	644,830	-	-	2,304,726	1,659,896	1,659,265	1,451,839	1,833,508	1,833,508
1980	1,535,716	562	-	-	405,417	-	178	1,941,873	1,536,456	1,535,894	1,536,775	1,569,964	1,569,964
1981	1,928,928	576	-	-	921,028	-	1,059	2,851,591	1,930,563	1,929,987	1,928,928	1,579,520	1,579,520
1982	1,752,809	639	-	-	239,734	-	-	1,993,182	1,753,448	1,752,809	1,752,809	2,064,110	2,064,110
1983	1,186,569	587	-	-	13,624	-	-	1,200,780	1,187,156	1,186,569	1,186,610	2,021,652	2,021,652
1984	1,590,944	557	-	-	271,017	-	41	1,862,559	1,591,542	1,590,985	1,593,941	1,567,520	1,567,520
1985	1,995,871	624	-	-	312,977	-	2,997	2,312,469	1,999,492	1,998,868	2,039,015	1,891,849	1,891,849
1986	1,961,027	958	-	-	36,863	-	43,144	2,041,992	2,005,129	2,004,171	1,961,027	2,364,193	2,364,193
1987	2,136,780	999	-	-	114,907	-	-	2,252,686	2,137,779	2,136,780	2,204,361	2,717,215	2,717,215
1988	2,317,976	1,211	-	-	-	-	67,581	2,386,768	2,386,768	2,385,557	2,467,131	2,595,120	2,595,120
1989	2,709,178	1,189	-	-	-	-	149,155	2,859,522	2,859,522	2,858,333	2,808,024	2,999,451	2,999,451
1990	2,452,178	1,422	-	-	90	-	98,846	2,552,536	2,552,446	2,551,024	2,479,213	3,116,623	2,648,993
1991	521,025	1,013	-	-	3,521	-	27,035	552,594	549,073	548,060	616,791	3,484,687	672,417
1992	1,374,444	1,244	3,484	-	1,156	-	92,282	1,472,610	1,471,454	1,470,210	1,596,028	3,630,618	1,634,685
1993	2,092,205	1,446	1,999	-	-	-	219,585	2,315,235	2,315,235	2,313,789	2,092,205	2,750,395	2,750,395
1994	1,747,495	1,856	-	-	112,625	-	-	1,861,976	1,749,351	1,747,495	1,825,496	2,691,379	1,911,027
1995	1,869,671	1,421	-	25,000	64,330	-	53,001	2,013,423	1,949,093	1,947,672	2,003,085	3,159,450	2,344,076
1996	2,205,065	1,437	-	-	28,647	174,909	133,414	2,543,472	2,514,825	2,513,388	2,379,974	2,701,707	2,701,707
1997	2,289,565	1,421	-	-	21,432	62,544	-	2,374,962	2,353,530	2,352,109	2,408,225	2,977,246	2,977,246
1998	1,616,922	1,581	-	17,180	20,288	75,000	38,936	1,769,907	1,749,619	1,748,038	1,691,922	3,191,045	3,191,045
1999	2,520,084	1,382	-	-	158,070	217,437	-	2,896,973	2,738,903	2,737,521	2,955,913	3,214,259	3,214,259
2000	2,711,984	1,487	-	-	308,257	282,305	218,392	3,522,425	3,214,168	3,212,681	3,328,414	3,617,267	3,406,083
2001	1,387,828	1,578	-	-	40,779	18,140	334,125	1,782,450	1,741,671	1,740,093	1,566,567	4,124,136	1,607,570
2002	2,521,654	1,589	-	-	43,116	45,252	160,599	2,772,210	2,729,094	2,727,505	***	3,913,698	2,887,014
2003												4,126,926	3,714,233
Total	53,536,445	33,367	345,121	49,180	6,994,079	875,587	1,702,221	63,536,000	56,541,921	56,508,554	53,941,648	79,199,748	68,161,062

* Total Table A South of Delta Delivery = Table A South of Delta + Art. 12D + Art. 14B + Turnback + Carryover

** CALSIM Format Table A Delivery = Table A South of Delta + Next year's Art. 12D + Next year's Art. 14B + Turnback + Next year's Carryover

*** Year 2003 Art. 12D, Art. 14B and carryover are needed to calculate 2002 delivery in CALSIM format

Table 5. SWP Table A Model Demands

Calendar Year	Sacramento River Index Classification	Model Demand Assumptions	Contractors' Total Request (taf)	CalSim Format Table A Delivery (taf)	Model Demand (taf)
1975	W	Historical Delivery	1,288	1,223	1,223
1976	C	Historical Delivery	1,368	1,378	1,378
1977	C	Contractors Request	1,157	790	1,157
1978	AN	Historical Delivery	1,829	1,497	1,497
1979	BN	Contractors Request	1,834	1,452	1,834
1980	AN	Historical Delivery	1,570	1,537	1,537
1981	D	Contractors Request	1,580	1,929	1,580
1982	W	Historical Delivery	2,064	1,753	1,753
1983	W	Historical Delivery	2,022	1,187	1,187
1984	W	Historical Delivery	1,568	1,594	1,594
1985	D	Contractors Request	1,892	2,039	1,892
1986	W	Historical Delivery	2,364	1,961	1,961
1987	D	Contractors Request	2,717	2,204	2,717
1988	C	Contractors Request	2,595	2,467	2,595
1989	D	Contractors Request	2,999	2,808	2,999
1990	C	Contractors Request	3,117	2,479	3,117
1991	C	Contractors Request	3,485	617	3,485
1992	C	Contractors Request	3,631	1,596	3,631
1993	AN	Historical Delivery	2,750	2,092	2,092
1994	C	Contractors Request	2,691	1,825	2,691
1995	W	Historical Delivery	3,159	2,003	2,003
1996	W	Historical Delivery	2,702	2,380	2,380
1997	W	Historical Delivery	2,977	2,408	2,408
1998	W	Historical Delivery	3,191	1,692	1,692

Table 6. CalSim II Historical Regulatory Standards and Operating Criteria Assumptions

Period of Simulation	WY: 1974-1992	WY: 1993-1994	WY: 1995-1998
Regulatory Standards			
Trinity River			
Minimum Flow below Lewiston Dam	Not modeled	Same	Same
Trinity Reservoir End-of-September Minimum Storage	Not modeled	Same	Same
Clear Creek			
Minimum Flow below Whiskeytown Dam	Downstream water rights, 1963 Reclamation Proposal to USFWS and NPS	Same	Same
Upper Sacramento River			
Shasta Lake End-of-September Minimum Storage	None	SWRCB WR 1993 Winter-run Biological Opinion (1900 taf)	Same
Minimum Flow below Keswick Dam	Flows for SWRCB WR 90-5	Flows for SWRCB WR 90-5 and 1993 Winter-run Biological Opinion temperature control	Same
Feather River			
Minimum Flow below Thermalito Diversion Dam	1983 DWR, DFG Agreement (600 cfs)	Same	Same
Minimum Flow below Thermalito Afterbay outlet	1983 DWR, DFG Agreement (1000 – 1700 cfs)	Same	Same
American River			
Minimum Flow below Nimbus Dam	SWRCB D-893 (see accompanying Operations Criteria)	Same	Same
Minimum Flow at H Street Bridge	SWRCB D-893	Same	Same
Lower Sacramento River			
Minimum Flow near Rio Vista	SWRCB D-1485	Same	SWRCB D-1641
Sacramento-San Joaquin Delta	SWRCB D-1485	Same	SWRCB D-1641

Period of Simulation	WY: 1974-1992	WY: 1993-1994	WY: 1995-1998
Operations Criteria			
Upper Sacramento River			
Flow Objective for Navigation (Wilkins Slough)	Discretionary 3,500 – 5,000 CFS based on Lake Shasta storage condition	Same	Same
American River			
Folsom Dam Flood Control	SAFCA, Interim-Reoperation of Folsom Dam, Variable 400/670 (without outlet modifications)	Same	Same
Flow below Nimbus Dam	Discretionary operations criteria corresponding to SWRCB D-893 required minimum flow	Same	Same
CVP Water Allocation			
CVP Settlement and Exchange	100% (75% in Shasta Critical years)	Same	Same
CVP Refuges	100% (75% in Shasta Critical years)	Same	Same
CVP Agriculture	100% - 0% based on supply	Same	Same
CVP Municipal & Industrial	100% - 50% based on supply	Same	Same
SWP Water Allocation			
North of Delta (FRSA)	Contract specific	Same	Same
South of Delta	Based on supply; Monterey Agreement	Same	Same
CVP/SWP Coordinated Operations			
Sharing of Responsibility for In-Basin-Use	1986 Coordinated Operations Agreement	Same	Same
Sharing of Surplus Flows	1986 Coordinated Operations Agreement	Same	Same
Sharing of Restricted Export Capacity	Not Applicable	Same	Equal sharing of export capacity under SWRCB D-1641

Table 7. Summary of Key Results

Figure/ Table	Performance Parameter	Dry-period average 1987-1992 Simulated (taf/yr)	Historical (taf/yr)	Difference (taf/yr)	(%)	Long-term average Simulated (taf/yr)	Historical (taf/yr)	Difference (taf/yr)	(%)
F.10, F.12	SWP south-of-Delta Table A deliveries	1,930	2,030	-100	-4.9	1,810	1,790	20	1.1
F.11	Total carryover storage in SWP reservoirs	2,020	1,910	110	5.8	3,190	2,810	380	13.5
F.16	SWP north-of-Delta deliveries	810	770	40	5.2	880	840	40	4.8
F.17, F.19	CVP south-of-Delta deliveries	2,230	2,320	-90	-3.9	2,650	2,490	160	6.4
F.18	Total carryover storage in CVP reservoirs	2,880	2,290	590	25.8	3,560	3,380	180	5.3
F.24	CVP north-of-Delta deliveries	1,960	1,810	150	8.3	1,960	1,750	210	12
F.25, F.26	Delta exports by Banks and Tracy pumping plants	4,450	4,460	-10	-0.2	4,670	4,320	350	8.1
F.27, F.28	Delta exports by Banks Pumping Plant	2,010	2,220	-210	-9.5	2,090	1,980	110	5.6
F.29, F.30	Delta exports by Tracy Pumping Plant	2,440	2,240	200	8.9	2,580	2,340	240	10.3
F.31	Sacramento River flow below Red Bluff diversion dam	5,830	5,860	-30	-0.5	9,020	9,100	-80	-0.9
F.32	Sacramento River flow at Ord Ferry	6,510	6,620	-110	-1.7	10,960	11,090	-130	-1.2
F.33	Sacramento River flow at Knights Landing	5,080	5,290	-210	-4.0	9,400	9,840	-440	-4.5
F.34	Feather River flow at mouth	3,000	2,800	200	7.1	6,740	6,820	-80	-1.2
F.35	Sacramento Valley inflow to the Delta	9,700	9,670	30	0.3	19,830	19,920	-90	-0.5
F.36	Sacramento Valley net accretion	1,103	1,155	-52	-4.5	5,920	5,950	-30	-0.5
F.37	Net Delta Outflow Index	5,270	5,090	180	3.5	19,070	19,690	-620	-3.1

Notes:
1. SWP long-term average deliveries are for the period 1975-1997.
2. CVP long-term average deliveries are for the period 1982-1997.
3. Historical exports for Banks do not include Article 21 and Drought Water Bank water.
4. Figures rounded to nearest 10 taf.

Table 8. Average Annual Net Groundwater Pumping

	DSA 58 (taf/yr)	DSA 10 (taf/yr)	DSA 12 (taf/yr)	DSA 15 (taf/yr)	DSA 65 (taf/yr)	DSA 69 (taf/yr)	DSA 70 (taf/yr)	Total (taf/yr)
1975-1998 long-term average								
CalSim II	18	305	68	28	349	145	144	1,058
CVGSM	56	368	72	255	262	222	201	1,436
Difference	-38	-63	-4	-227	87	-77	-57	-378
1987-1992 dry-period average								
CalSim II	16	313	33	28	342	215	127	1074
CVGSM	58	391	2	163	247	104	171	1136
Difference	-42	-78	31	-135	95	111	-44	-62

Table 9. Average Annual Stream Gain from Groundwater

	DSA 58 (taf/yr)	DSA 10 (taf/yr)	DSA 12 (taf/yr)	DSA 15 (taf/yr)	DSA 65 (taf/yr)	DSA 69 (taf/yr)	DSA 70 (taf/yr)	Total (taf/yr)
1975-1998 long-term average								
CalSim II	91	53	N/A	65	N/A	57	-23	243
CVGSM	77	44	N/A	-70	N/A	69	-67	53
Difference	14	9	N/A	135	N/A	-12	44	190
1987-1992 dry-period average								
CalSim II	92	54	N/A	99	N/A	52	-11	286
CVGSM	71	59	N/A	-4	N/A	112	-61	178
Difference	21	-5	N/A	103	N/A	-60	50	108

Figures

Figure 1. Major Features of California's Water System

Figure 2. Geographical Coverage of CalSim II

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Figure 3a. CalSim II Schematic for Historical Operations Study, Sheet 1 of 2

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Figure 3b. CalSim II Schematic for Historical Operations Study, Sheet 2 of 2

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Figure 4. Depletion Study Areas

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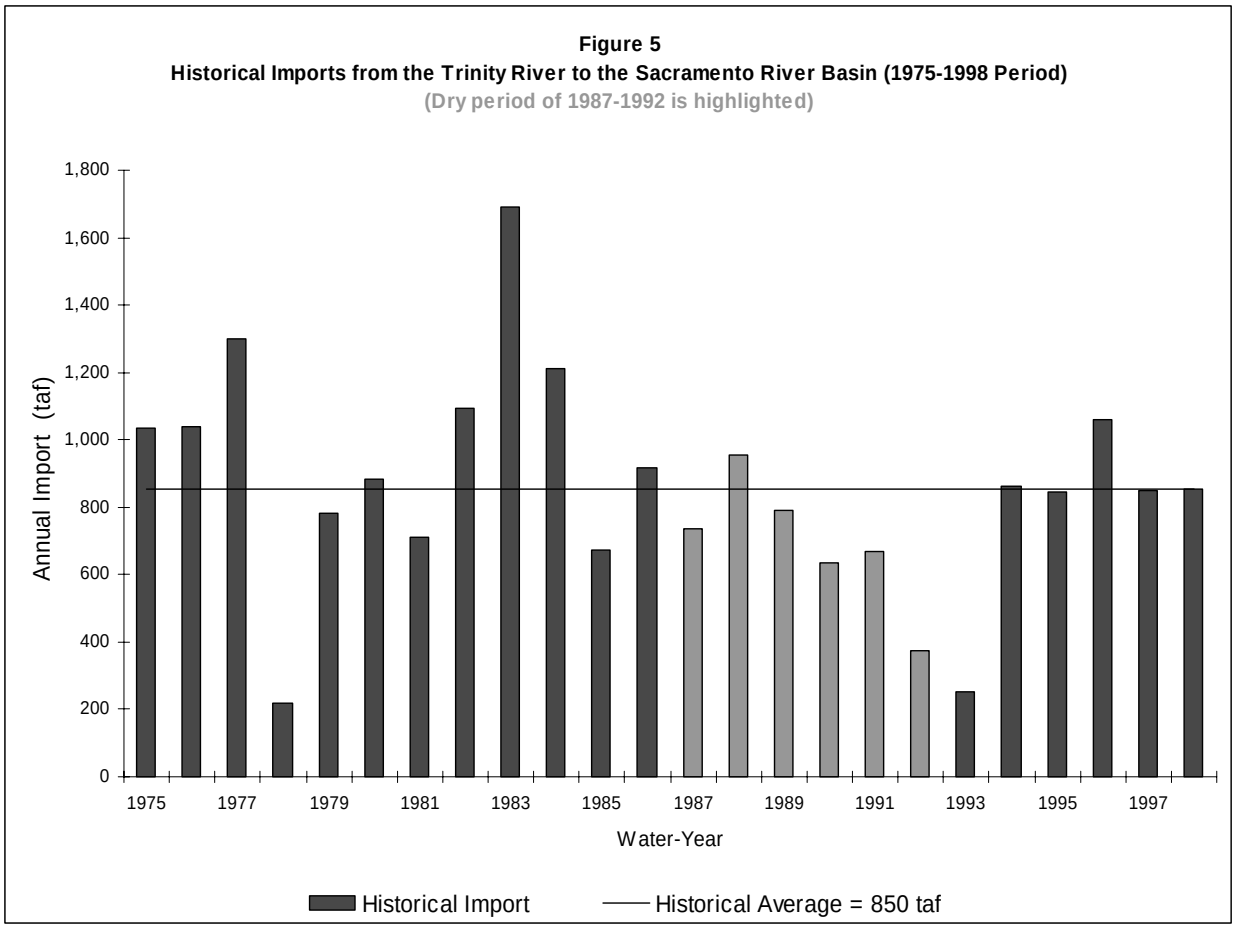

Figure 5 shows the historical imports through the Clear Creek Tunnel for the 1975-1998 period used in the Historical Operations Study for the CalSim II evaluation. The average annual import during the 6-year drought of 1987-1992 is about 670 taf per year.

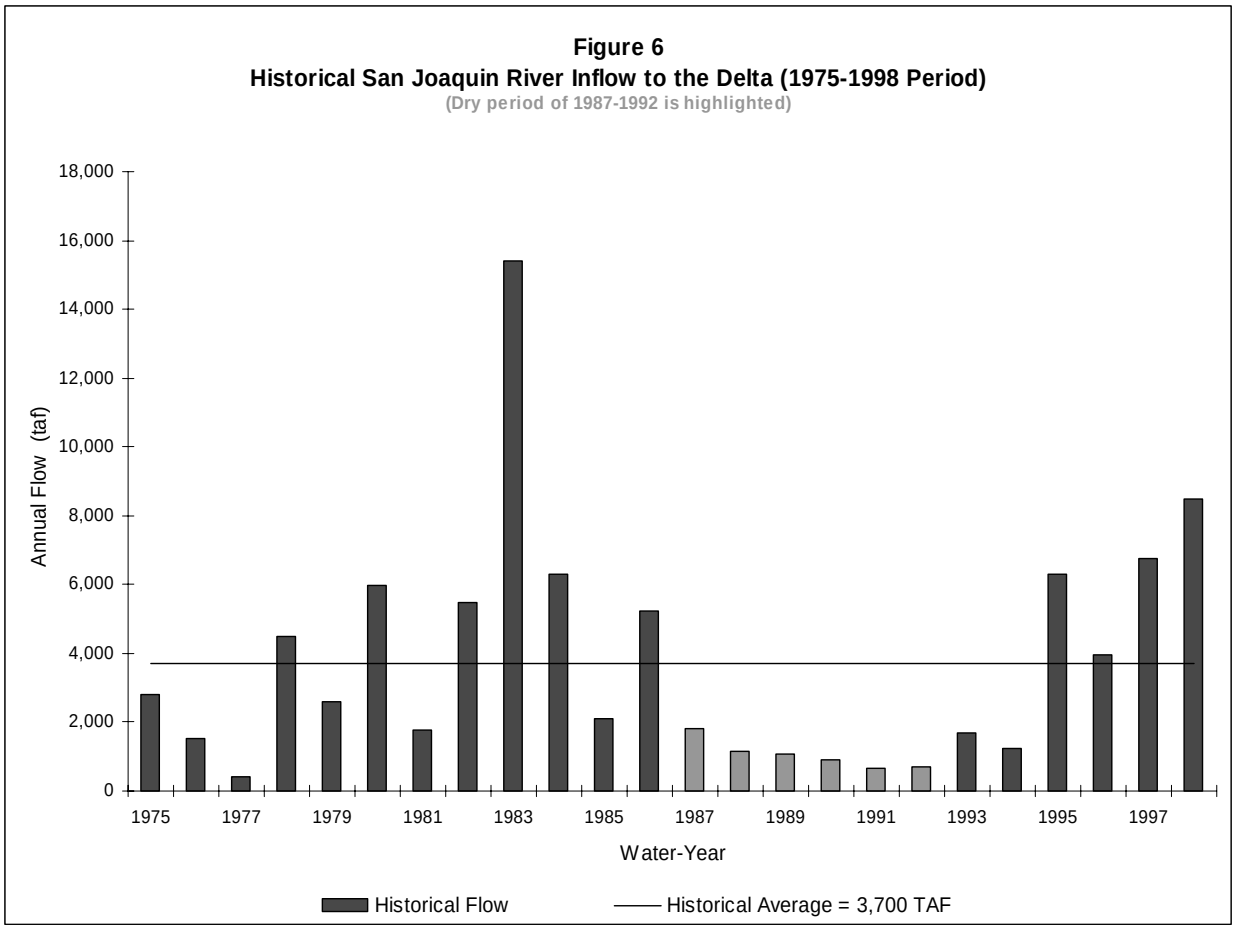

Figure 6 shows the historical inflow to the Delta from the San Joaquin River for the 1975-1998 period. These historical values were used in the Historical Operations Study for the CalSim II evaluation. The average annual inflow during the 6-year drought of 1987-1992 is about 1,050 taf per year.

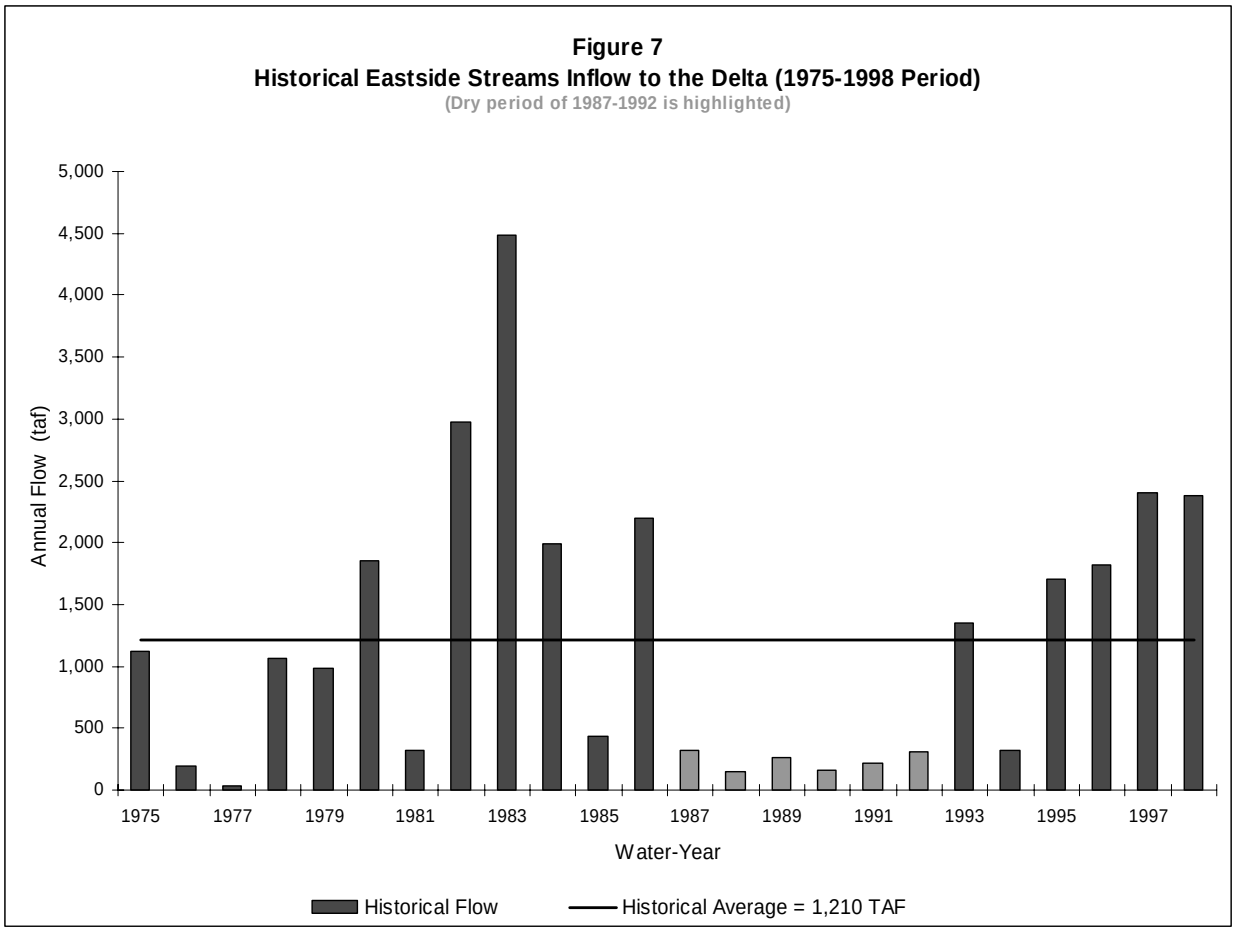

Figure 7 shows the historical inflow to the Delta from the Eastside Streams, including the Cosumnes, Mokelumne, and the Calaveras rivers for the 1975-1998 period. These historical values were used in the Historical Operations Study for the CalSim II evaluation. The average annual inflow during the 6-year drought of 1987-1992 is about 240 taf per year.

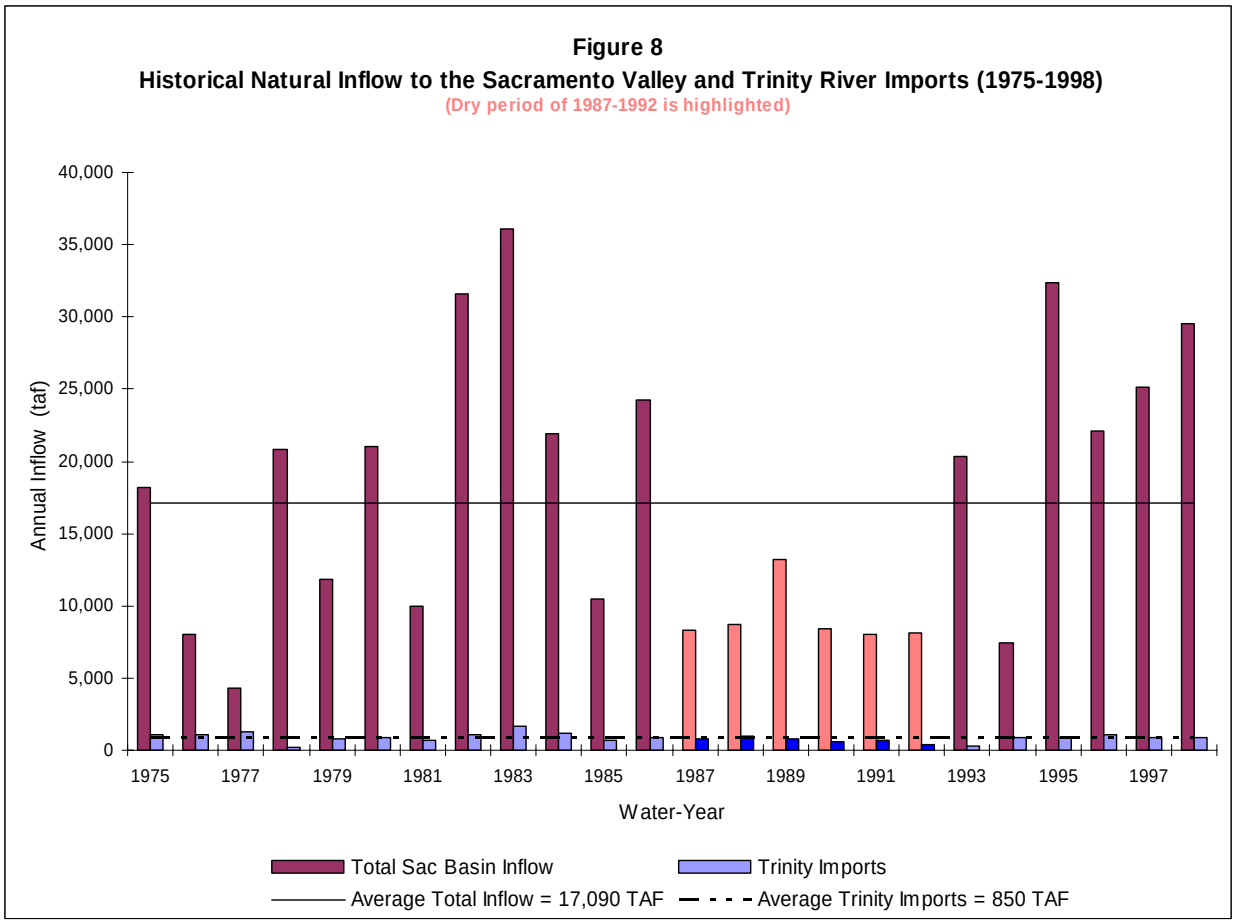

Figure 8 shows a comparison between the historical Trinity imports and the total historical natural inflow to the Sacramento Valley. Natural inflow consists of the inflow to major reservoirs and basin accretions. The long-term average import from the Trinity River is only about 5.0 percent of the total natural inflow to the Sacramento Valley. The historical average annual natural inflow to the Sacramento Valley during the 6-year drought of 1987-1992 is about 9,130 taf per year. The average for the historical imports from the Trinity River during the drought is 670 taf per year, about 7.3 percent, as compared to the natural inflow.

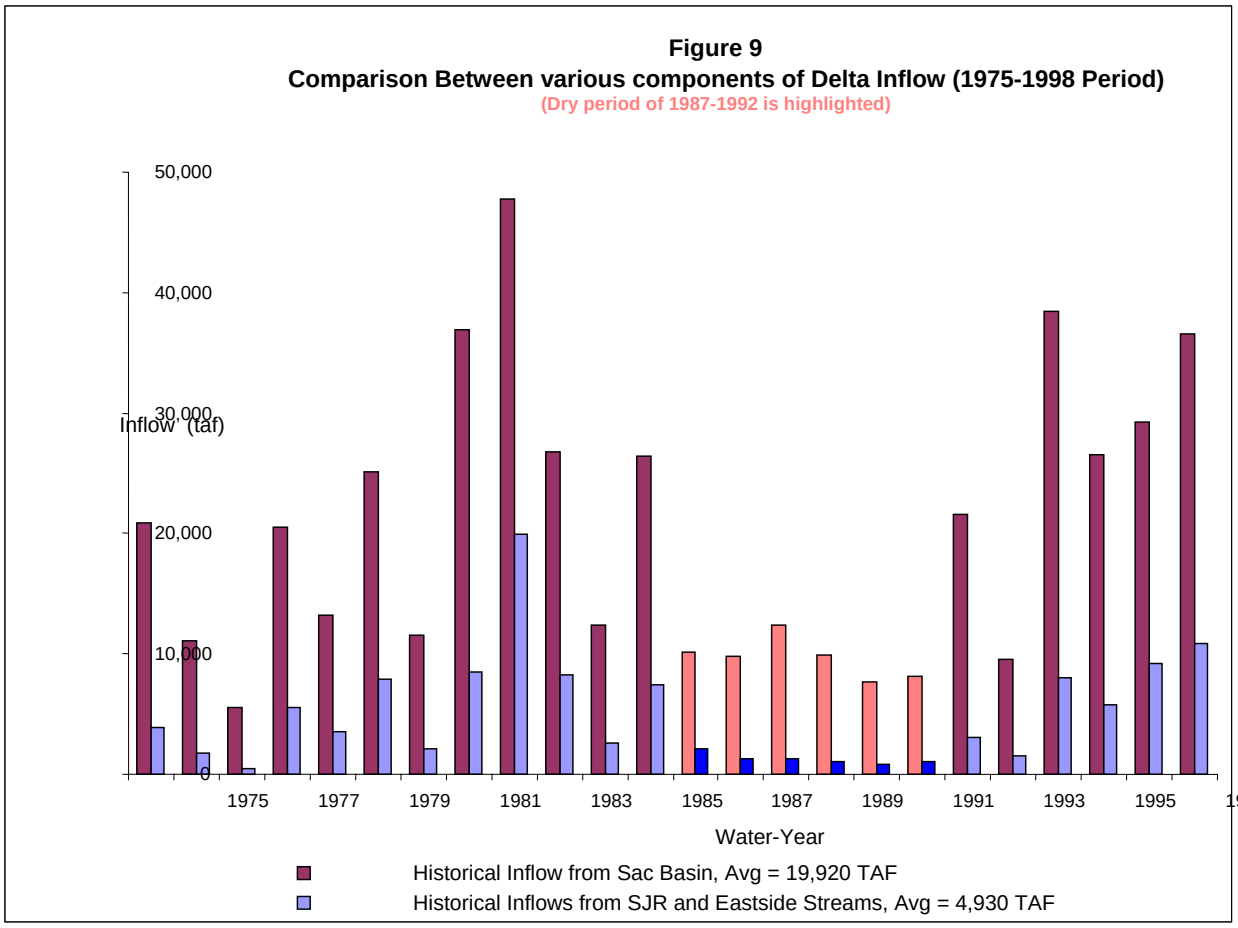

Figure 9 shows a comparison between the historical inflow to the Delta from the combined San Joaquin River and the Eastside Streams and the historical Delta inflow from the Sacramento Basin. The long-term average of the inflows from the San Joaquin River and the Eastside Streams are about 24.8 percent of the historical Delta inflow from the Sacramento Basin. The historical average annual inflow from the Sacramento Valley during the 6-year drought of 1987-1992 is about 9,670 taf per year. The average for the historical inflow from the San Joaquin Basin and the Eastside Streams during the drought is 1,340 taf per year, about 13.9 percent of the inflow from the Sacramento Basin.

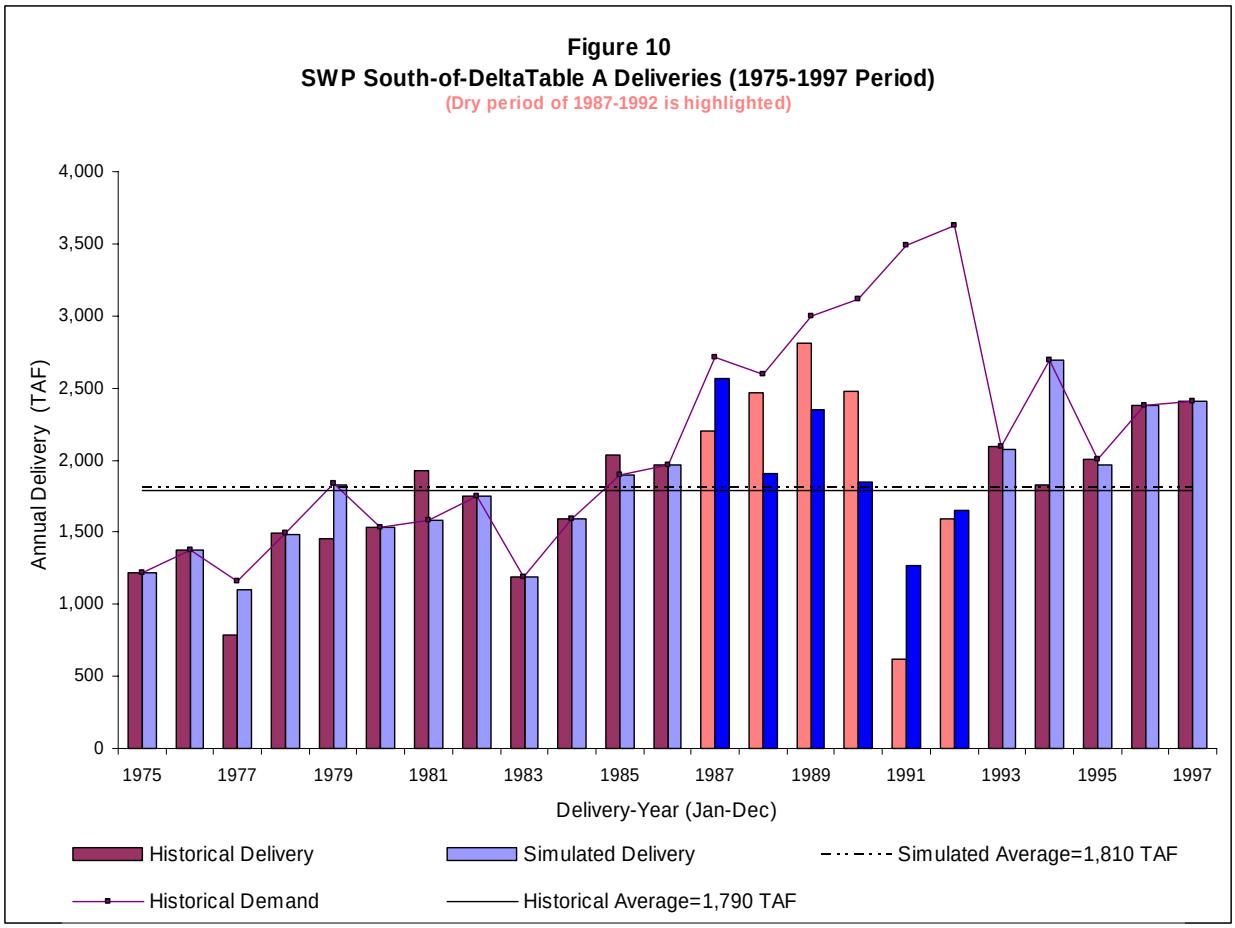

Figure 10 shows a comparison of historical and simulated SWP deliveries to south-of-Delta contractors for calendar years 1975 to 1997. Simulated deliveries in 1981 and 1985 are lower than historical deliveries due to the lower initial contractors requests used as demands for those years according to the rules discussed in Section 4.4.3. The higher historical deliveries, however, indicate that there might have been a revision in contractors' requests for higher deliveries subsequent to their submission of initial requests. Long-term average of the simulated deliveries exceeds that of the historical deliveries by approximately 1.1 percent. Both historical and simulated deliveries include only Table A deliveries without any Article 21 or any non-project deliveries.

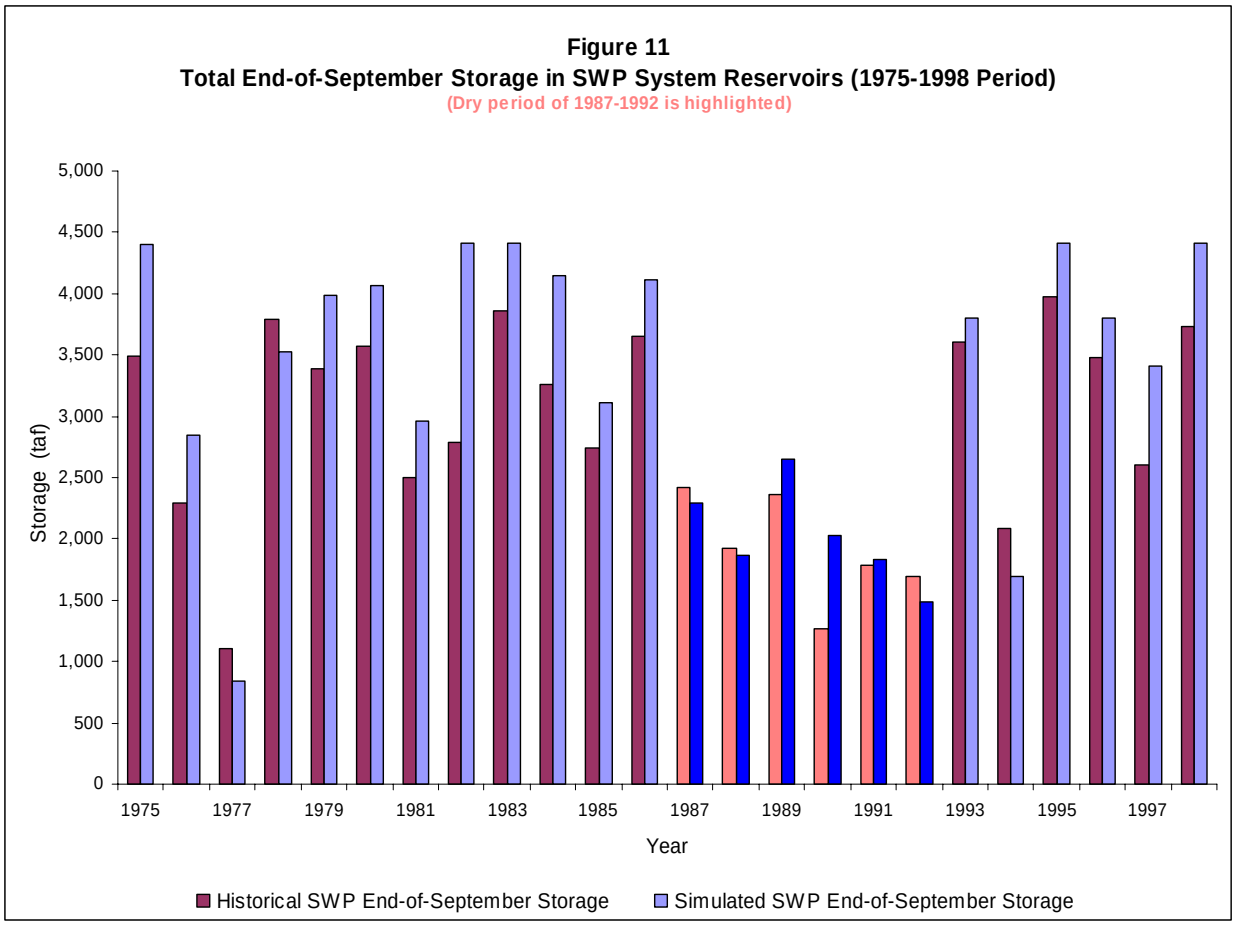

Figure 11 shows the total storage in the SWP system reservoirs at the end of each water year. The carryover storage in the system (Lake Oroville + SWP San Luis Reservoir) is one of the factors that determine the SWP allocations.

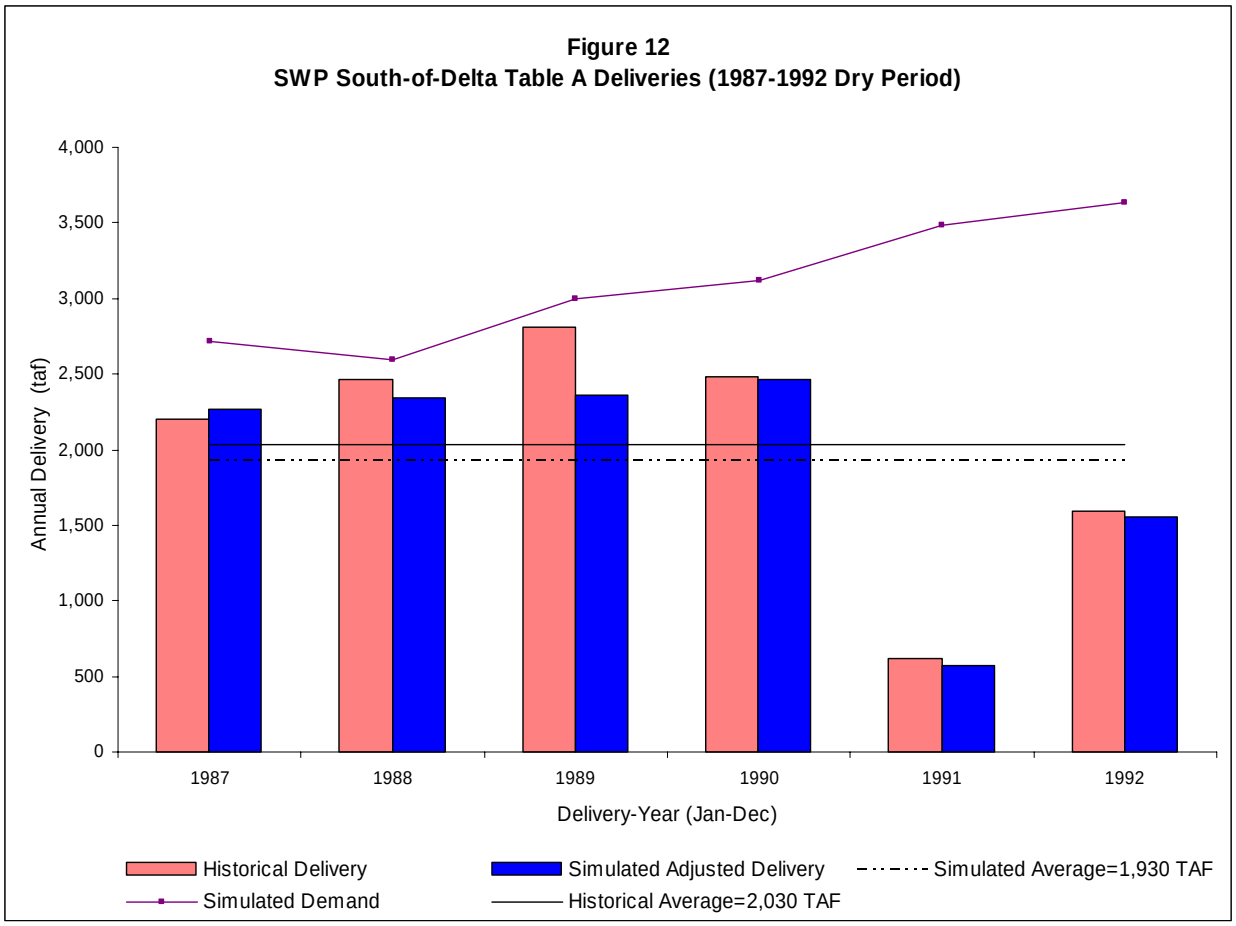

Figure 12 shows a comparison of historical and simulated SWP deliveries to south-of-Delta contractors during the drought of 1987-1992. Simulated annual deliveries during the drought have been adjusted to account for the difference in storage utilization in any given year. After the corrections for storage utilization, the 6-year critical period average of the simulated deliveries is lower than that of the historical deliveries by approximately 4.9 percent. The adjusted simulated deliveries shown in the bar chart are computed as the gross delivery for each calendar year of simulation minus the difference between the historical and simulated values of storage used from January 1 to December 31 of that year. For the first year of the drought, 1987, the storage difference between March 31 (the highest system storage just before the onset of the drought) and December 31 was used. Storage differences are based on the total SWP system storage (Oroville and SWP San Luis). Both, historical and simulated deliveries include only Table A deliveries to the south-of-Delta contractors, without any Article 21 or any non-project deliveries.

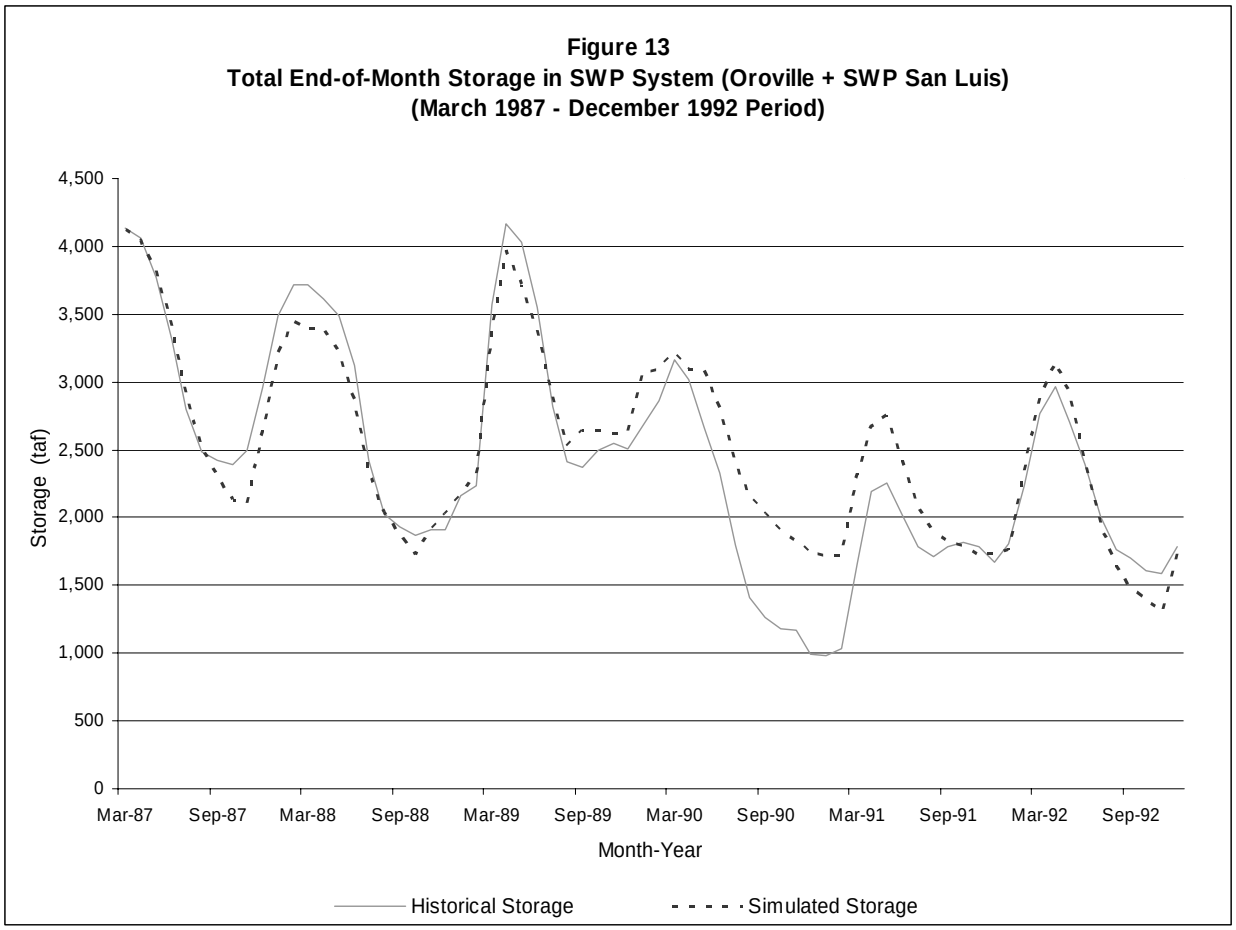

Figure 13 shows a line plot of the end-of-month SWP storage (Oroville plus SWP San Luis) for the 1987-1992 drought. The historical storage at the outset of the drought on March 31, 1987 was 4,139 taf. The corresponding storage marking the end of the drought on November 30, 1992 was 1,591 taf. The table below lists the storage values and the corresponding annual changes in storage for the beginning of each calendar year. The storage change for the first year of the drought was based on the end of March 1987 when the system storage was at its highest level before the drought began. Differences in the historical operation criteria and those used in the simulation study may result in different ending storages in SWP system. These storage differences were used to compute the adjustments for delivery bar charts presented in Figure 12.

	Historical		Simulated		Difference
	Storage	Storage Change	Storage	Storage Change	
March 31 1987	4,139	NA	4,120	NA	NA
January 1 1988	2,958	1,181	2,634	1,486	305
January 1 1989	1,908	1,050	2,026	608	-442
January 1 1990	2,505	-597	2,635	-609	-12
January 1 1991	993	1,512	1,738	897	-615
January 1 1992	1,675	-682	1,730	8	690
January 1 1993	1,785	-110	1,748	-18	92

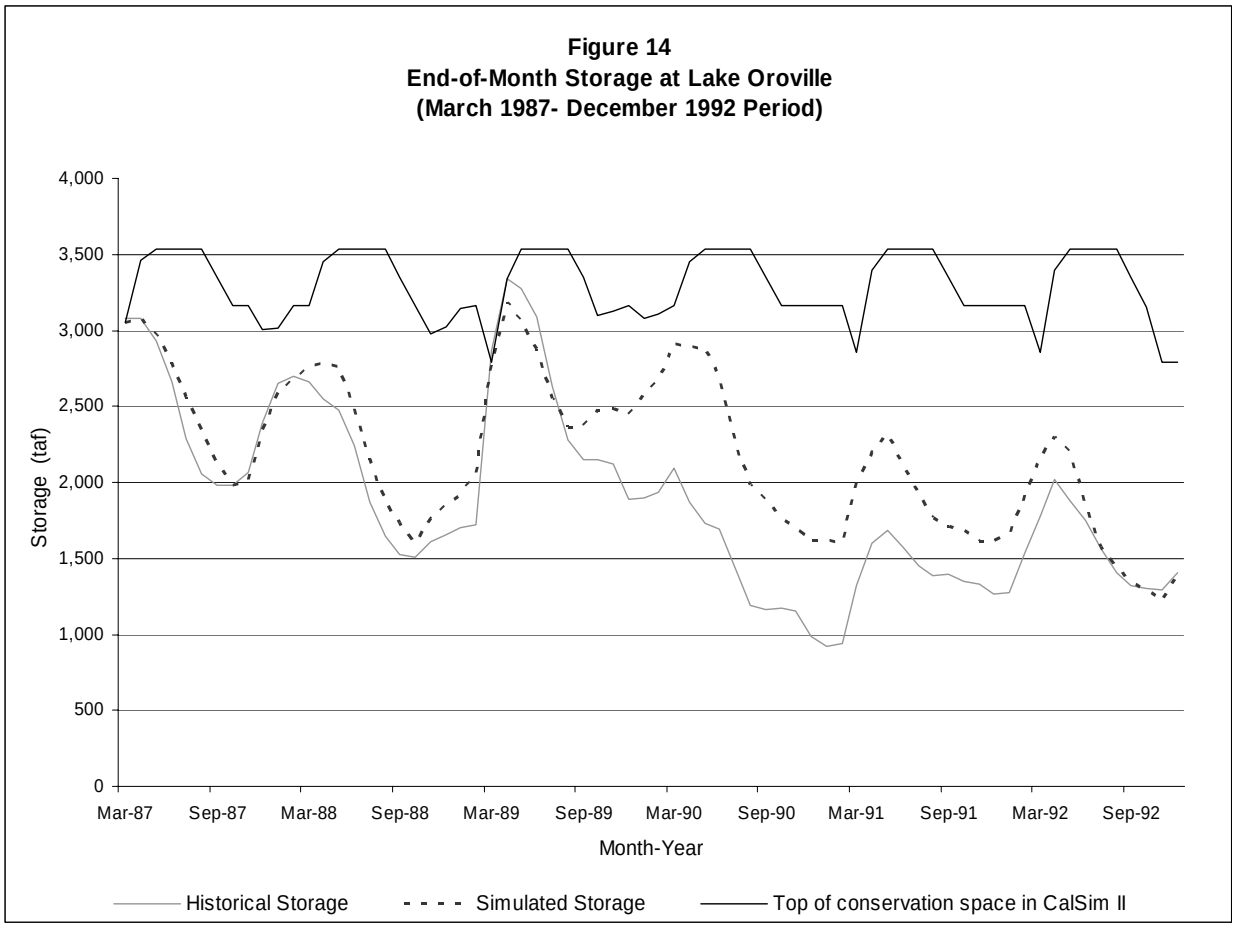

Figure 14 shows a line plot of end-of-month storage in Lake Oroville for the 1987-1992 drought. The historical storage at the outset of the drought on March 31, 1987, was 3,087 taf. The corresponding storage marking the end of the drought on November 30, 1992, was 1,294 taf. The table below lists the storage values and the corresponding annual changes in storage for the beginning of each calendar year. The storage change for the first year of the drought was based on the end-of-March 1987 quantities when the system storage was at its highest level, just before the drought began. Differences in the historical operation criteria and those used in the simulation study may result in different ending storages in Lake Oroville.

	Historical		Simulated		Difference
	Storage	Storage Change	Storage	Storage Change	
March 31 1987	3,078	NA	3,053	NA	NA
January 1 1988	2,388	690	2,344	709	19
January 1 1989	1,660	728	1,849	495	-233
January 1 1990	1,889	-229	2,445	-596	-367
January 1 1991	987	902	1,618	827	-75
January 1 1992	1,266	-279	1,620	- 2	277
January 1 1993	1,402	-136	1,382	238	374

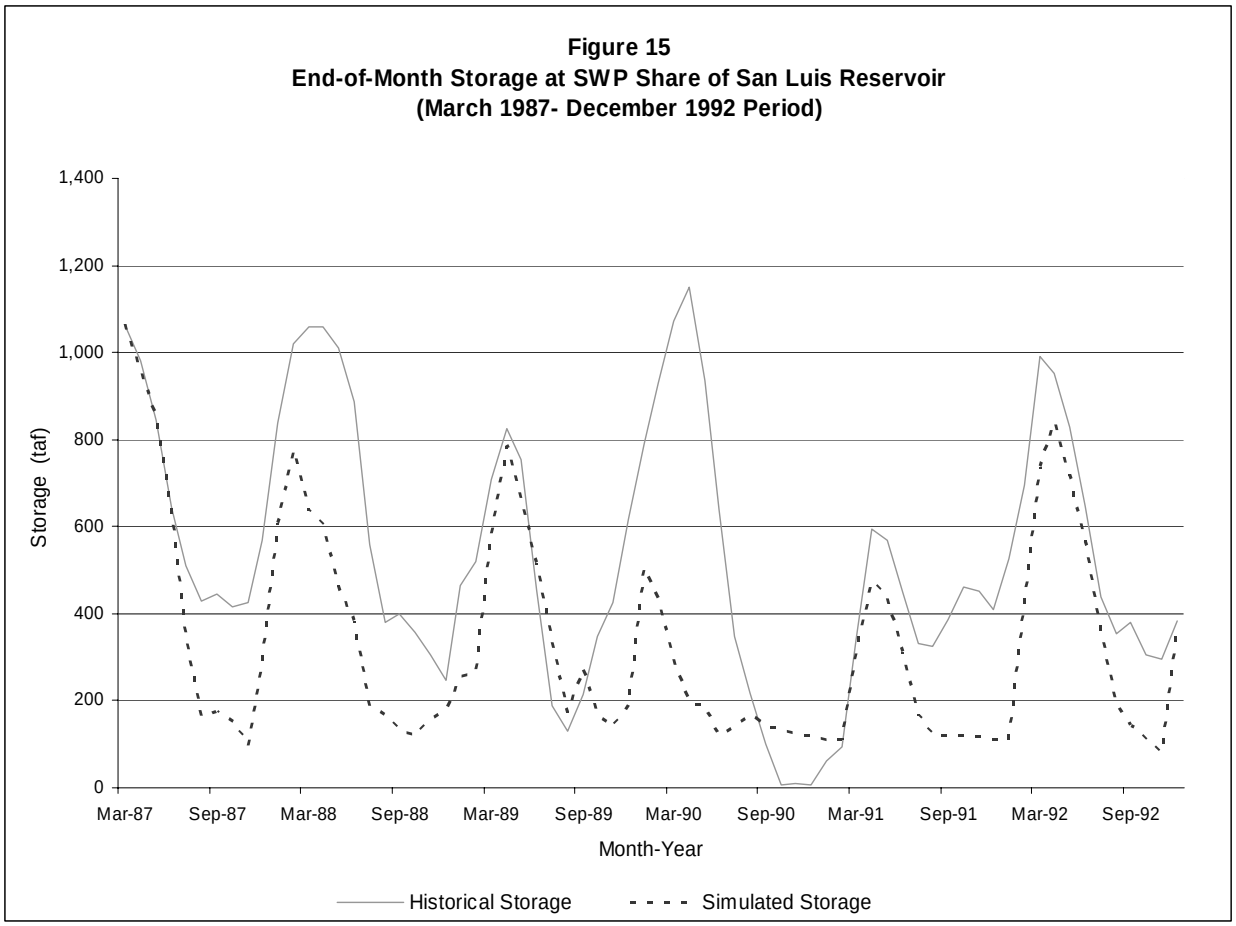

Figure 15 shows a line plot of end-of-month storage in SWP portion of San Luis Reservoir for the 1987-1992 drought. The historical storage at the outset of the drought on March 31, 1987, was 1,061. The corresponding storage marking the end of the drought on November 30, 1992, was 297. The table below lists the storage values and the corresponding annual changes in storage for the beginning of each calendar year. The storage change for the first year of the drought was based on the end-of-March 1987 quantities when the system storage was at its highest level, just before the drought began. Differences in the operation criteria and SWP San Luis rule curve between the historical operation and those used in the simulation study may result in different ending storages in San Luis Reservoir.

	Historical		Simulated		Difference
	Storage	Storage Change	Storage	Storage Change	
March 31 1987	1,061	NA	1,067	NA	NA
January 1 1988	570	491	291	776	285
January 1 1989	248	322	176	115	-207
January 1 1990	616	-368	190	-14	354
January 1 1991	6	610	119	71	-539
January 1 1992	410	-404	110	9	413
January 1 1993	383	27	366	-256	-283

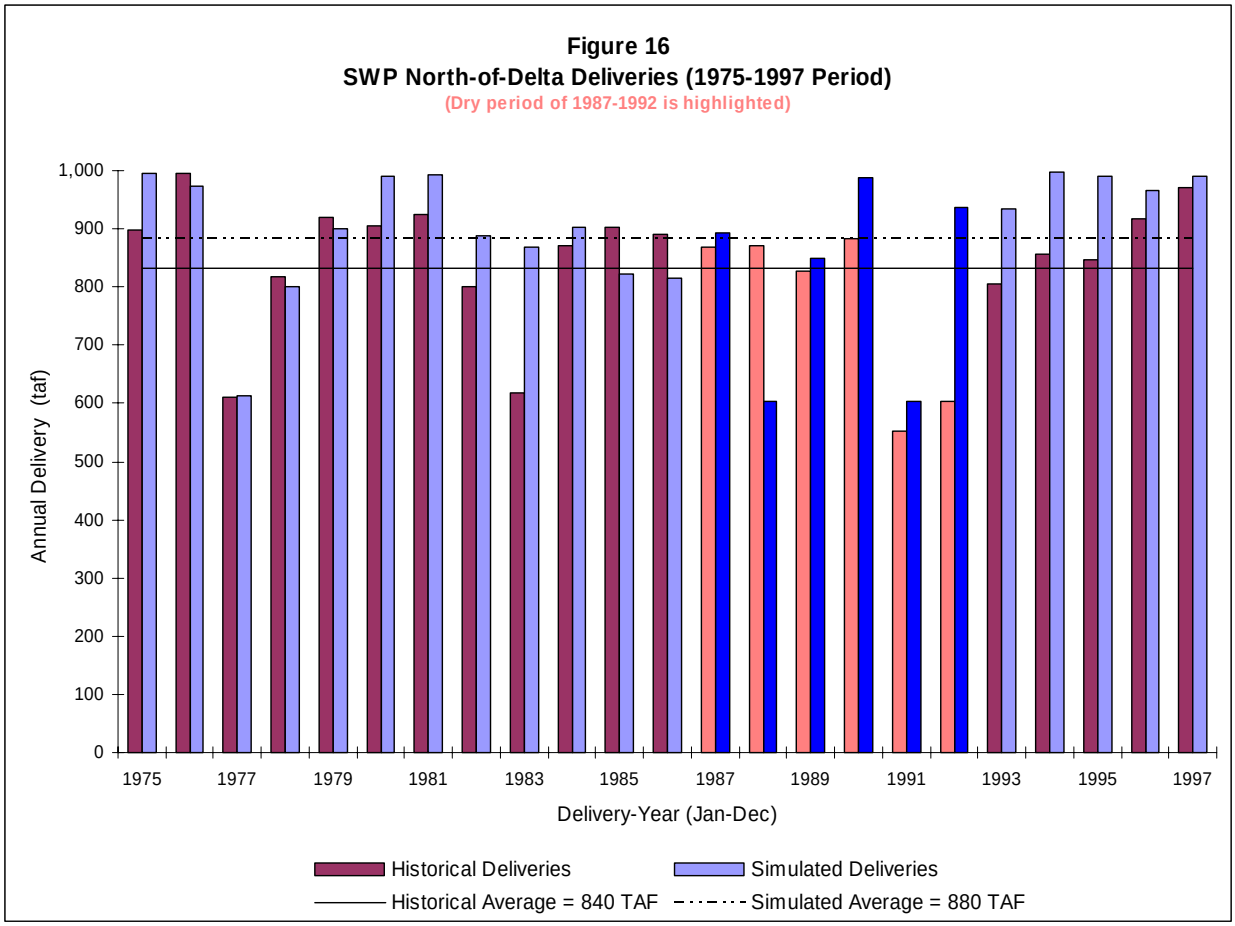

Figure 16 shows the bar chart of comparison between the historical and simulated deliveries made to SWP north-of-Delta contractors and senior water right holders in FRSA for the period of 1975-1997. The total includes deliveries made to all of the senior water rights holders downstream of Lake Oroville (i.e. Joint Water District Board, Western Canal Water District, Garden Highway Mutual Water Company, Plumas Mutual Water Company, Thermalito Irrigation District, Tudor Mutual Water Company, and Oswald Water District). The long-term average of the simulated deliveries exceeds that of the historical deliveries by approximately 4.8 percent. The historical average annual delivery during the 6-year drought of 1987-1992 is about 770 taf per year. The average for the simulated values during the drought is 810 taf per year, a difference of about 5.2 percent.

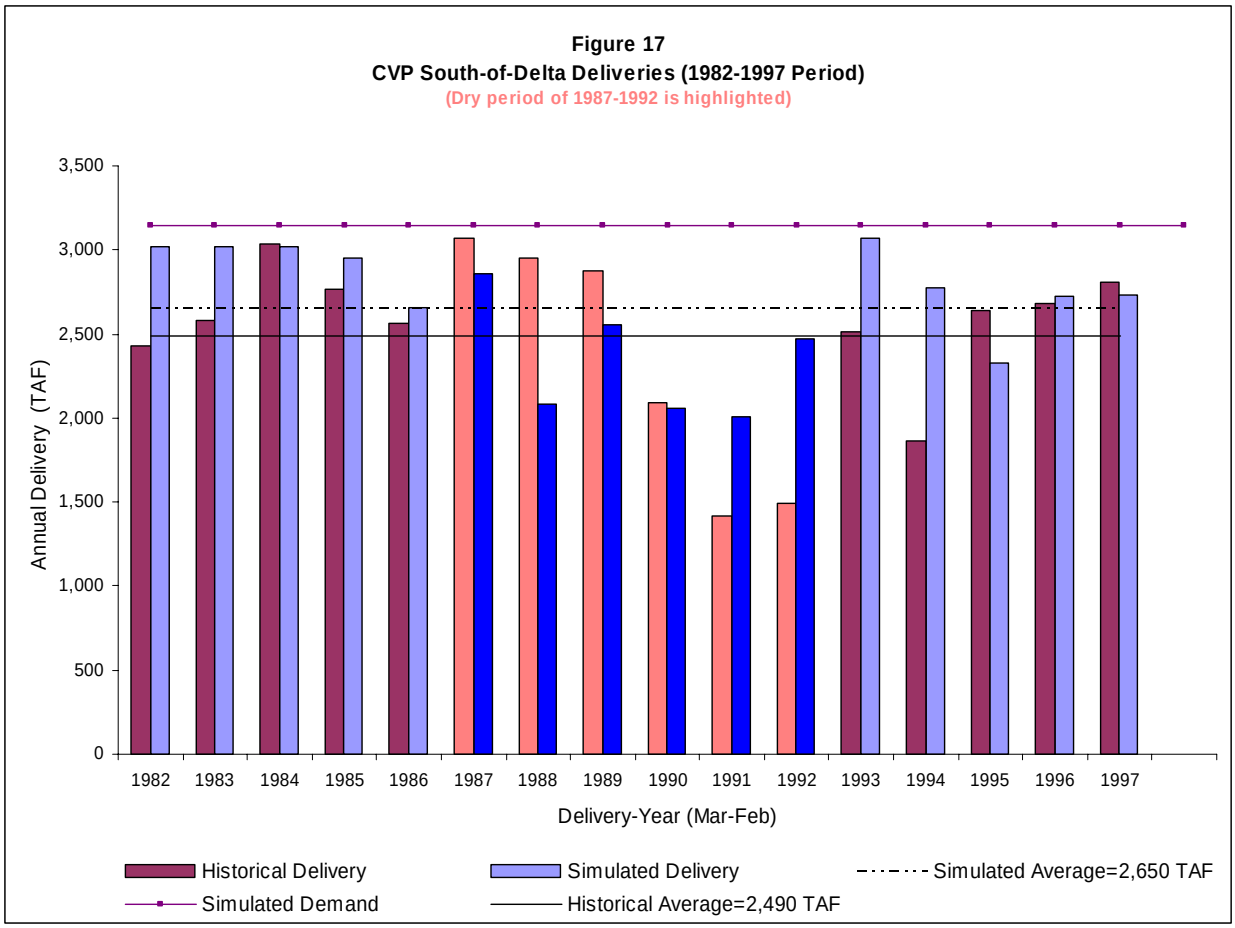

Figure 17 shows a comparison of historical and simulated CVP deliveries to south-of-Delta contractors for calendar years 1982 to 1997. The long-term average of the simulated deliveries exceeds that of the historical deliveries by approximately 6.4 percent. Differences between demand and other operation between historical and simulation criteria may result in different deliveries.

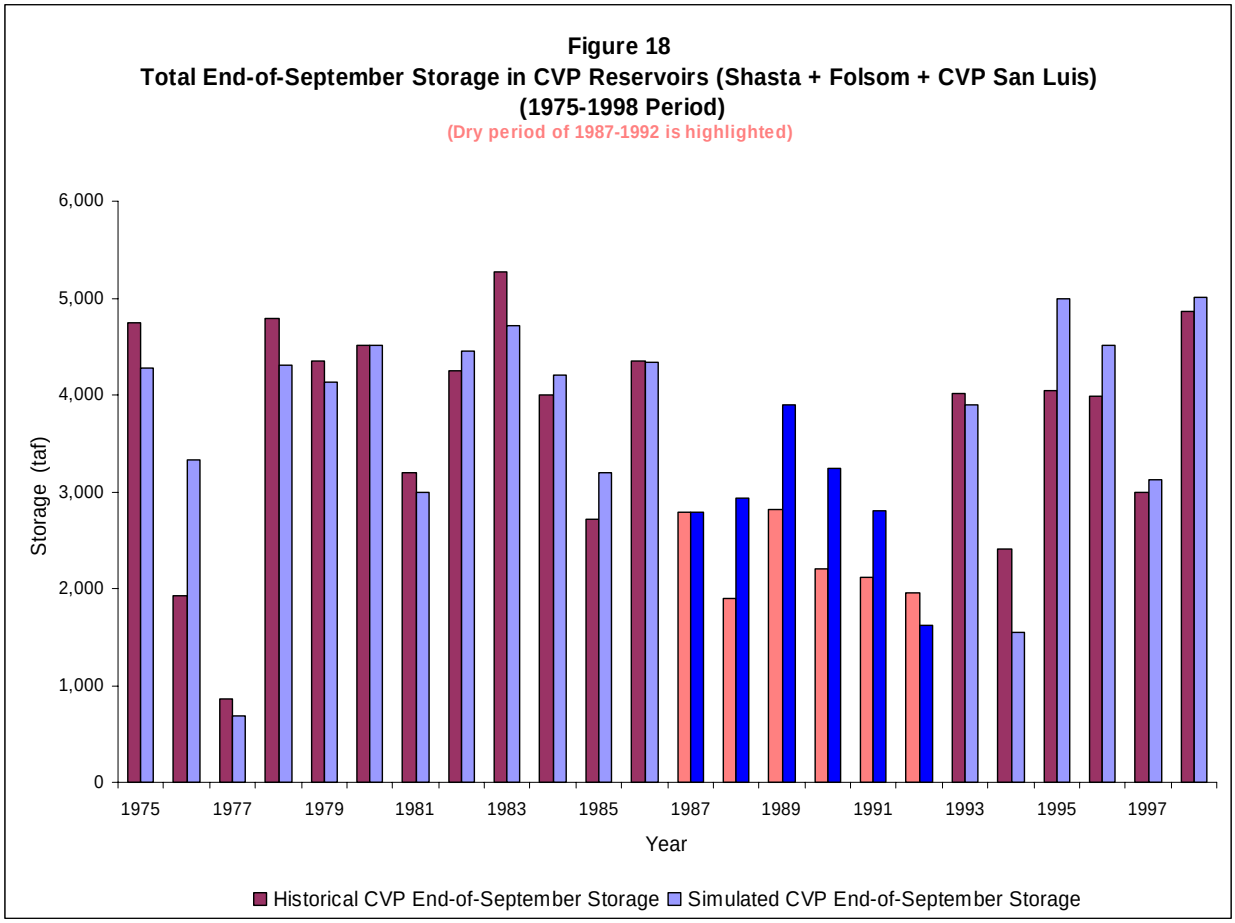

Figure 18 shows the total storage in the CVP system (Shasta, Folsom, CVP San Luis) reservoirs at the end of each water year. System carryover storage at the end of the water year is one of the factors that determine the allocation of water for making deliveries to CVP contractors.

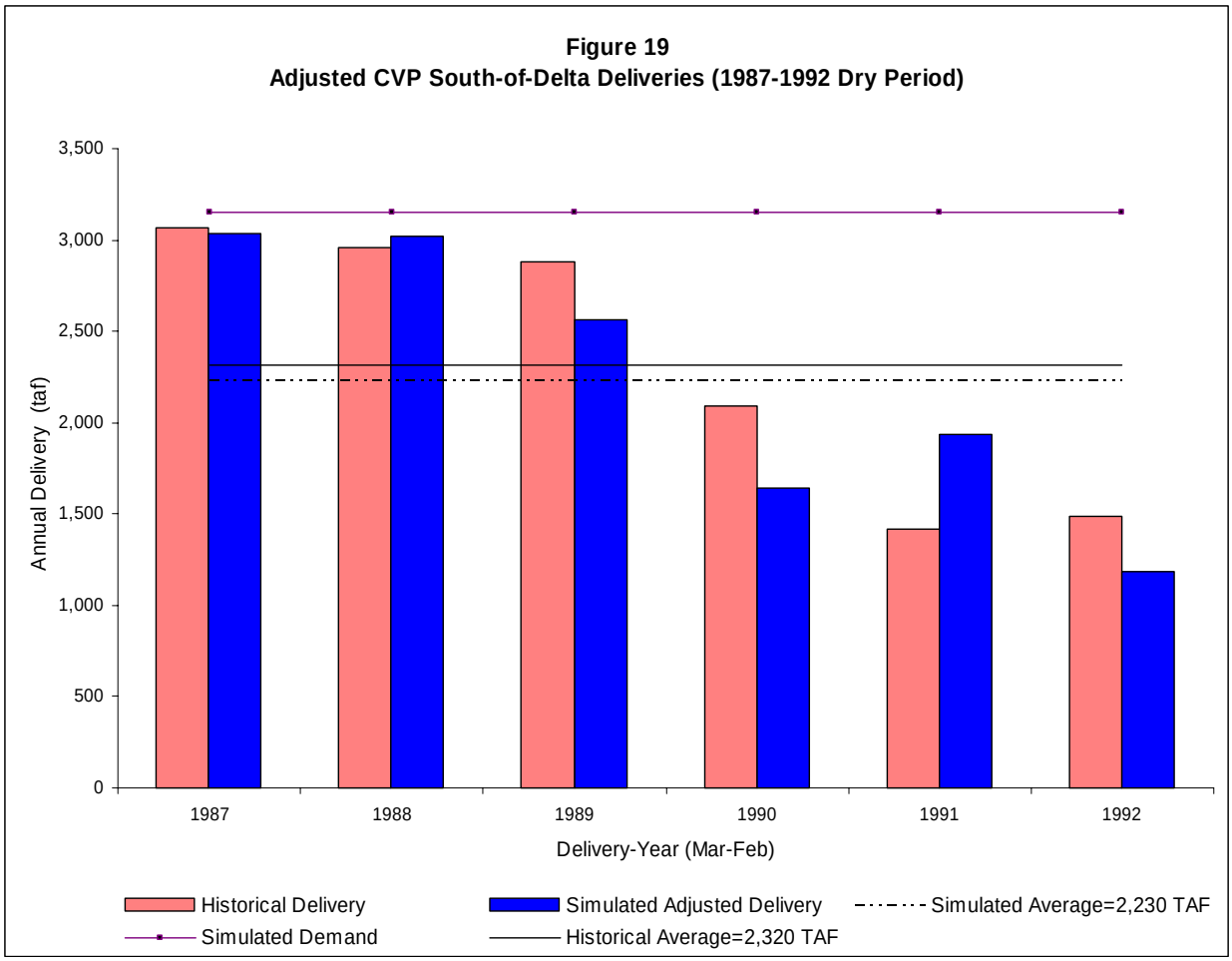

Figure 19 shows a comparison of historical and simulated CVP deliveries to south-of-Delta contractors during the 1987-1992 drought. Simulated annual deliveries during the drought have been adjusted to account for the difference in storage utilization in any given year. After the corrections for storage utilization during the critical period the 6-year average of the simulated deliveries is lower than that of the historical deliveries by approximately 3.9 percent. The adjusted simulated deliveries shown in this bar chart are computed as the gross delivery for each delivery year of simulation minus the difference between the historical and simulated values of storage used from March 1 to February 28(29) of the following year. For the first year of the drought, 1987, the storage difference between March 31 (the highest system storage just before the onset of the drought) and February 29, 1988, was used. Storage differences are based on the total CVP system storage (Shasta, Folsom, and CVP San Luis).

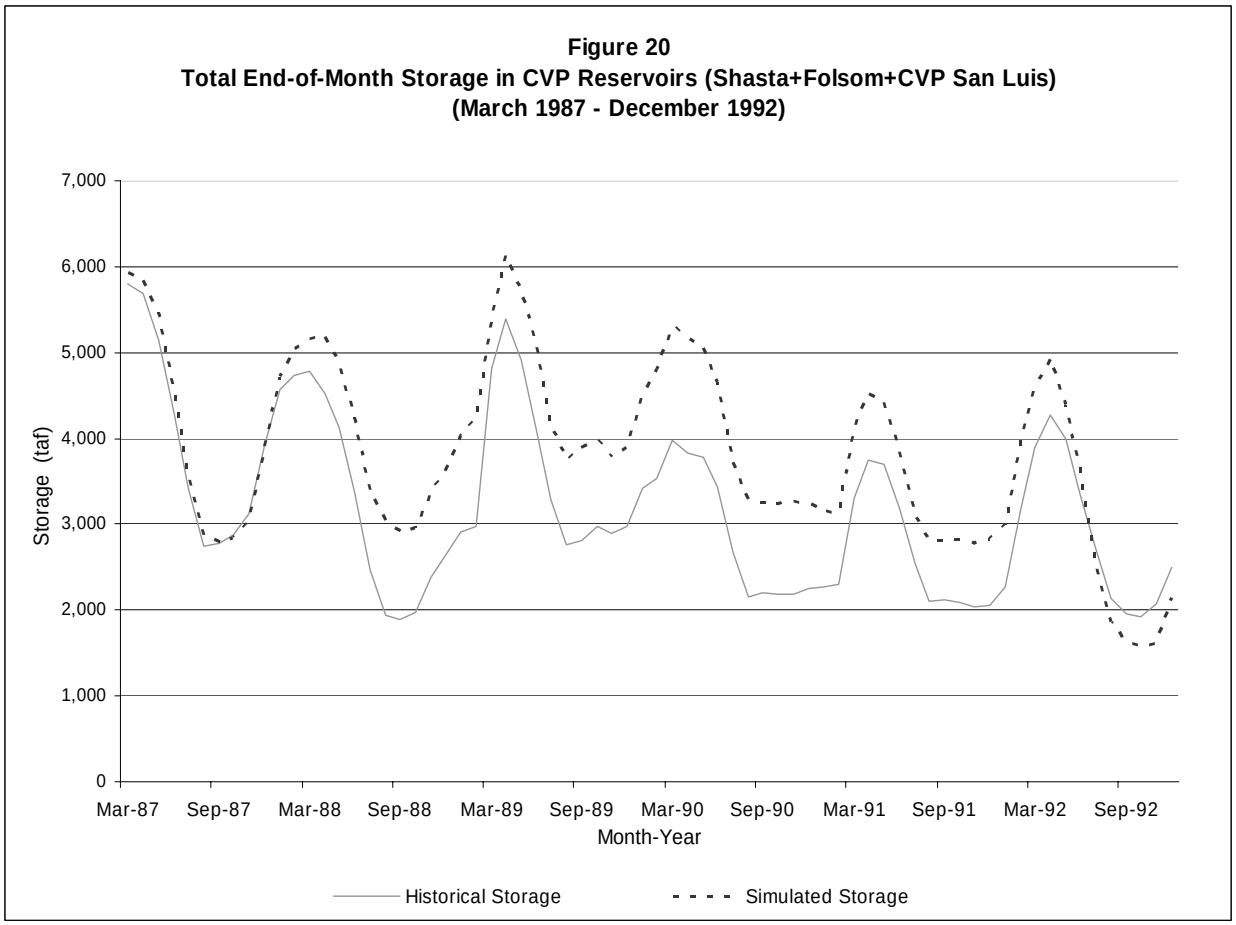

Figure 20 shows a line plot of end-of-month CVP storage (Shasta, Folsom, and CVP San Luis) for the 1987-1992 drought. The historical storage at the outset of the drought on March 31, 1987, was 5,807 taf. The corresponding storage marking the end of the drought on October 31, 1992, was 1,914. The table below lists the storage values and the corresponding annual change in storage for the beginning of each delivery year. The storage change for the first year of the drought was based on the end-of-March 1987 when the system storage was at its highest level, just before the drought began. Differences in the historical operation criteria and those used in the simulation study results in different ending storages in the CVP system. These storage differences were used to compute the adjustments for delivery bar charts presented in Figure 19.

	Historical		Simulated		Difference
	Storage	Storage Change	Storage	Storage Change	
March 31 1987	5,807	NA	5,938	NA	NA
January 1 1988	4,728	1,079	5,032	906	-173
January 1 1989	2,982	1,746	4,231	801	-945
January 1 1990	3,538	-556	4,794	-563	-7
January 1 1991	2,298	1,240	3,135	1,659	419
January 1 1992	3,165	-867	3,935	-800	67
January 1 1993	4,608	-1,443	4,092	-157	1,286

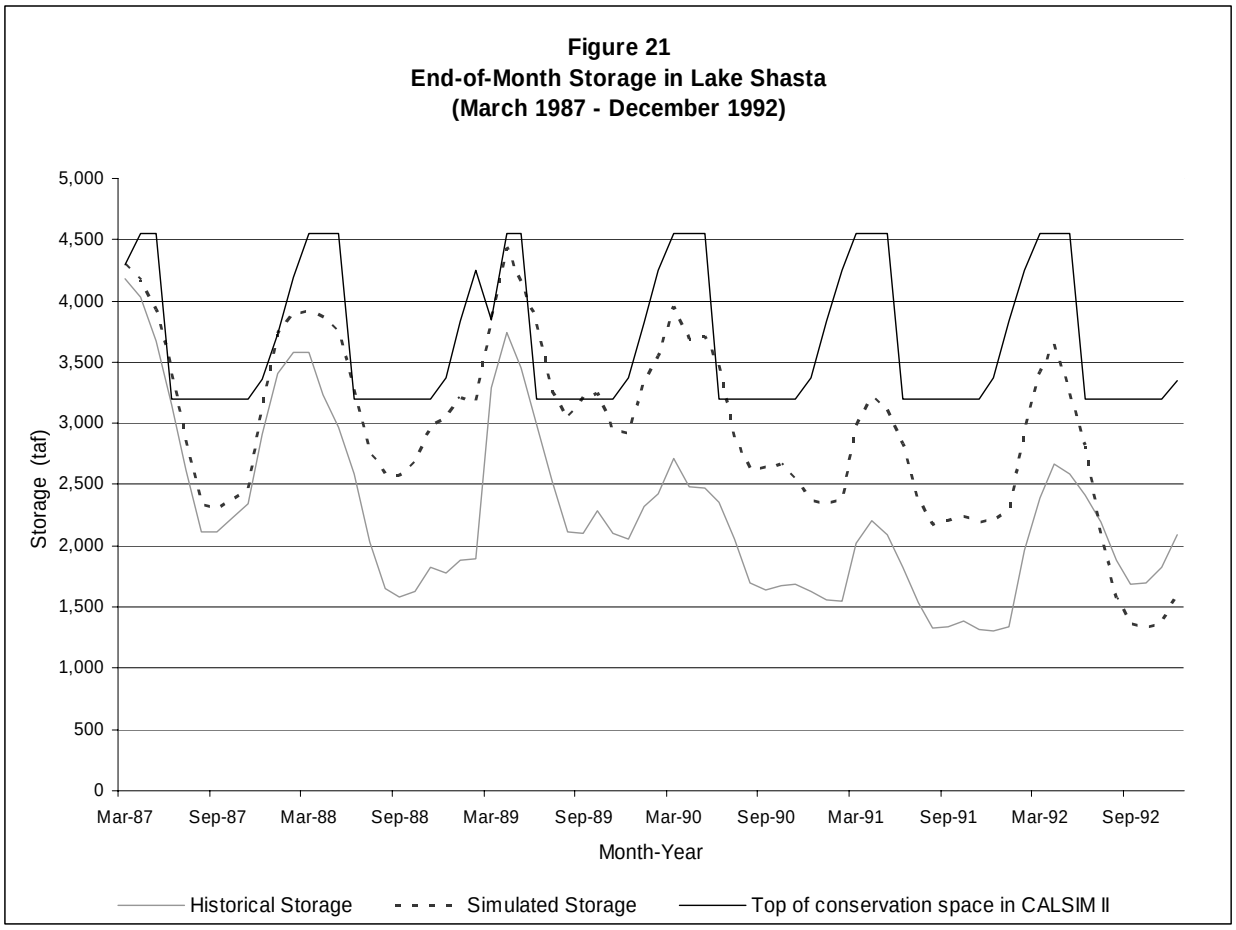

Figure 21 shows a plot of end-of-month storage in Lake Shasta for the 1987-1992 drought. The historical storage at the outset of the drought on March 31, 1987, was 4,182 taf. The corresponding storage marking the end of the drought on September 30, 1992, was 1,683 taf. The table below lists the storage values and the corresponding changes in storage for the beginning of each delivery year. The storage change for the first year of the drought was based on the end-of-March 1987 when the system storage was at its highest level, just before the drought began.

	Historical		Simulated		Difference
	Storage	Storage Change	Storage	Storage Change	
March 31 1987	4,182	NA	4,298	NA	NA
January 1 1988	3,583	599	3,896	402	- 197
January 1 1989	1,896	1,687	3,186	710	- 977
January 1 1990	2,429	- 533	3,542	- 356	177
January 1 1991	1,543	886	2,376	1,166	280
January 1 1992	1,966	- 423	2,940	- 564	- 141
January 1 1993	3,459	-1,493	3,022	- 82	1,411

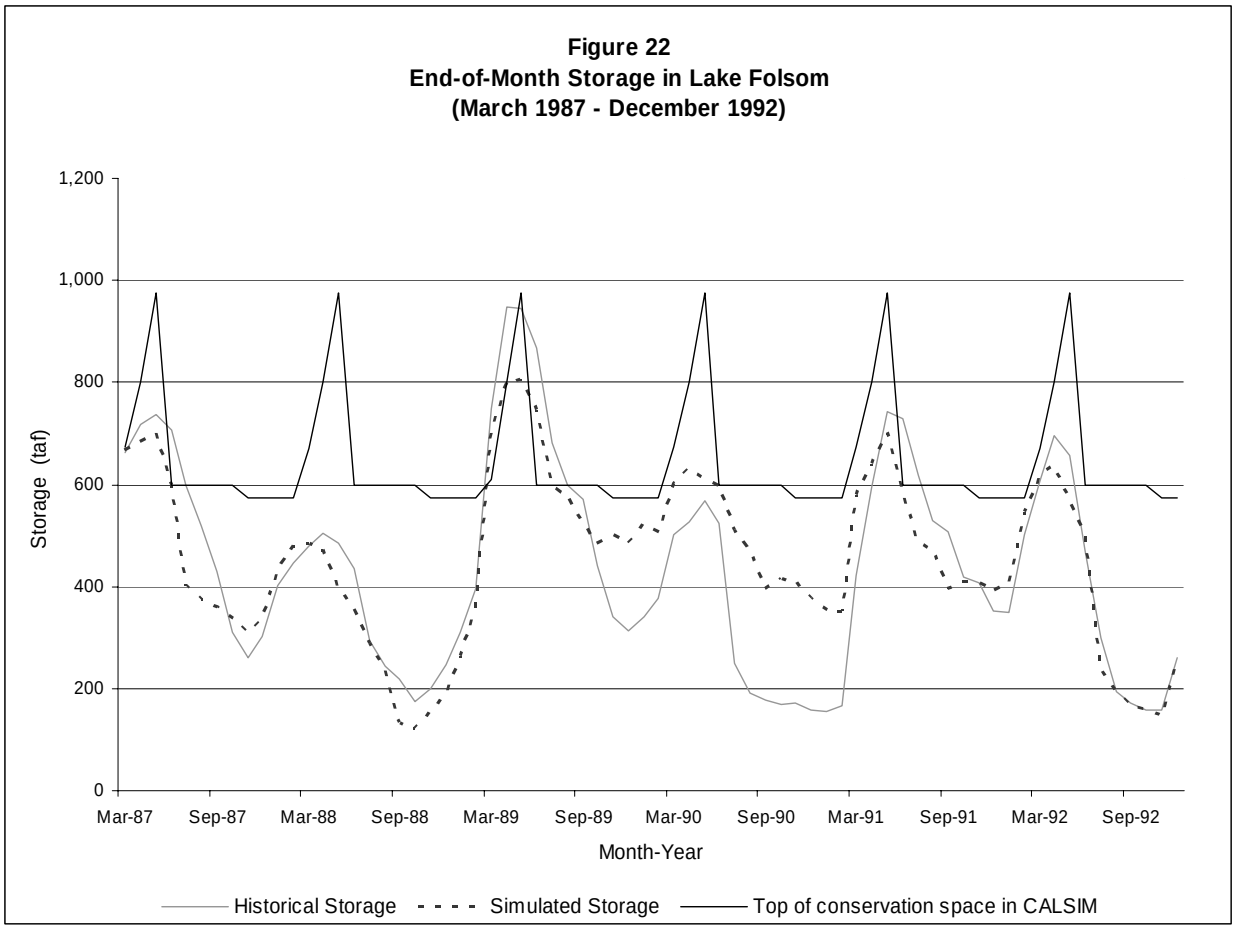

Figure 22 shows a plot of end-of-month storage in Lake Folsom for the 1987-1992 drought. The historical storage at the outset of the drought on March 31, 1987, was 662 taf. The corresponding marking the end of the drought on November 30, 1992, was 157 taf. The table below lists the storage values and the corresponding changes in storage for the beginning of each delivery year. The storage change for the first year of the drought was based on the end-of-March 1987 when the system storage was at its highest level, just before the drought began.

	Historical		Simulated		Difference
	Storage	Storage Change	Storage	Storage Change	
March 31 1987	662	NA	668	NA	NA
January 1 1988	447	215	480	188	-27
January 1 1989	398	49	356	124	75
January 1 1990	378	20	506	-150	-170
January 1 1991	167	211	351	155	-56
January 1 1992	502	-335	546	-195	140
January 1 1993	505	-3	555	-9	-6

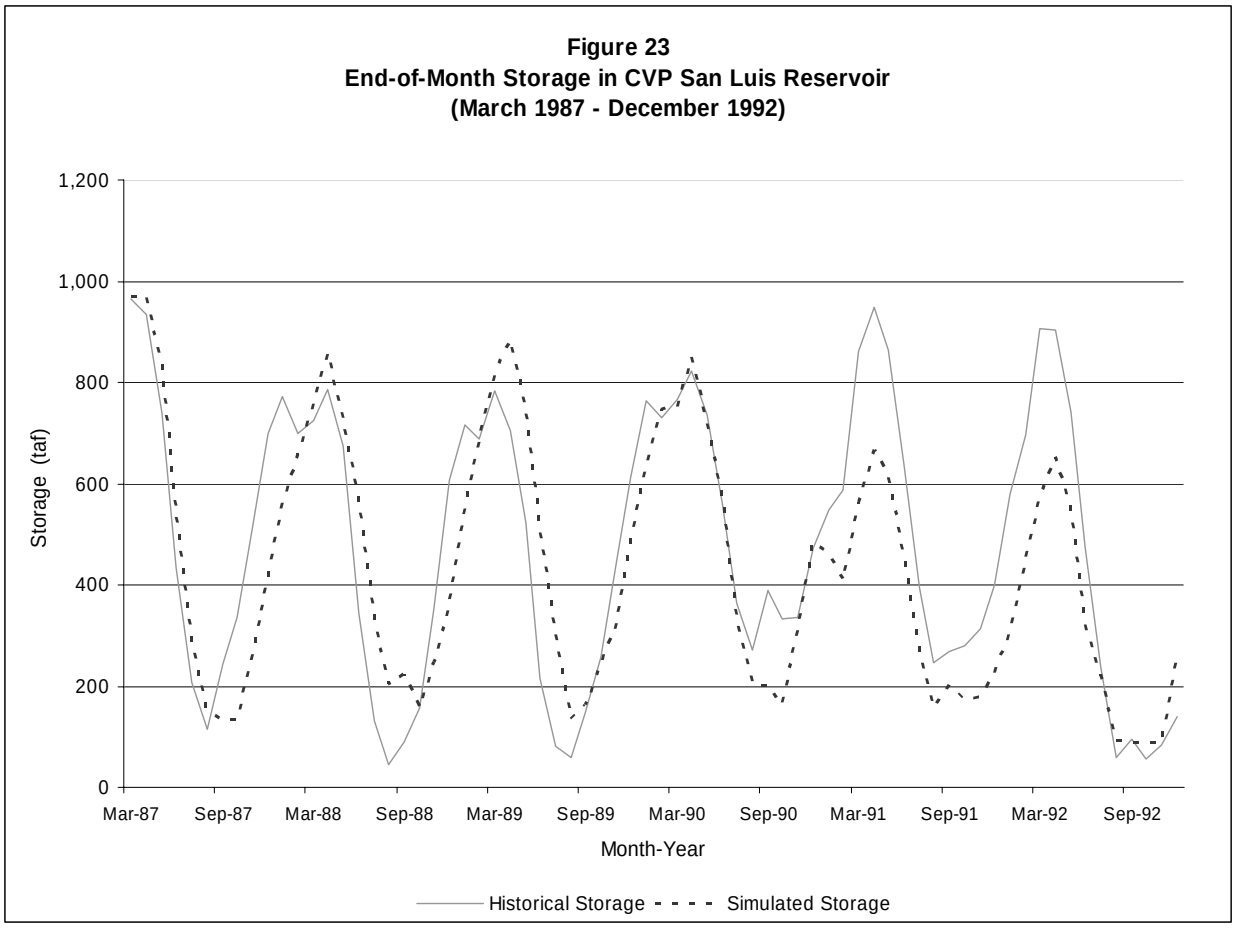

Figure 23 shows a plot of end-of-month storage in CVP San Luis Reservoir for the 1987-1992 drought. The historical storage at the outset of the drought on March 31, 1987, was 964 taf. The corresponding storage marking the end of the drought on October 31, 1992, was 57 taf. The table below lists the storage values and the corresponding changes in storage for the beginning of each delivery year. The storage change for the first year of the drought was based on the end-of-March 1987 when the system storage was at its highest level, just before the drought began.

	Historical		Simulated		Difference
	Storage	Storage Change	Storage	Storage Change	
March 31 1987	964	NA	972	NA	NA
January 1 1988	698	266	656	316	50
January 1 1989	689	9	688	-32	-41
January 1 1990	731	-42	746	-58	-16
January 1 1991	588	143	408	338	195
January 1 1992	698	-110	449	-41	69
January 1 1993	645	53	515	-66	-119

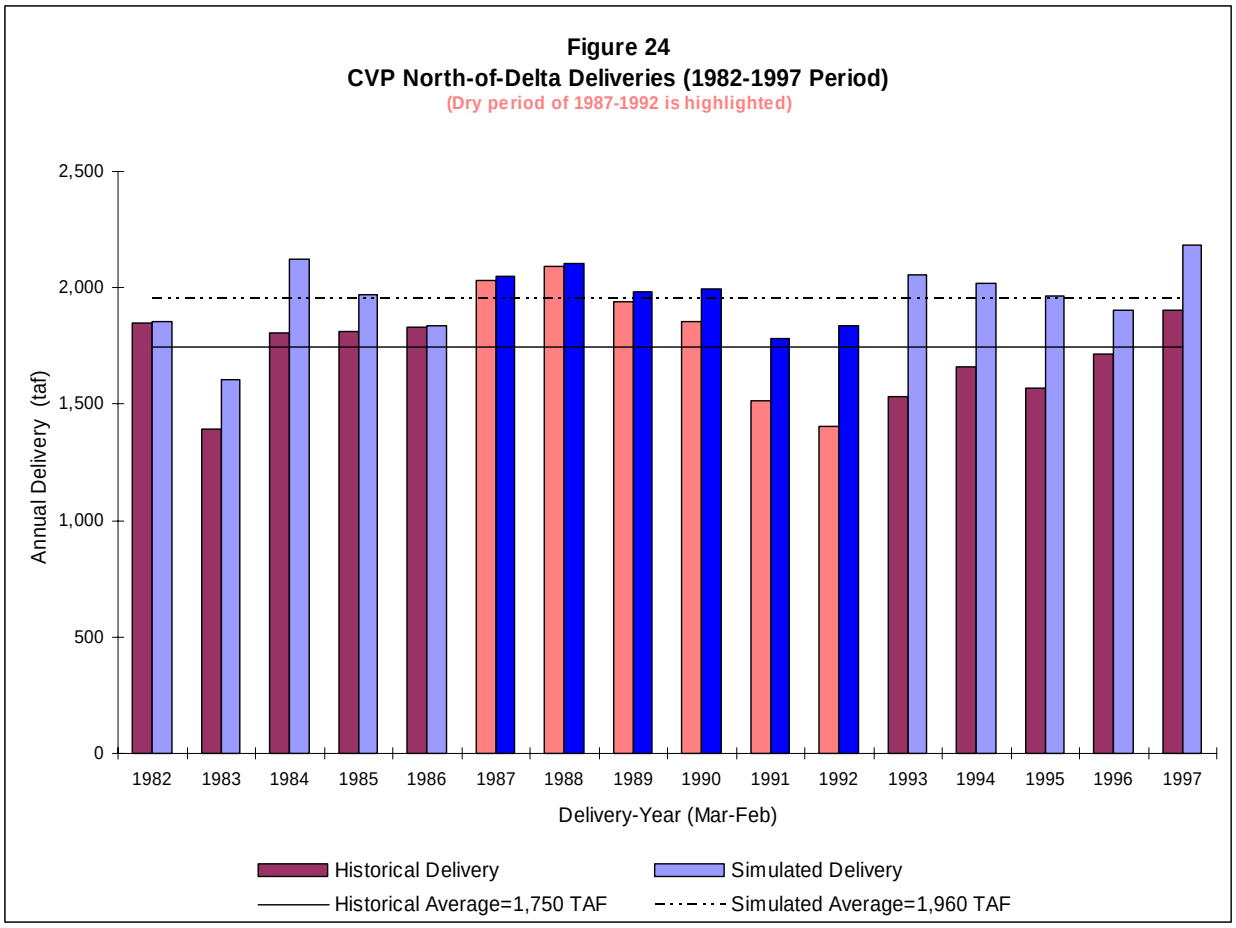

Figure 24 shows the bar chart of comparison between the historical and simulated deliveries made to the CVP north-of-Delta contractors in the Sacramento Valley for the period of 1982-1997. They include the Tehema-Colusa Canal service area, Corning Canal service area, Glenn-Colusa ID, Anderson-Cottonwood ID, City of Redding, Maxwell ID, Provident ID, Princeton-Codora-Glenn ID, Colusa IC, Meridian Farms WC, Pelger Mutual WC, RD 1004, RD 108, Roberts Ditch IC, Sartain MWD, Sutter MWC, Swinford Traft IC, Tisdale Irrigation and Drainage Company, and Sacramento, Delevan, and Colusa Refuge Areas. The long-term average of the simulated deliveries exceeds that of the historical deliveries by 12.0 percent. The historical average annual delivery during the 6-year drought of 1987-1992 is about 1,810 taf per year. The average for the simulated values during the drought is 1,960 taf per year, a difference of about 8.3 percent.

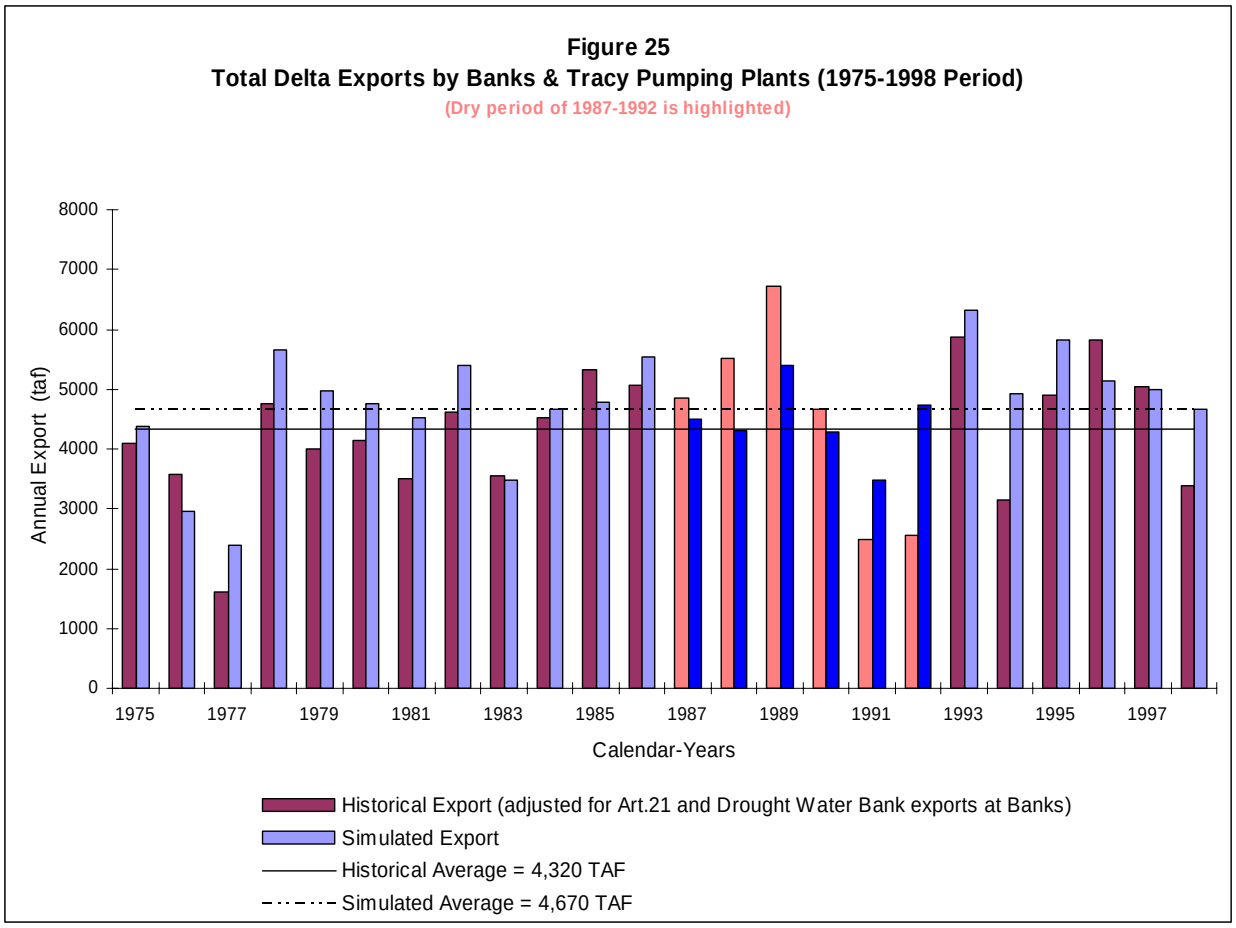

Figure 25 shows the total project exports made from the Delta by the CVP and SWP pumping facilities. Historical values for total exports were obtained from DAYFLOW average daily data, and as such included all types of diversions, project and non-project, made at the Clifton Court Forebay by the Banks Pumping Plant. Since the simulated values of the Delta exports by Banks Pumping Plant did not include any Article 21 water or any non-project water transfers, the values obtained from DAYFLOW for the historical exports were adjusted to be more comparable to the simulated values. The adjustments were made for Article 21 water and exports that were made to transfer Drought Water Bank supplies, only. No other non-project exports were included in the adjustments. After these adjustments, the simulated long-term average annual exports exceeded the historical average by approximately 8.1 percent.

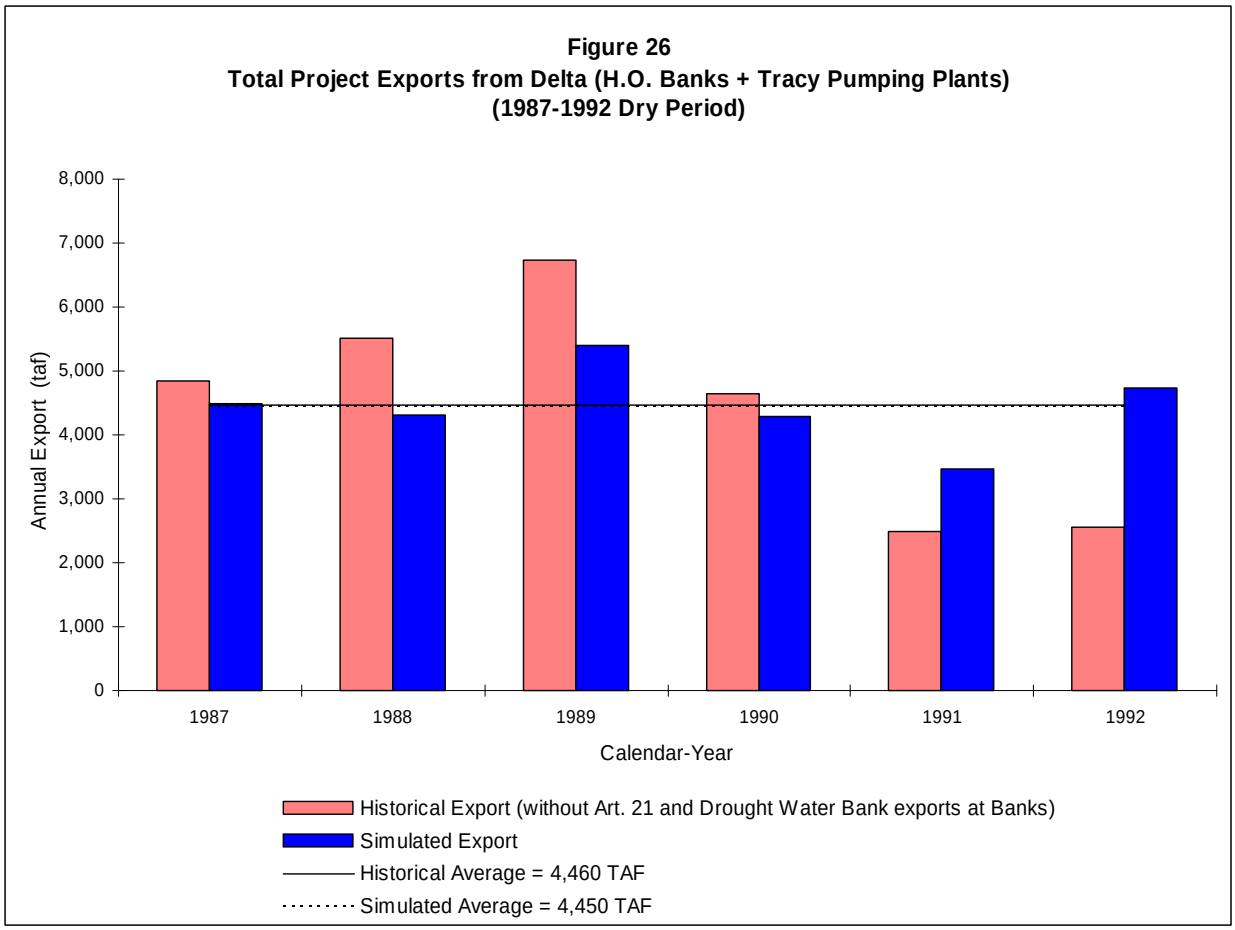

Figure 26 shows the total project exports made from the Delta by the CVP and SWP pumping facilities during the 1987-1992 dry period. Historical values for total exports were obtained from DAYFLOW average daily data, and as such included all types of diversions, project and non-project, made at the Clifton Court Forebay by the Banks Pumping Plant. Since the simulated values of the Delta exports by Banks Pumping Plant did not include any Article 21 water or any non-project water transfers, the values obtained from DAYFLOW for the historical exports were adjusted to be more comparable to the simulated values. The adjustments were made for Article 21 water and exports that were made to transfer Drought Water Bank supplies, only. No other non-project exports were included in the adjustments. After these adjustments, the historical average annual export during the 6-year drought of 1987-1992 is about 4,460 taf per year. The average for the simulated values during the drought is 4,450 taf per year, a difference of about 0.2 percent.

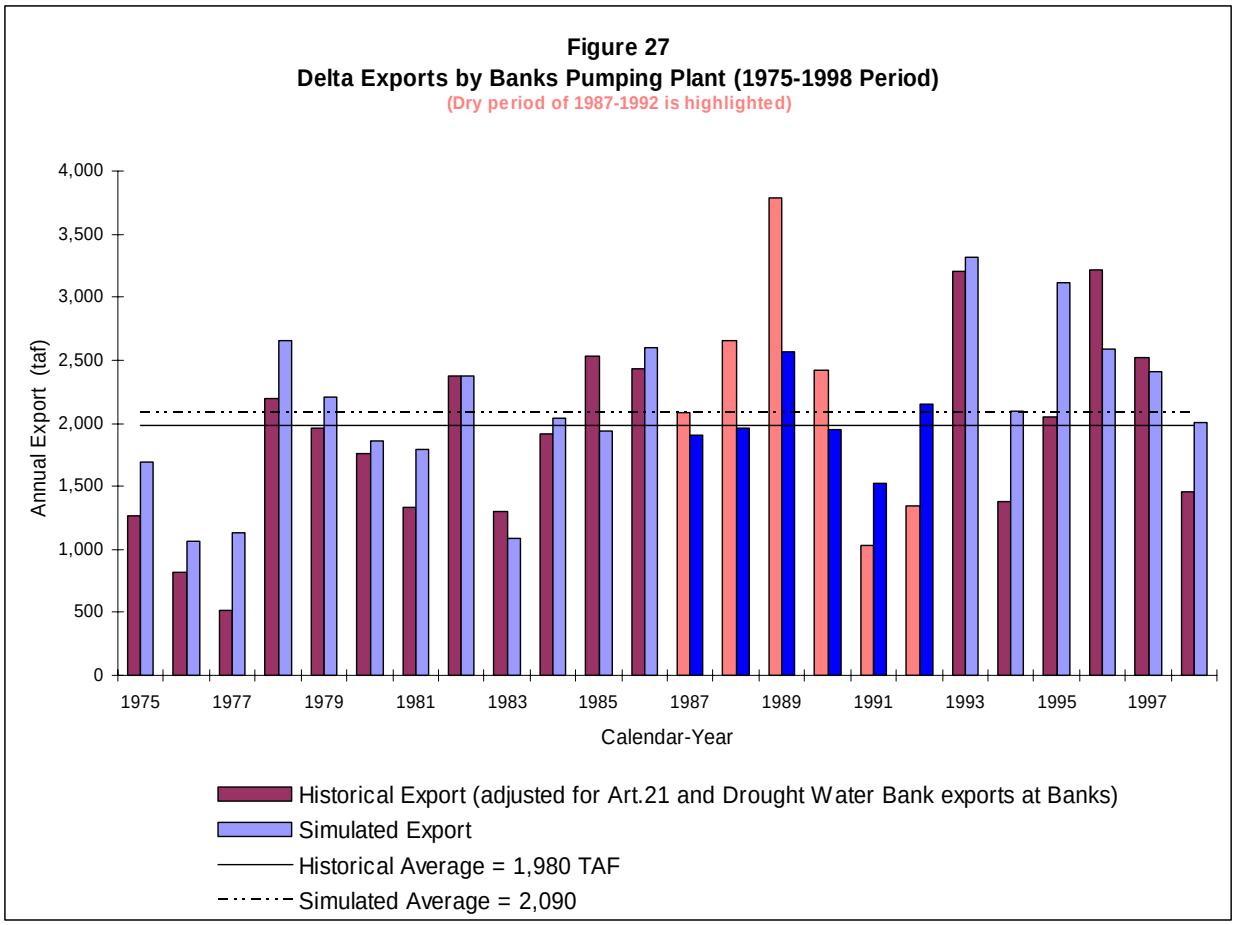

Figure 27 shows the total exports made from the Delta by the Banks Pumping Plant. Historical values for exports at Banks Pumping Plant were obtained from DAYFLOW average daily data, and as such included all types of diversions, project and non-project, made at the Clifton Court Forebay. Since the simulated values of the Delta exports by Banks Pumping Plant did not include any Article 21 water, or any non-project water transfers the values obtained from DAYFLOW for the historical exports were adjusted to be more comparable to the simulated values. The adjustments were made for Article 21 water and exports that were made to transfer Drought Water Bank supplies, only. No other non-project exports were included in the adjustments. After these adjustments the simulated long-term average annual exports exceeded the historical average by approximately 5.6 percent.

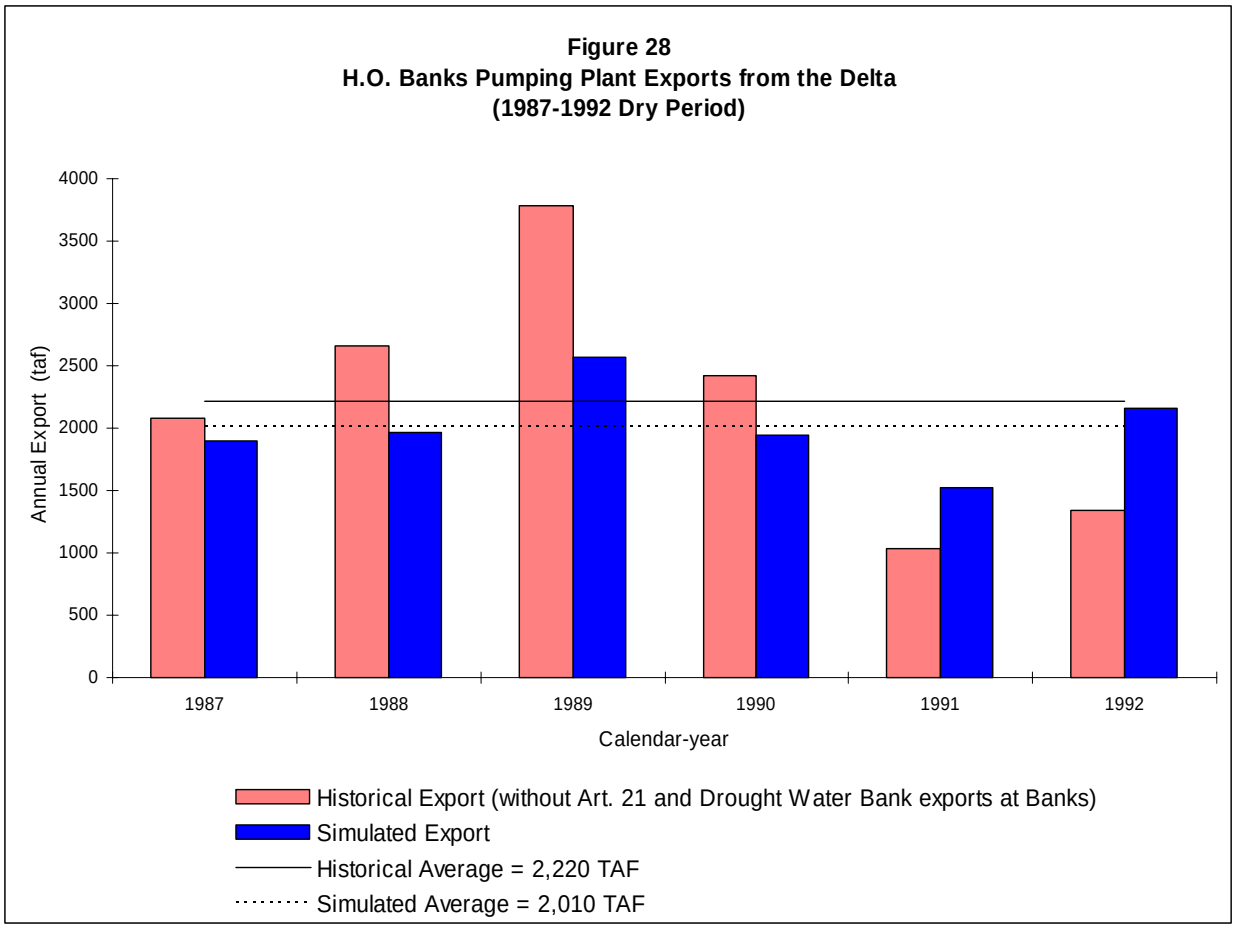

Figure 28 shows the total exports made from the Delta by the Banks Pumping Plant. Historical values for exports at Banks Pumping Plant were obtained from DAYFLOW average daily data, and as such included all types of diversions, project and non-project, made at the Clifton Court Forebay. Since the simulated values of the Delta exports by Banks Pumping Plant did not include any Article 21 water, or any non-project water transfers the values obtained from DAYFLOW for the historical exports were adjusted to be more comparable to the simulated values. The adjustments were made for Article 21 water and exports that were made to transfer Drought Water Bank supplies, only. No other non-project exports were included in the adjustments. After these adjustments, the historical average annual adjusted export during the 6-year drought of 1987-1992 is about 2,220 taf per year. The average for the simulated values during the drought is 2,010 taf per year, a difference of about 9.5 percent.

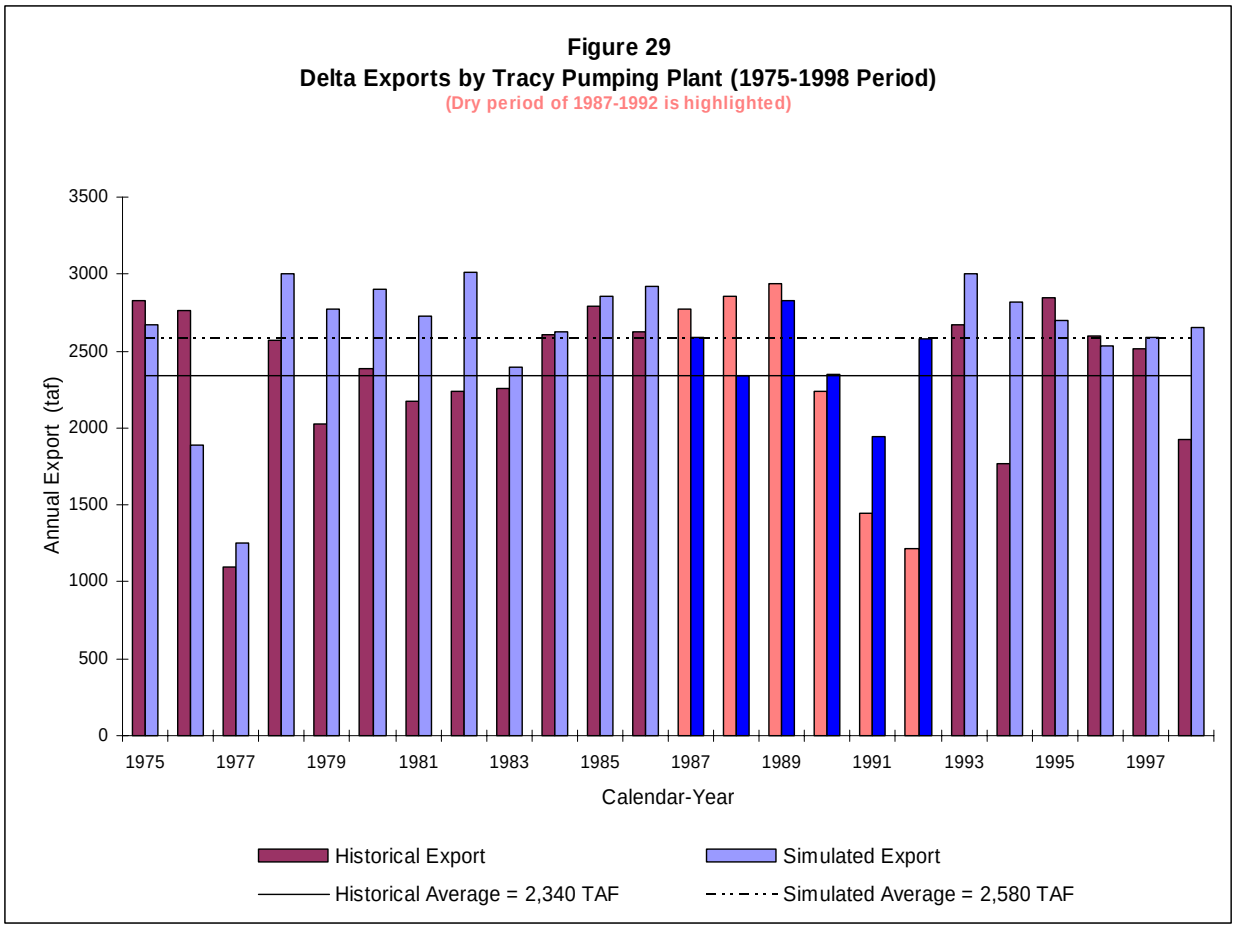

Figure 29 shows the total exports made from the Delta by the Tracy Pumping Plant. Historical values were obtained from DAYFLOW. The simulated long-term average annual exports exceeded the historical average by approximately 10.3 percent.

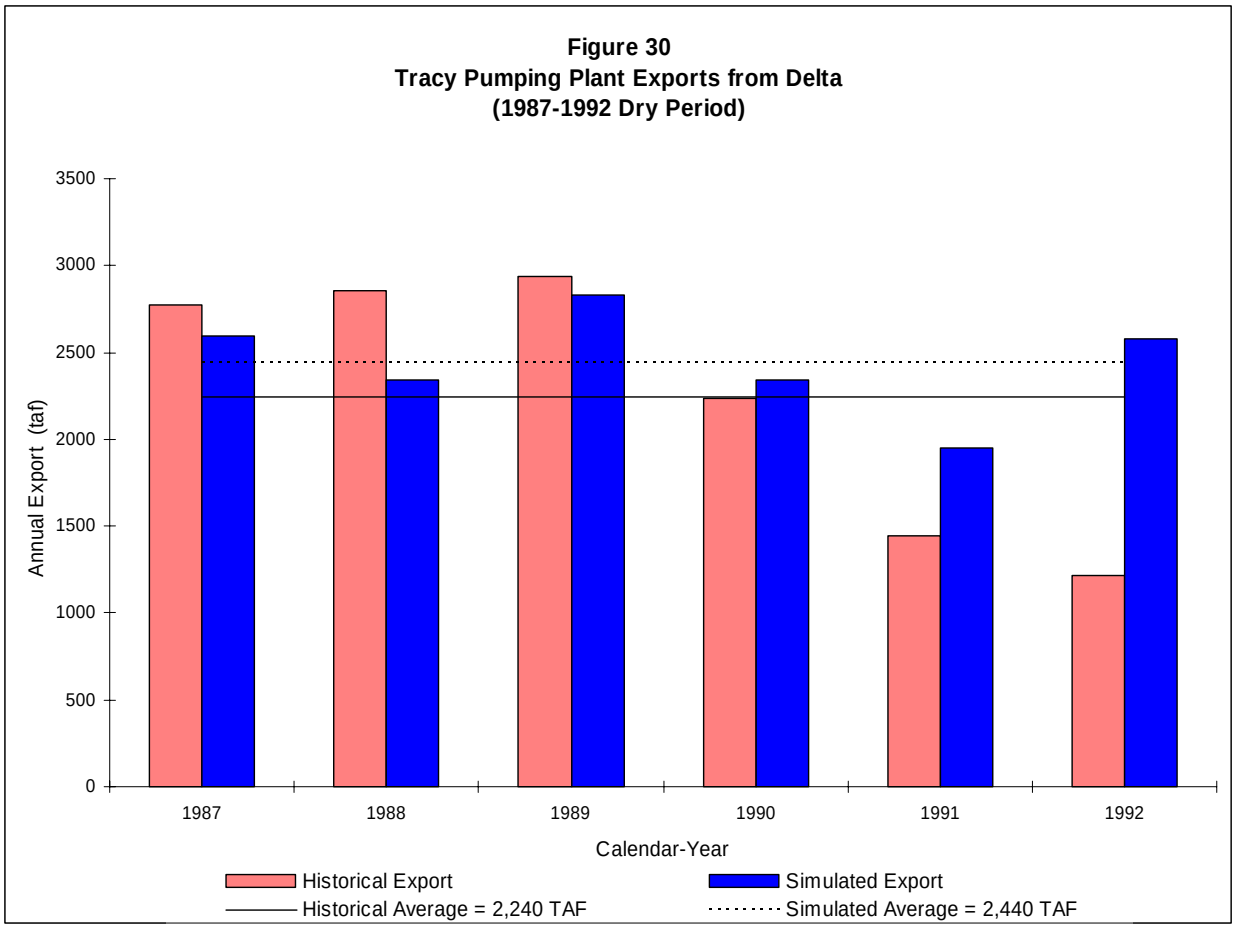

Figure 30 shows the total exports made from the Delta by the Tracy Pumping Plant during the dry period of 1987-1992. Historical values were obtained from DAYFLOW. The historical average annual export during the 6-year drought is about 2,240 taf per year. The average for the simulated values during the same period is 2,440 taf per year, a difference of about 8.9 percent.

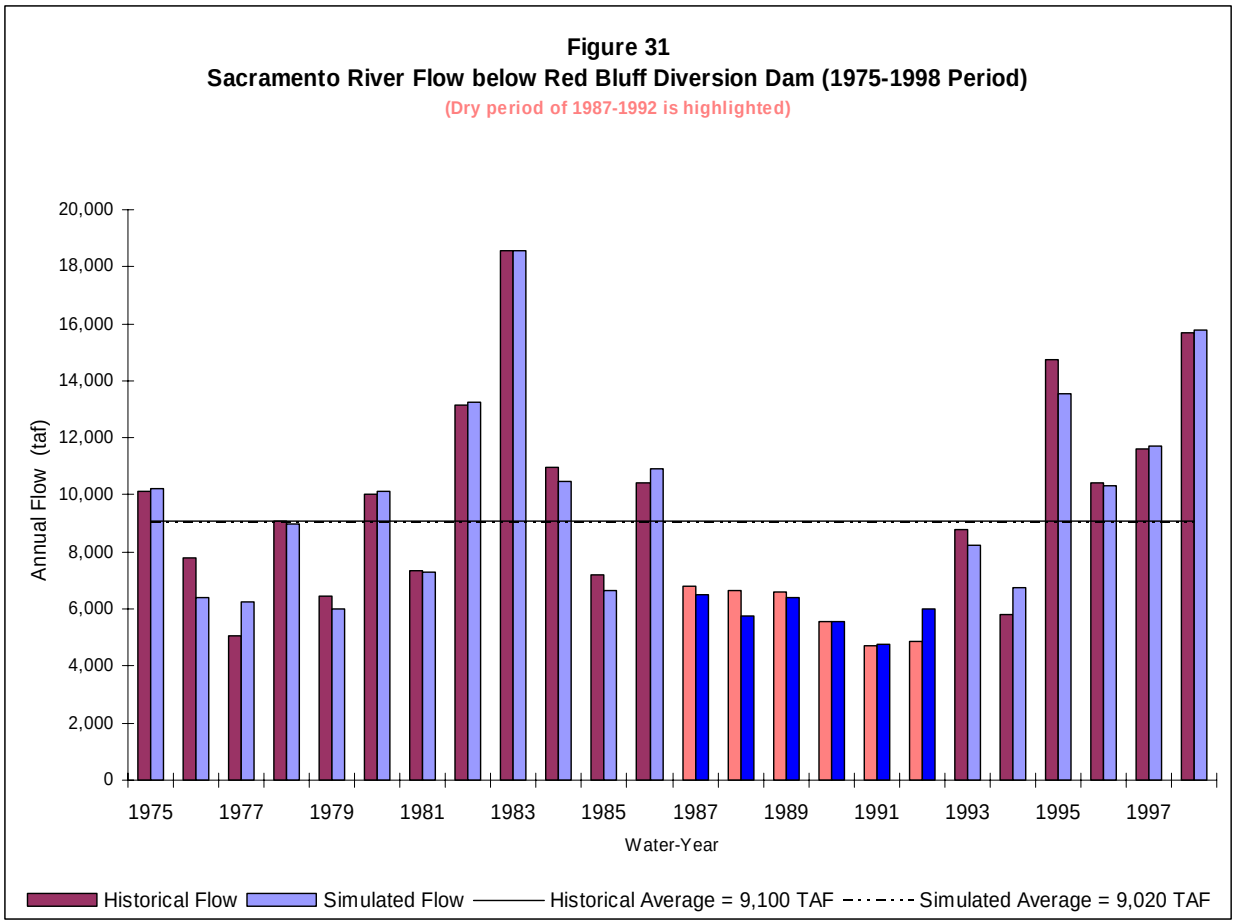

Figure 31 provides a comparison of the historical and simulated flows at the gaging station below the Red Bluff Diversion Dam on the Sacramento River. The long-term average of the simulated values is lower than that of the historical values by less than 1.0 percent. The historical average annual flow during the 6-year drought of 1987-1992 is about 5,860 taf per year. The average for the simulated values during the drought is 5,830 taf per year, a difference of about 0.5 percent.

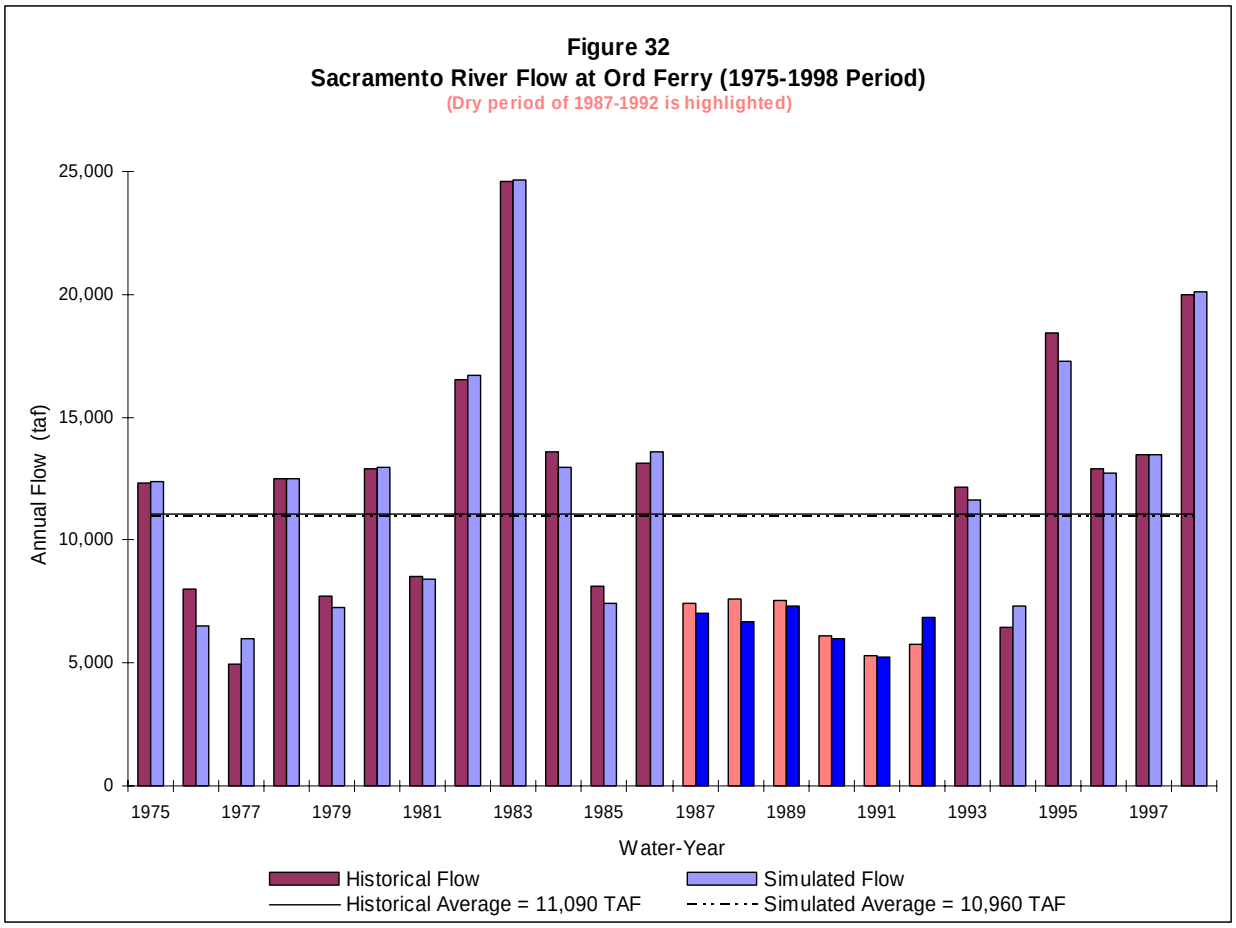

Figure 32 provides a comparison of the historical and simulated flows at the gaging station near Ord Ferry on the Sacramento River. The long-term average of the simulated values is lower than that of the historical values by about 1.2 percent. The historical average annual flow during the 6-year drought of 1987-1992 is about 6,620 taf per year. The average for the simulated values during the drought is 6,510 taf per year, a difference of about 1.7 percent.

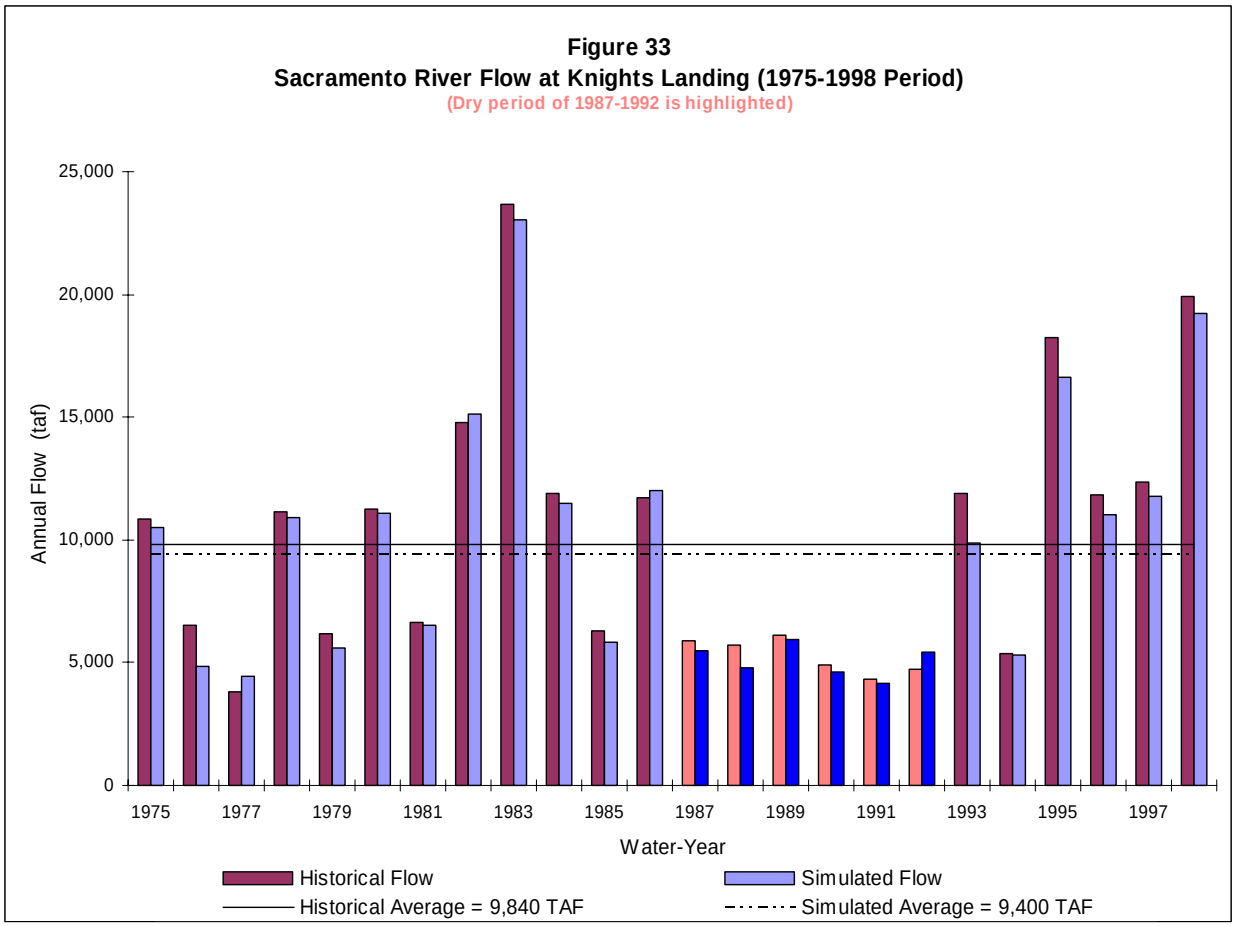

Figure 33 provides a comparison of the historical and simulated flows at the Knights Landing gaging station on the Sacramento River. The long-term average of the simulated values is lower than that of the historical values by about 4.5 percent. The historical average annual flow during the 6-year drought of 1987-1992 is about 5,290 taf per year. The average for the simulated values during the drought is 5,080 taf per year, a difference of about 4.0 percent.

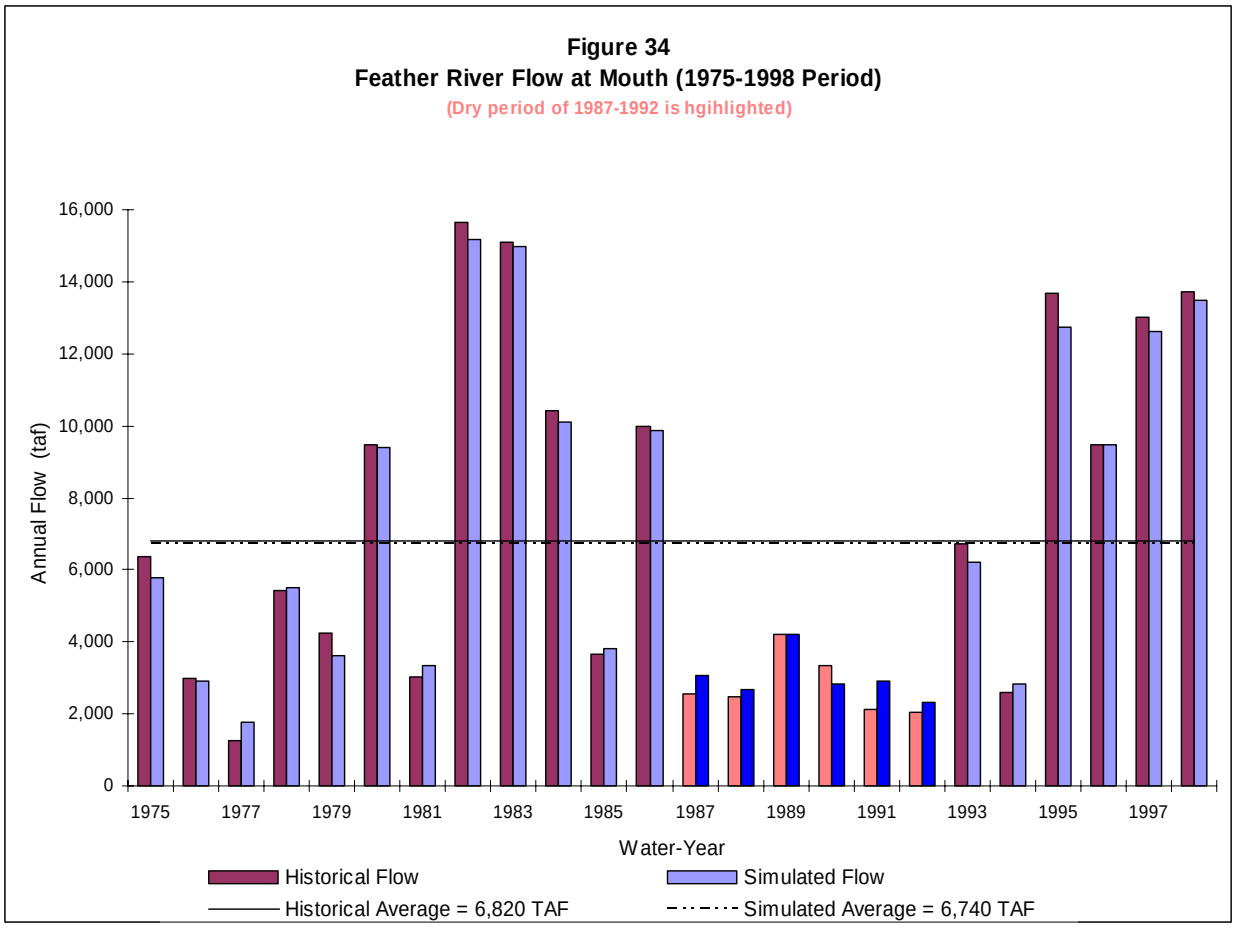

Figure 34 provides a comparison of the historical and simulated flows in the Feather River at confluence with the Sacramento River. The long-term average of the simulated values is lower than that of the historical values by about 1.2 percent. The historical average annual flow during the 6-year drought of 1987-1992 is about 2,800 taf per year. The average for the simulated values during the drought is 3,000 taf per year, a difference of about 7.1 percent.

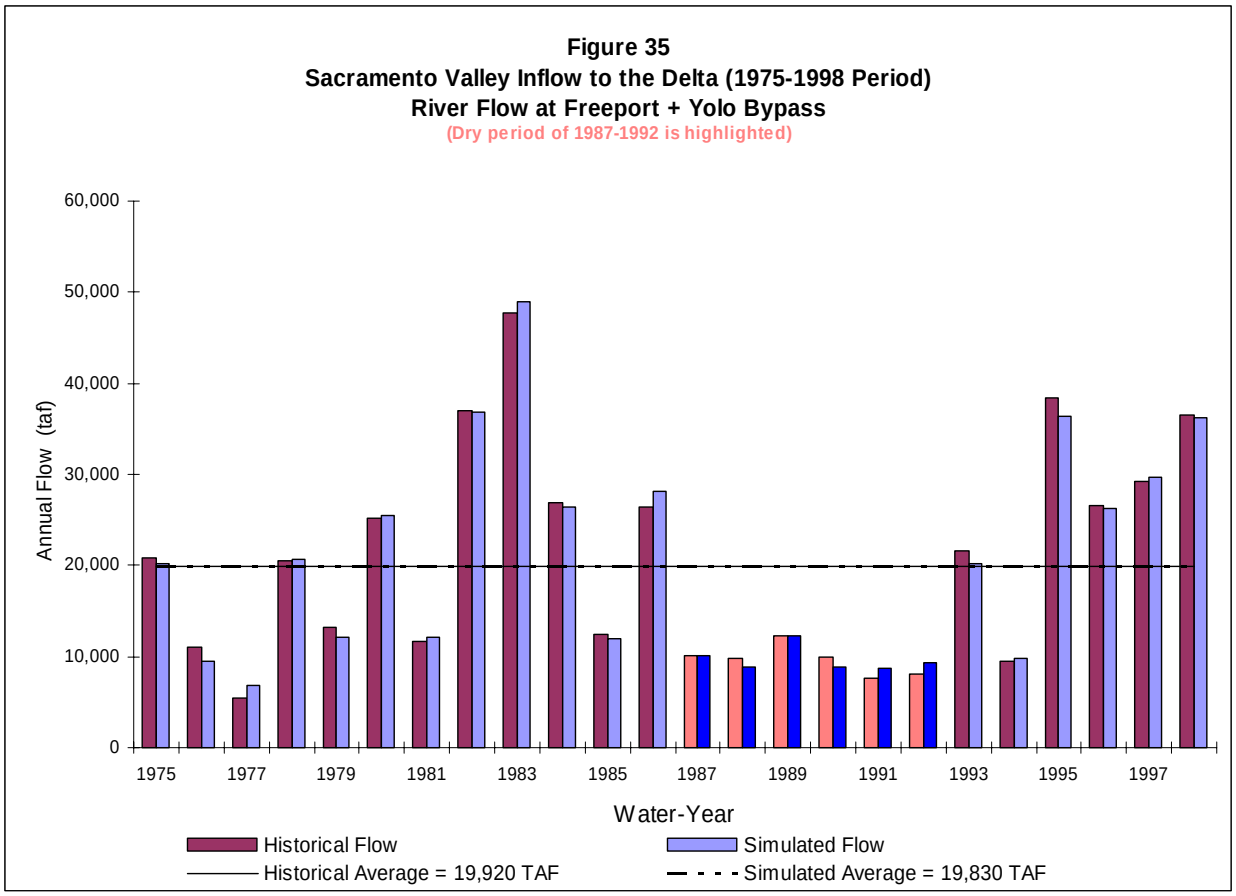

Figure 35 shows the comparison between the simulated and historical outflow from the Sacramento Valley to the Delta for the period of 1975-1998. This outflow includes the flow on the Sacramento River at Freeport plus the outflow from the Yolo Bypass. The long-term average of the simulated values is lower than that of the historical values by 0.5 percent. The historical average annual inflow during the 6-year drought of 1987-1992 is about 9,670 taf per year. The average for the simulated values during the drought is 9,700 taf per year, a difference of about 0.3 percent.

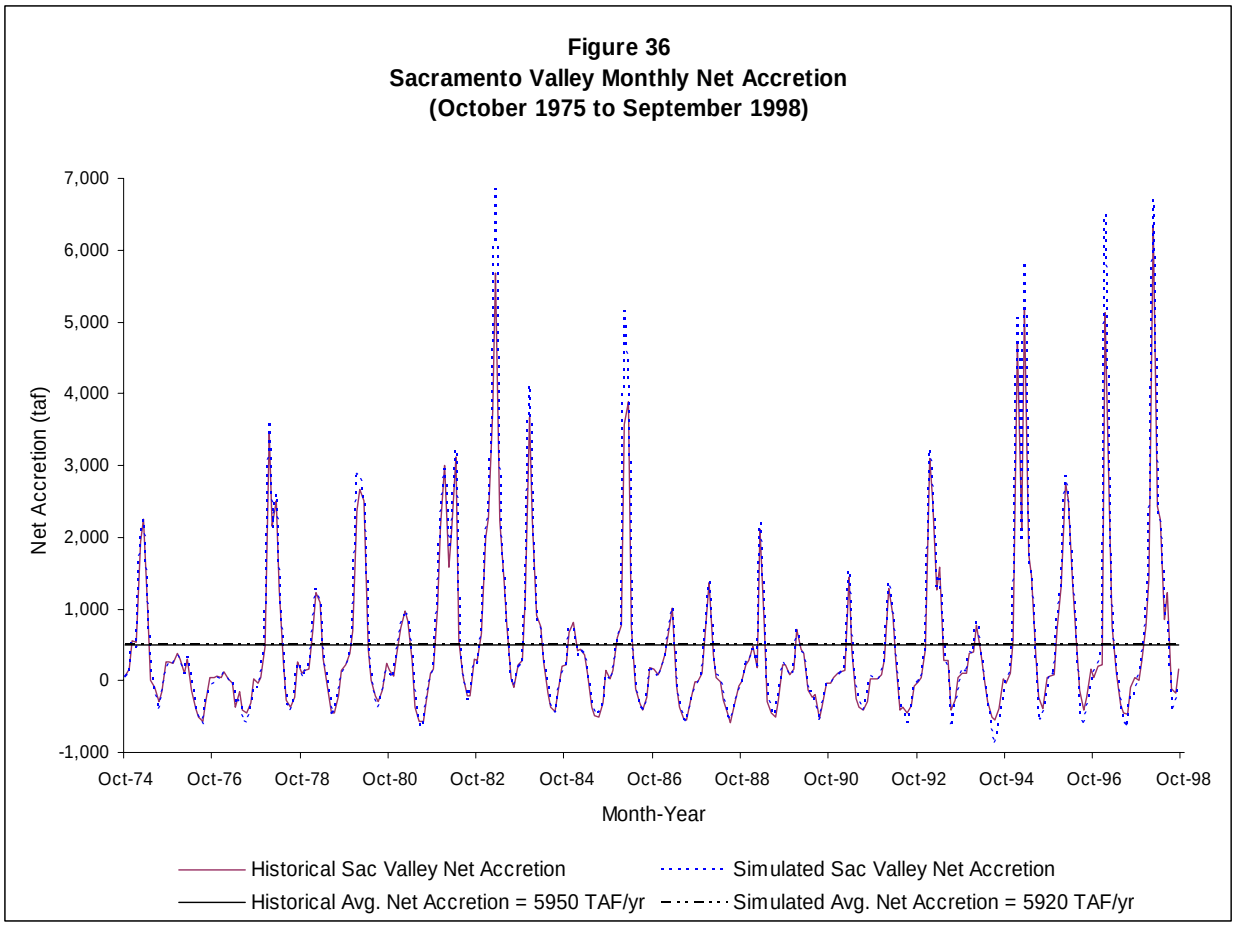

Figure 36 shows the net monthly Sacramento Valley accretion. This is calculated as the Delta inflow less the major reservoir releases. Inflow to the Delta is the sum of the Sacramento River flow at Freeport and the flow in the Yolo Bypass. The reservoir releases are calculated as the sum of releases from Whiskeytown Lake (including lake diversions), Keswick Reservoir, Lake Orville (including lake diversions to the Palermo Canal) and Lake Natomas (including lake pumped diversions for both Natomas and Folsom). The long-term average of the simulated values is approximately 0.5 percent lower than historical. The historical average annual net accretion during the 6-year drought of 1987-1992 is 1,155 taf/yr, compared to a simulated value of 1,103 taf/yr.

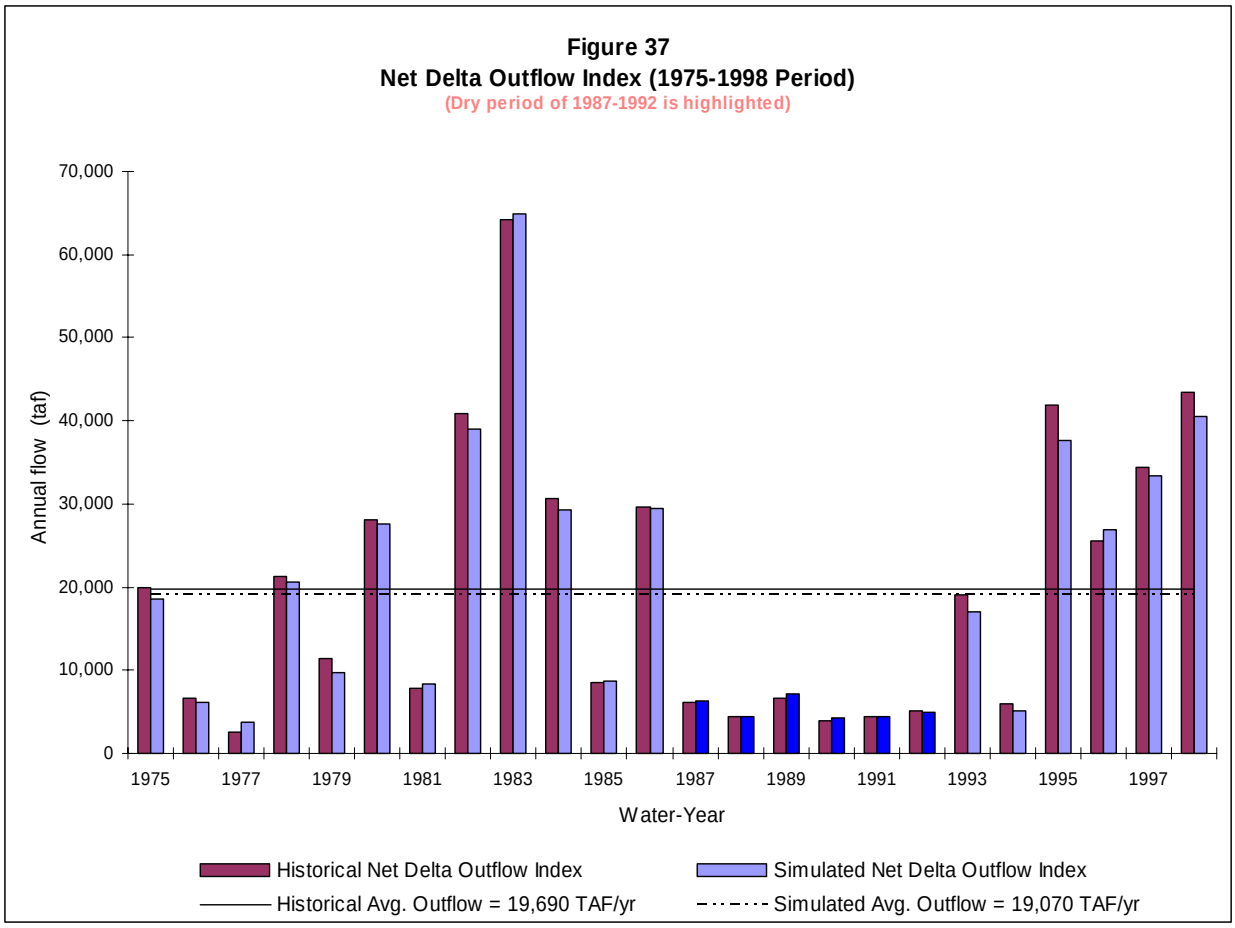

Figure 37 presents a comparison between the historical and simulated values of the Net Delta Outflow Index. Historical values of the NDOI were obtained from DAYFLOW, which estimates this variable by performing a water balance at the boundary of the Sacramento-San Joaquin Delta, taking Chipps Island as the western limit. The long-term average of the simulated values is lower than that of the historical values by about 3.1 percent. The historical average annual outflow during the 6-year drought of 1987-1992 is about 5,090 taf per year. The average for the simulated values during the drought is 5,270 taf per year, a difference of about 3.5 percent.

State of California
Department of Water Resources
The Resources Agency
Bay-Delta Office
P.O. Box 94236
Sacramento, CA 94236-0001

CALSIM II Benchmark Studies

Download

Version 1 (May 17th, 2002)
As used for SWP Delivery Capability Report

Version 2 (September 30th, 2002)

The California Department of Water Resources (DWR) and the Bureau of Reclamation Mid-Pacific Region (Reclamation) have jointly released CALSIM II Benchmark Studies of the State Water Project (SWP) and Central Valley Project (CVP). CALSIM is a general water resources planning software developed by DWR. CALSIM II, developed through a collaborative effort by DWR and Reclamation, represents a comprehensive simulation of the SWP and CVP.

Upon completion of the development of CALSIM II, sample studies were released for review and comment in September 2001. Technical reviews were conducted and refinements made to the sample studies. A preliminary version of a benchmark study was released for review and comment in December 2001. This included a 2001 Level of Hydrology Benchmark Study (using Contra Costa Water District's G-model for flow-salinity relationships in the Delta). Technical reviews have continued and additional refinements have been made throughout the last year.

The technical reviews and refinements have been conducted by the Benchmark Study Team (BST) under the direction of the CALFED/DWR/USBR Technical Coordination Team (TCT), DWR and Reclamation management. The TCT was formed early in 2001 to coordinate the efforts of various programs in the development of CALSIM II analyses of the water management options identified in the CALFED Record of Decision. The BST was formed following the release of the sample studies in September 2001.

This release includes study reports and input datasets for: Version 1 (May 17, 2002) and Version 2 (September 30, 2002) of the 2001 and 2020 Level of Hydrology Benchmark Studies (using DWR's Artificial Neural Network model for flow-salinity relationships in the Delta). The documentation includes a Benchmark Studies Assumptions document, which presents the assumptions used in the studies.

The assumptions in the Benchmark Studies and the limitations of the CALSIM II model must be thoroughly understood before undertaking a CALSIM II analysis. In determining the suitability of this Benchmark Study for a particular analysis, the user should incorporate engineering judgment, review the study reports, and consider consulting with the TCT before proceeding. Technical review and refinement of the

benchmark studies will continue. Public comments, information regarding upcoming public workshops and additional information requests should be directed to the TCT, DWR or Reclamation planning departments (contact information follows). A description of planned improvements that are being pursued by the BST has been included in this release. Four areas to note in the planned improvements are: 1) CVP/SWP Forecasting and Allocation procedures; 2) CVPIA 3406(b)(2) operations; 3) Environmental Water Account operations; and 4) Delta flow-salinity relationships.

CALSIM II provides a reasonable planning level simulation of existing project operations, recognizing that the operating environment and regulatory requirements for the projects are in a constant state of transition and change. Since CALSIM II is not a detailed operations model, it does not capture many of the complexities of forecasted and actual operations of project facilities. In determining the suitability of these studies to a particular analysis, the user should consult all documentation that accompanies this release and the TCT and BST as appropriate.

For additional information, please contact:

Lloyd Peterson, Mid Pacific Region Bureau of Reclamation at: lpeterson@mp.usbr.gov
(916) 978-5075
Sushil Arora, California Department of Water Resources at: sushil@water.ca.gov
(916) 653-7921

URL http://modeling.water.ca.gov/hydro/studies/calfed/index.html
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CALIFORNIA THE GOLDEN STATE

CALIFORNIA HOMEPAGE GOVERNOR'S HOMEPAGE

Department of Water Resources
Bay-Delta Office
Modeling Support Branch
Available Studies

CALSIM II Benchmark Studies Version 2 (September 30th)

- **Model Study Technical Reports**
  2001 LOD Benchmark Study
  BST_2001D10A_ANNBENCHMARK_1_2
  2020 LOD Benchmark Study
  BST_2020D09D_ANNBENCHMARK_2_2
  Benchmark Studies Assumptions and Appendices
- **Model Input and Output Files**
  2001 input and output files: Benchmark
  2020 input and output files: Benchmark
- **CALSIM II Schematic**
  The CALSIM schematic is available for download in either drawing web format (dwf) or in AutoCAD format (dwg).
  dwf format
  dwg format

  T he Autodesk Whip! viewer plug-in is no longer valid. Autodesk no longer supports the plug-in. They have replaced it with a program called the Autodesk Express Viewer. The link to the new program is:
  AutoDesk Express Viewer
- **CALSIM II Model Download**

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Musings On A Model: CalSim II In California's Water Community,
San Francisco Estuary and Watershed Science, Vol. 3, Issue 1
(March 2005), Article 1, by Inês C. Ferreira, *et al*

SAN FRANCISCO ESTUARY & WATERSHED SCIENCE

Musings on a Model: CalSim II in California's Water Community

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ABSTRACT

Computer model results are becoming more prominent in water policy deliberations in California. CalSim II is the most prominent water management model in California, and has become central to a variety of water management and policy issues and controversies. This paper reports on the results of an extensive set of loosely-structured interviews with members of California's technical and policy-oriented water management community regarding the use and development of CalSim II in California. The interviewers reflect on the thoughts of interviewees and how such interview activities can further policy-effective modeling and technical activities for water management. CalSim II is a complex model of a complex part of California's changing multi-purpose water system. As such, analytical controversies and misunderstandings are inevitable. Ideally, a model and its associated data would perform an additional service as a forum to resolve technical controversies and continually improve quantitative understanding of the system. While CalSim II is generally seen as a significant improvement over previous models, a wide variety of ideas are suggested for improvements.

KEYWORDS

CalSim II, water resources planning, water management, regional water planning, model development, Sacramento-San Joaquin Bay-Delta

SUGGESTED CITATION

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http://repositories.cdlib.org/jmie/sfews/vol3/iss1/art1

INTRODUCTION

Computer models have become increasingly important in the management and planning of California's water resources. The California Department of Water Resources (DWR) and U.S. Bureau of Reclamation (USBR) jointly developed CalSim II to model the State Water Project and Central Valley Project (SWP and CVP, respectively), which form much of the state's surface water storage and inter-regional water delivery infrastructure (DWR 2004).

CalSim II is a simulation model of the CVP and SWP storage and distribution systems that utilizes a linear programming solver in each time-step to route water through a network given user-defined constraints and priority weights. Developers of CalSim (the generalized water resources management model software underlying CalSim II) also developed the Water Resources Simulation Language (WRESL), which acts as an interface between the user and the solver, time-series database, and relational database. CalSim II simulation of the operations of the CVP and SWP systems includes physical, institutional, and regulatory constraints and an objective function composed of priority-weighted operational penalties. California's current regulatory environment is very complex; and that complexity is represented in the model by four regulatory layers: State Water Resources Control Board's Decision (SWRCB) 1485 (D-1485) and SWRCB Decision 1641 (D-1641); Central Valley Improvement Act (CVPIA), Section 3406 (b)(2); and the California Bay-Delta Authority's Environmental Water Account (EWA). While (b)(2) requires that the conditions under D-1485 be known, EWA requires that condition under D-1485, D-1641, and (b)(2) be known. Because the regulatory environments are interdependent, CalSim II simulates each regulatory condition sequentially for one entire year, before moving on to the following year. This sequential simulation of environmental conditions is commonly known as regulatory layers of CalSim II.

While USBR and DWR developed CalSim II for project-related purposes, CalSim II's actual uses have been wide-ranging. As the single official model for California's two largest water projects, CalSim II and its results affect statewide and Central Valley water operations and planning, and are often at the center of technical and policy controversies. Resolution of controversies often requires an initial airing of concerns from all parties, as it is usually difficult to address informally stated technical problems. This is especially true when many parties are involved, representing a wide range of interests and expressing a variety of concerns. As computer model results have played increasingly important roles in policy and planning decisions, technical concerns (and their policy manifestations) have impeded the development and use of serious modeling tools for water management in California. The original and central purpose of this research was to gather the uses, thoughts, and concerns of a broad cross-section of the California water community regarding CalSim II with the intent to facilitate discussion and assessment, and perhaps address these issues more productively. This project also provided background information for a peer review panel convened in November 2003. http://science.calwater.ca.gov/pdf/CALSIM_Review.pdf (Loucks et al. 2003).

Feedback was collected during interviews of 89 individuals who are involved in the management, planning, decision-making, analysis, and/or modeling of California water resources. Information gathered during the interview process includes existing and potential uses of and questions for CalSim II, reasons for selecting this model, views on its strengths and weaknesses, views on alternatives to CalSim II, and features that people would like to see in alternative operations and planning models or in an improved CalSim model. The report to the CALFED Science Program and its peer review panel presents the detailed methodology and summary of these interviews (Ferreira et al. 2004). The collected uses, thoughts, and insights regarding CalSim II should be useful for:

- Purposes of external review,
- Identification and prioritization of further model development activities,
- Education and outreach activities that would make the model (and modeling in general) better understood and more useful, and
- Better practical understanding (and perhaps ultimately better scientific understanding) of modeling and its complex role in water management in California.

Technical discussions usually benefit from open airing of technical concerns. We hope this paper and its underlying report provide such benefits.

For the California water community, this paper provides a concise overview and insights regarding the roles, problems, and concerns for water operations planning modeling. For researchers and technical managers, this study presents and illustrates a qualitative field method for gaining a better understanding of complex and controversial technical topics and highlight some challenges for the development and use of CalSim II and other models of the California water system.

METHODOLOGY

Surveys and interviews are commonly undertaken for research purposes. However, unlike most interview research, the intent of this particular project was not quantitative or scientific hypothesis-testing, but qualitative and applied, to extract from a broad selection of California's water management community their impressions, concerns, and uses for the CalSim II model. As such, a loosely structured interview process with emphasis on clear and verified interviewee statements of their ideas was developed (Bailey 1978). No attempt was made to assess the frequency of ideas contributed by interviewees. The frequency of responses or thoughts was not relevant for most intended purposes of this research. These interviewee-validated statements of uses, impressions, and concerns are available in the appendix of a report (Ferreira et al., 2004), with a systematic consolidation of these comments being presented in the report itself for easier reading and use by model developers, reviewers, users, and policy-makers.

Since most members of the interview team are also active in computer modeling of California water management (albeit not using CalSim), special potential problems and opportunities arose. As such, the process had some elements of a classical participant-observer study (Gans 1967; Whyte 1955), especially as reported in the latter part of this paper. The potential problems of having interviewers interpret interviewee responses based on the interviewers' experiences were mitigated by having multiple interviewers (for all but one interview), with all interviewers reviewing draft summaries of each interview for verisimilitude with interviewee statements. These draft summaries of each interview were then returned to interviewees with ample opportunity for correction or expansion. The interviewers' prior acquaintance with modeling water problems in California provided advantages for understanding many of the points made by interviewees, facilitating consolidation of comments in the report, and hopefully communicating these thoughts for later use.

Interview procedure

The research team developed and followed standardized procedures to arrange and conduct the interviews. Ninety-five individuals from California's water community, including staff from both DWR and USBR (the agencies that created, own, and manage CalSim II) and individuals affiliated with consulting firms, water districts, environmental groups, and universities, were contacted, of whom 89 agreed to participate in the interviews. Potential interviewees were selected from the members of the California statewide long-term planning (California Bulletin 160-03) advisory committee, from discussions with individuals known to be active in development and use of CalSim II, and from suggestions provided during the course of the interviews. A summary of interviewee affiliations is presented in Table 1. After being contacted, interviewees received a document describing the purpose of the CalSim II interviews, the questions they would be asked during the interview, procedures for interview write-up and review, and policies for attribution.

Table 1. Affiliation of interviewees

Affiliation	Number of Interviewees
DWR	23
USBR	13
Public Water Purveyors	18
Other Government Agencies	5
Non-Profit	5
Universities	1
Consultants	24

The research team conducted interviews either individually or in groups, with group sizes ranging from two to five. In total the team conducted 65 interviews (16

groups and 49 individual) between April 30 and August 28, 2003. Each interview followed a common questionnaire (available in Appendix A of Ferreira et al. 2004), focusing on how the individual and his/her organization currently use CalSim II, would like to use the model, or plan to use the model in the future, as well as more open-ended questions to solicit the individual's full range of thoughts and suggestions regarding CalSim II. The responses were extensive, varied, and at times contradictory. Typical interviews lasted one hour, but some lasted as little as half an hour or as long as two and a half hours.

In all but one case at least two interviewers were present for each interview. Each member of the interview team took hand-written notes during the interviews, none of which were tape-recorded. After the interview was completed, the team wrote a summary and sent it to the interviewee or "lead interviewee" for group interviews. The interviewee then had two weeks to revise and/or extend the summary of his or her interview. Each interviewee had the option of having some, all, or none of the interview summary included in the remarks "Not For Attribution." All of the summaries of the interviews with DWR and USBR personnel were designated "Not For Attribution." Interviewees also had the option of submitting separate written statements, documents, or materials for inclusion or citation in an appendix of the report.

After finalizing the summaries, the research team aggregated the comments into a single database, combining both comments "For Attribution" and "Not For Attribution," and then categorized the comments by topic and content. The *Current and Prospective Uses of CalSim II* section presents the range of analysis to which users apply CalSim II. The section entitled *Interviewee Thoughts and Suggestions* describes remarks regarding the perceived strengths and weaknesses of CalSim II. The results presented below are based on what was heard during the interviews and, to the extent possible, do not contain the opinions of the research team. In the subsequent section entitled *Discussion of Results* the interview team presents its own thoughts on CalSim II and its future management and development.

CURRENT AND PROSPECTIVE USES OF CALSIM II

Current uses of CalSim II include policy planning studies, system operations, facility planning, regulatory compliance, model development, water management, impact estimation, and policy evaluation. Interviewees often use CalSim II with other models, as its output serves as input to numerous economic, hydrodynamic, water quality, operations, and other water planning models at both state and local levels. Table 2 presents a sample of interviewees' current and prospective uses of CalSim II; a full listing and discussion appears in Ferreira et al. (2004).

Table 2. Summarized examples of current and prospective uses of CalSim II

Use	Current	Prospective
Planning Studies		
California Water Plan Update	x	x
SWP Reliability Study	x	x
Integrated Water Resources Planning (local)	x	x
Proposed Facilities		
Storage and Conveyance Projects	x	x
Dam Removal		x
Operations		
Water Temperature Management	x	x
Seasonal Planning (local)	x	x
Real-time	x	
Position Analysis	x	x
Regulatory Analysis and Compliance		
FERC Re-licensing	x	x
Local Flow Standards	x	
EIR/EIS	x	x
ESA Consultations	x	x
Evaluation of Management Options		
Water Transfers	x	x
Conjunctive Use	x	x
Groundwater Banking	x	x
Other		
Gaming Exercises	x	x
Hydropower Generation	x	x

INTERVIEWEE THOUGHTS AND SUGGESTIONS

Most interviewee comments relate to CalSim II's strengths and weaknesses, suggestions regarding CalSim II technical support and development, and broad conclusions about the model's effectiveness in meeting the diverse goals of the many users of CalSim II results. Interviewee thoughts and suggestions were classified according to five major categories and 36 subcategories (Table 3). Some of the most prominent themes that emerged from the hundreds of individual comments are summarized below according to five major categories presented in Table 3. The comments in the *Mission* section highlight the purposes and uses of the model. *Administration* refers to how DWR and USBR manage, direct, and supervise CalSim II and related activities. *Implementation* refers to how the CalSim software is applied to the SWP/CVP system. *Inputs* refer to the data required by CalSim II for each model run. Finally, *Software* refers to the general water resources simulation software package, CalSim, and is not specific to its application to the SWP/CVP system. Many other comments, not mentioned below due to limitations on space, appear in the larger report (Ferreira et al. 2004).

Mission

Prior to CalSim II, DWR and USBR had independent models of the Central Valley projects (DWRSIM and PROSIM, respectively). The two models had different sets of hydrologic data and treated project operations differently. There is wide agreement that cooperation between DWR and USBR has improved greatly as a result of their joint modeling effort to develop and maintain CalSim II. In addition, the use of a single, standard modeling tool and data set has greatly improved the general modeling environment in the California water community. Work now focuses more on substantive issues, rather than on differences between competing models.

While there is consensus that CalSim II represents a step forward, there is also consensus that it needs further improvement in a variety of areas. Many interviewees assert that CalSim II developers did not think through the questions that CalSim II would be asked prior to building the model, and so it is poorly suited to address many of the questions for which interviewees need answers. However, many see CalSim II as the only tool available for such questions, especially for modeling the CVP and SWP systems. The limited (or seemingly limited) modeling options for California water mangers leads to the perception that CalSim II is often misused, misapplied, or over-stretched. Some feel

Table 3. Categorization of Thoughts and Suggestions

Major Category	Sub-Category
I. Mission	A. General Comments
	B. Uses of the Model
	C. Model Scope
	D. Consensus Model
	E. Comparative vs. Absolute Applications
	F. Geographic Scope and Scale
	G. Other
II. Administration	A. Support
	B. Documentation
	C. Management of Model Development
	D. Credibility
	E. Revisions and Updates
	F. Calibration
	G. Benchmark Study
III. Implementation	A. Mathematical Formulation
	B. Operations Representation
	C. Model Complexity
	D. Time Step
	E. Model Flexibility
	F. Representation of Management Options
	G. Stability/Sensitivity of Model Results
	H. Geographic Representation
	I. Run Time
	J. Other
IV. Inputs	A. General Comments
	B. Demands
	C. Hydrology
V. Software	A. Solver
	B. GUI (Graphical User Interface)
	C. Output/Post-processor
	D. Database/Data Management Software
	E. DSS (Data Storage System)
	F. WRESL (Water Resources Simulation Language)
	G. Transparency
	H. Simulation vs. Optimization
	I. Other

that DWR and USBR have already invested too much time and money in CalSim II to be able to objectively ask if the model can answer the questions asked of it, and if not, then what can and/or should be done.

A primary area of concern among interviewees is CalSim II's ability to perform comparative and/or absolute analyses. Comparative modeling examines differences between multiple model runs to evaluate the effects that varying a condition, facility, or operating policy will have on the system, while absolute (or predictive) modeling directly estimates what is likely to happen to the system given a single set of inputs. There is general agreement among interviewees that CalSim II is an appropriate tool for comparative studies, but there is no such consensus regarding absolute studies. Many interviewees feel that using CalSim II in absolute mode is risky and/or inappropriate, but they have no other option because there are no other agency-supported alternatives. To that end, many interviewees want DWR and USBR to either improve CalSim II's predictive capabilities or create a predictive companion model. If users are to apply CalSim II in an absolute mode, many believe that detailed documentation of known limitations and weaknesses, a better understanding of the uncertainty associated with results, and additional effort towards the calibration and testing of the model are imperative.

The huge range of expectations that the California water community has for CalSim II exacerbates this problem of perception. Model developers promised that CalSim II would be easy to use and accessible; in reality, it is a complex model of a complex system that requires significant expertise to run and understand. As a result, only a few individuals concentrated in DWR, USBR, and several consulting firms understand the details and capabilities of CalSim II. Thus, much of the rest of the water community feels left in the dark regarding what CalSim II can do, how to use it, and where to find further guidance. This widespread confusion and uncertainty has eroded CalSim II's credibility outside the small circle of knowledgeable users, as it is difficult to trust a tool that one is unfamiliar with and does not understand. Many indicate that reducing these uncertainties would improve the model's credibility.

Administration

Interviewees commonly mentioned a need for more people who can run CalSim II. The current need for model runs outstrips the number of people who can produce them. This situation is likely to worsen as the demand for CalSim II runs continues to grow. CalSim II's complexity is daunting to new and potential users, and so very few individuals can conduct an entire model study and produce good quality CalSim II runs. This shortage of expertise means that DWR and USBR may be unable to produce CalSim II runs quickly, reducing the usefulness of the model, as it is effectively inaccessible due to the lack of qualified modelers. In addition, the narrow circle of knowledgeable CalSim II users contributes to the perception that CalSim II is a "closed shop" available only to a few insiders. Finally, a small group of users limits the power of CalSim II as an analytical tool, as some see CalSim II's potential power and utility expanded by having a broad spectrum of groups representing different perspectives on water management debates. There is also concern that CalSim II analyses are considered "good" or "acceptable" only with the approval of a select group of individuals who are very familiar with California's water system. A larger pool of users is likely to broaden this circle and dilute the influence of individuals. In the absence of expanding this group, or until the number of experienced users has increased sufficiently, there may be value in creating a standing review group or some other method to certify studies. In general, interviewees agree that DWR and USBR should actively seek to expand the group of expert users, especially to include non-agency and non-consulting users.

To further this goal, many interviewees recommend that DWR and USBR create a centralized source of support for CalSim II users. They would like a help desk or website to provide information on assumptions made in the model and guidance regarding model code, logic, and structure. Tutorials for running CalSim II and interpreting its results, software utilities with which to download data and perform statistical analyses of results, answers to common questions, and results from a sample CalSim II run would also further this cause. In addition, the agencies should expand the existing CalSim II training course to address both the logistics of running CalSim II and the subtleties

required to understand the meaning of its output and its appropriate application. A well-publicized user group also could provide many of these services, distributing information to model users from many interest groups efficiently, and thereby expanding the skill base and reducing the perception of CalSim II as a "closed shop." Similarly, many interviewees feel that some CalSim II managers are defensive in the face of criticism and that including more stakeholders in the development process or providing a forum for input from model users will enhance CalSim II's acceptance and credibility.

All users agree that CalSim II needs better documentation of the model, data, inputs, and results. CalSim II is data-driven, and so it requires numerous input files, many of which lack documentation. Documentation of assumptions is spotty and very technical when it exists, making it difficult for anyone other than model developers to understand how CalSim II arrives at its results. Poor documentation of the conceptual model means that it takes a long time for users to answer seemingly trivial questions and it is difficult for new users to learn how to use the model at all. Overall, the lack of clear and comprehensible documentation increases the likelihood of misunderstandings regarding how the model functions and it contributes to the common impression of CalSim II as a "black box" whose inner workings are beyond the comprehension of most users. This also makes CalSim II runs difficult to duplicate, eroding the model's credibility.

CalSim II is still relatively new and so many users are unsure of and thus uncomfortable with its limitations. They want more information on the model's limitations, including a clear description of what the model does and does not do well. In addition, information on the uncertainty associated with CalSim II results in the form of error bounds, ranges for individual values, or statistical parameters (e.g., mean, variance, etc.) would inform users about the limitations of specific outputs, which is particularly important when users run CalSim II in absolute mode.

There is considerable debate about the current and desirable state of CalSim II's calibration and verification. Some efforts have been made to calibrate the model, but many interviewees express concern that this effort is insufficient if the model is to be run in absolute mode. In addition, DWR and USBR have released a benchmark study to provide a baseline case from which users create alternative scenarios and to which they compare results of alternative runs. This benchmark study has changed with ongoing modifications to CalSim II. Many model users and potential users look forward to a complete, unchanging benchmark study to provide a stable point of reference for other analyses.

Implementation

CalSim II is at once both too simple and too complex. Its representation of the SWP and CVP includes many simplifications that raise concerns regarding the accuracy of results. At the same time, CalSim II is so complex that it is difficult to understand and requires several hours to run. Interviewees express numerous concerns about specific details of CalSim II's implementation, only a few concerns which seemed more prominent and informative are addressed here.

CalSim II's complexity reflects the complexity of the California water system. However, this makes the model cumbersome and difficult to learn. The difficulty in learning and running the model has been a source of frustration to many users and potential users, and there is a common consensus among respondents that CalSim II should be more user-friendly so that stakeholders can run the model without hiring consultants. Just as CalSim II is complex and difficult to understand, so are its results. Many interviewees indicate that interpreting CalSim II results requires not only experience with the model, but also knowledge of the CVP/SWP system and of linear programming. Model users require significant time to determine if results are reasonable and very little guidance on this topic is available from model developers. Also, some claim that there are no specific criteria to define a "good" model run or post-processing tools to help visualize, interpret, correct errors, and obtain answers to common questions. There is additional concern that CalSim II's formulation should be more robust so that runs are not user-dependent. Starting from the same point, different model users likely will produce different CalSim II outputs because during a CalSim II run, the model user generally views intermediate results and adjusts model parameters until he/she

reaches an acceptable result. This adds to inconsistencies across CalSim II runs, making results more difficult to interpret. Finally, CalSim II's complexity and its many layers have resulted in a model that requires several hours to run, frustrating planners who need to explore many refinements to alternatives.

Many interviewees are concerned that CalSim II's monthly time step cannot capture hydrologic variability adequately and thus does not compute water exports and export capacity accurately, both of which are significant factors in system operations. The model's inability to capture within-month variations sometimes results in overestimates of the volume of water the projects can export from the Sacramento-San Joaquin Bay-Delta and makes it seem easier to meet environmental standards than it is in real operations. Many of the system's operations function on a shorter time scale and so CalSim II cannot represent them well given its current formulation. On the other hand, it is unclear if reducing the time step would be either more accurate or more useful, given the additional data and assumptions that would be needed to characterize the system. Some fear that moving to a daily time step might worsen some problems due to questions regarding the precise timing of short events.

Interviewees cannot always determine the parameters to which CalSim II is highly sensitive or its overall stability and sensitivity. They feel that the linear programming formulation allows multiple solutions, which can differ considerably. Small changes in CalSim II input can result in large changes in model results, causing difficulties in impact analyses and the defensibility of model results. In addition, some users note that the multiple layers of regulations and operational agreements included in CalSim II may obscure the effects of the change to the system being modeled.

Inputs

Many interviewees indicate that CalSim II represents demands simplistically using out-of-date values and calculations. Specifically, they believe that demands should be based on land use and should be sensitive to economic factors such as the unit price of water. Without a better basis for the demands in CalSim II, many question the model's validity and capabilities.

Some interviewees also want to see further improvement in CalSim II's representation of hydrologic processes. They feel that it is weak enough to undermine the entire model, as errors in this input propagate through each layer of the model. Many claim that CalSim II's hydrology uses data and methods that are decades out of date and rely on too coarse a geographic scale. In addition, some feel that development of a hydrology should be based on land use patterns and include thorough documentation. Despite these significant concerns, interviewees agreed that CalSim II's joint hydrology (agreed upon by both DWR and USBR) is an improvement over those used by each agency for its previous model.

Software

Model users express general frustration with CalSim II's commercial linear programming (LP) solver. They contend that it provides little information on the location of infeasibilities, so that even a knowledgeable individual may need many days to debug a run. In addition, the solver sometimes produces non-unique solutions and running identical scenarios on different computers seems to generate different results. Several model users state that the solver does not provide any of the sensitivity analysis that LP solutions usually offer and gives no indication of which parameters are constrained, so that users have to search for this information on their own. However, many interviewees feel that the use of an optimization engine for CalSim II is a step forward from previous models and that it is appropriate given the regulatory structures that it tries to model. Others are unsure of how the optimization engine works within CalSim II, while some feel that an optimization approach does not make sense given the many constraints of the SWP and CVP systems.

Individual users are developing their own post-processing techniques, creating the potential for inconsistencies between analyses. They would like visual tools with which to present and compare multiple CalSim II runs. Interviewees expressed interest in tools, both computational and especially visual, that would make it easier to compare results across runs.

Users would like a more intuitive, geographically referenced interface to facilitate the understanding of both

inputs and outputs. It would be helpful if the interface could show the current CalSim II schematic, allowing a user to click on a node and see relevant information including input data, metadata, water balances, and information on the location of relevant equations.

Interviewees applaud CalSim II's inherent transparency as a data-driven model. However, some find the vast number of input files required by CalSim II daunting, thus reducing the effective transparency. In addition, CalSim II includes no automated quality control mechanisms for its many input files, resulting in a time-consuming, generally manual process for setting up a CalSim II run that leaves substantial room for error. Interviewees largely agree that CalSim II would be easier to use if it had a simpler and more coherent data management system. Particularly desirable functions include the archiving of calculation files and the ability to conduct multiple traces of dependencies.

DISCUSSION OF RESULTS

The section above is a brief distillation of the remarks heard during the interview process, absent, to the extent possible, of the research team's opinions. They include many of the most common and interesting points raised throughout the interviews. During the analysis of the many interviews, the research team developed its own thoughts regarding CalSim II and its future development and management. While these clearly are informed by the interviews, this section represents the opinions of the research team. Some of these conclusions are similar to those in the report of a subsequent external peer review panel (Loucks et al. 2003). Our conclusions below are organized around three areas.

Broader involvement in development and use

CalSim II is a significant improvement over previous models of the CVP and SWP systems. A publicly available model, CalSim II uses a modeling approach that affords a flexible, expandable, data-driven, and more transparent modeling framework than alternative and previous models. These modeling features are a remarkable achievement for the developers of CalSim II. DWR's and USBR's agreement to use a single model and underlying data sets has facilitated this significant accomplishment. This consensus has allowed the two agencies to devote resources to develop a single tool rather than critiquing each other's model, as seemed common in the days of PROSIM and DWRSIM.

Despite the advancements of the CalSim II modeling efforts, the consensus between DWR and USBR needs to extend beyond the two agencies. Although both agencies have made attempts to include outsiders in the model development process, CalSim II might have been a much better model had a broader range of stakeholders been more integrally involved during its development. The knowledge and expertise that stakeholders could have brought to the fore would have allowed model developers to better represent the operations and water demands of many local water agencies, particularly how local operations interact with and affect the CVP and SWP systems. This would allow model developers to implement more realistic water demands, in terms of both land use and alternative management options available at the local and regional levels. More importantly, the inclusion of stakeholders in the early stages of model development would have provided developers with crucial insight regarding current and prospective modeling needs of the water community and helped broaden the model user community.

The disconnect between CalSim II developers and the broader California water community is one of the greatest obstacles to CalSim II's acceptance. In part, this obstacle stems from the limited institutional charge of model developers to model only the CVP and SWP systems, and not California water management more generally. Broader and more serious effort on the part of CalSim II developers is needed to raise CalSim II's credibility among stakeholders. To gain credibility among stakeholders it is imperative that model developers see CalSim II as "outsiders" see it. That is, DWR and USBR should more fully commit to communication with the wider California water community through a well publicized, open, and available channel. This communication channel should be a way for outsiders to provide feedback to DWR and USBR regarding their modeling needs and for model developers to provide information and assistance to

model users. For CalSim II to be effective for policy and planning purposes it must be seen as more widely accepted by stakeholders, something that seems unlikely to happen unless (i) stakeholders are involved in ongoing model development, (ii) CalSim II is seen as a useful model to stakeholders, and (iii) more people around the state are comfortable using the model and interpreting its results.

Continuous improvement for contemporary problems

A significant consequence of not including more stakeholders in the early phases of CalSim II development is that the current versions of CalSim II are ill-suited for many of the current analysis needs of the broader water community, particularly absolute applications. Current California water management differs considerably from a decade or two ago, when models that were designed for comparative applications were adequate for most analysis needs. Compliance with legislative provisions regarding both the environment and water availability for new land development requires much more accurate and non-comparative quantitative results than before. While CalSim II developers like to promote it as a model best used for comparative analysis, there is a clear need for a model for absolute purposes. Many local agencies and other stakeholders (including DWR) are employing CalSim II to develop non-comparative, absolute estimates of short- and long-term water deliveries. Therefore, given the issues facing California's water resources and the analysis needs of the water community, it seems unrealistic to expect that modelers only will use CalSim II for comparative analysis. Under the mantra of "the best available tool" (in this case the only available tool), CalSim II is being used, and will continue to be used, for many other types of analyses for which it may be ill-suited, including in absolute mode. Considering the setting in which CalSim II exists, its developers should work toward a model appropriate for absolute applications.

For use in absolute applications, CalSim II needs adequate calibration and testing against recent historical data. (Some very preliminary exploratory work has begun in this direction (DWR 2003).) As with any other type of study, calibration and testing results must be accompanied by a self-critical analysis indicating where the model performs well and where it does not, as well as how this will affect studies that use CalSim II results, both in comparative and in absolute mode, and why. This type of self-critical information is essential. Only when model limitations are understood better will CalSim II gain broader and deeper credibility and acceptance within the water community, and needed improvements can be better pursued.

In addition to the need for a model that can be used in absolute mode, there is also widespread demand for a model that encompasses more than just the SWP and the CVP elements of California's inter-tied water system. The desired model or modeling framework would include not only more of California geographically, but also represent a wider range of water management opportunities and options. For CalSim II to be a truly statewide model it needs to cover the Bay Area, Tulare Basin (including the Friant-Kern and Madera canals, eastside San Joaquin reservoirs, and Millerton), Yuba River Basin (for potential water transfer opportunities), Colorado River, Colorado River and Los Angeles aqueducts, and local Southern California projects.

Coupled with a need for greater geographic coverage, CalSim II should include management options available in California at the regional and local levels. Inter- and intra-agency water transfers are now commonplace, as are other management options such as groundwater banking, conjunctive use, desalination, and water conservation. Consequently, to effectively simulate the array of water operations available within the State, CalSim II needs to include a wider range of management options, facilities, and regions. It is vital that those involved in the management of California's water be able to analyze how local, regional, and state facilities and options best go together. California does not currently have a model or modeling framework capable of such integrated analysis, to parallel the kinds of integrated management thinking being pursued at local, regional, and statewide levels.

Accessibility

Along with serving the needs of the water community, acceptance of CalSim II will increase if more people are able to use and understand the model. Consequently, DWR and USBR need to widen the pool

of model users (a problem DWR and USBR managers often note). Unfortunately, the current narrow circle of knowledgeable CalSim II users contributes to the perception that CalSim II is a "closed shop," available only to a few insiders. This perception also raises concerns about conflicts of interest, as skills on which many diverse stakeholders rely are concentrated in the hands of a few consulting firms, DWR, and USBR.

To widen the group of CalSim II users, DWR and USBR should provide a much greater level of user support than presently available. More frequent training workshops, a comprehensive manual/user's guide, a help desk, and online tutorials could supply much needed assistance to current and prospective CalSim II users. Better pre- and post-processing tools should be available to make the input process more automated and less prone to user error and to facilitate comparison, retrieval, viewing, and result interpretation.

Such attempts, however, should not replace thorough model and data documentation and version control, something that CalSim II currently lacks. CalSim II is unavoidably a very complex model and thus requires comprehensive documentation to enable users to understand the model framework and, more importantly, the sources and methodology used in the derivation of input data, including their limitations. It is difficult to attain credibility when the model and data are seen as impenetrable, particularly when model results run counter to many people's understanding of the system. Counterintuitive results are not necessarily infrequent or bad outcomes for a complex model of a complex system serving diverse stakeholders.

Model documentation should include information regarding appropriate uses of the model, data and model limitations, and error bounds on output values specific to the various purposes for which the model can be used. An often-mentioned frustration of many would-be model users is the lack of guidance on (i) how to appropriately interpret model results for various applications and (ii) what constitutes an acceptable model run.

As with any model, it is much easier to perform a good run if the user thoroughly understands what is being modeled. Understanding California's water system allows the model user to determine whether or not a particular run is "good" and to interpret its results. However, this should not be an excuse not to provide guidance on determining what constitutes a good model run and what must be done to attain a good run. If there are people who can evaluate a set of model results and determine if they are appropriate (and if not, how to modify model inputs to achieve adequate results) then that knowledge should be made available in the public domain, perhaps in the form of a post-processor. Such a post-processor should include guidelines for the appropriate interpretations of model results for various types of applications, including the use of monthly model results to assess impacts that depend on operations and processes that occur at a sub-monthly time-scale. Such a post-processor might not be a final certification of a model run, but would provide an initial screening.

A major problem facing CalSim II developers is that the system they try to model is extremely complex, particularly in light of numerous environmental requirements that must be modeled sequentially. While some people criticize CalSim II for doing too much and therefore being too complex, others believe that CalSim II is not comprehensive enough. Consequently, CalSim II is simultaneously seen as both too complex and too simple. This apparent dichotomy can only be resolved if CalSim II is made truly modular. Modularity would allow model users to turn features, regions, or layers of disaggregation on or off depending on their modeling needs. Modularity could also reduce model run time for many purposes and allow model users to apply CalSim II more efficiently in the early stages of screening alternatives.

THEORETICAL CONTEXT

The theme of opening CalSim II to a broader set of users is consistent with a growing body of literature on the value of combining policy and technical processes, rather than letting one lead the other (Sabatier 1999). While much of this literature focuses on how decision makers plan large infrastructure projects or manipulate natural resource systems, their lessons apply to the development and use of CalSim II, a complex model with significant policy implications.

The importance of including affected parties is now broadly accepted in project planning (WCD 2000; Delli Priscoli 2004). Beginning with research in ecosystem dynamics in the 1970s (Holling 1978), the concept of adaptive management and the integral use of computer models in environmental management and policy-making has grown to influence a variety of disciplines. Traditional methods of centralized planning for projects that affect a broad array of stakeholders based on technical expertise have largely given way to more holistic approaches that solicit input from a wider variety of sources and perspectives (NRC 2004). Within water resources management, this approach has been applied to projects as varied as restoration of the Everglades in Florida and the planning and construction of high dams in developing countries (NRC 2003; WCD 2000). The vast majority of the stakeholders interviewed about CalSim II expressed some interest in a more inclusive process for the ongoing development and improvement of the model. This broader literature supports many interviewees' assertion that CalSim II would benefit from their input, as the inclusion of multiple stakeholders in this process is likely to improve both the performance and acceptance of a complex project such as CalSim II (Lee 1993).

DISCONTENT AND MODEL DEVELOPMENT

Based on the concerns voiced by the interviewees during the interview process and on the impressions of the research team there exists significant concern regarding the abilities and applicability of CalSim II to California's large inter-tied water system. A simple reading of the summaries from the interviews could leave one with the impression that discontent with CalSim II in the water community is a serious impediment to the model's success. However, discontent with an analytical tool is not necessarily unhealthy or avoidable. Voiced concerns are a sign that the model is being used, produces useful insights, and encourages more systematic discussions of system details. Concerns also often provide a positive basis for model improvement.

Investments, both in terms of money and time, in analytical tools for decision-making usually arise from discontent with unaided decision-making. Technical development often follows six stages:

1. Informal statements of concerns;
2. Formal statement of concerns;
3. Assessment of concerns;
4. Plans to address concerns;
5. Actions to address concerns;
6. More (and hopefully different) concerns (repeat step 1).

The development process is by no means linear (BDMF, 2000). Stages can overlap and there is still the likelihood that new concerns will arise even after the effort is made to address the original concerns. Thus the development process is circular, reflecting evolution of the model, greater understanding of the system, and changing thoughts regarding management and policy problems.

If the technical end product was useless, its audience would ignore it entirely and the cycle would end without having successfully addressed the concerns. Many concerns will appear internally within the technical development team working on the products; such comments usually require less communication effort since they are already internal to the development team. New concerns also arise as the field problems to which the model is applied change. Such concerns are a sign of success, as the model is considered worthy of being stretched or adapted to address new problems. Finally, some concerns indicate great success from a model when they arise because model users demand further refinements as they ask more probing questions of the system.

In the case of CalSim II both the user community and the development team have raised concerns. Some of these concerns are quite positive in that the model is being asked to address new and expanded problems in more precise ways, going beyond the model's original narrow SWP/CVP scope. Ultimately, the broader the range of individuals involved with the on-going development of the model, the better the product likely will be. The fact that so many individuals have concerns regarding the uses and applicability of CalSim II is a sign that the model is being used and is worthy of on-going applications, discussions, and development.

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DWR letter to Mindy McIntyre, Planning and Conservation League
April 20, 2006

STATE OF CALIFORNIA -- THE RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

April 20, 2006

Ms. Mindy McIntyre
Water Program Manager
Planning and Conservation League
921 11th Street, Suite 300
Sacramento, California 95814

Dear Ms. McIntyre:

This letter responds to your letter dated December 22, 2005 providing comments of the Planning and Conservation League on the draft of the State Water Project Delivery Reliability Report–2005 (DRR (2005)). Your letter expresses concern regarding the adequacy of the analysis, criticizes the timing of the release of the report, makes several recommendations for improvement, and includes an attachment with comments regarding specific statements in the draft report. The following addresses the body of your letter. Responses to the detailed comments in the attachment of your letter are included as an attachment to this letter.

Your letter states that the draft DRR (2005) should mention that it is required per the settlement agreement to the case *Planning and Conservation League v. Department of Water Resources* (2000) 83 Cal. App. 4th 892. The final report includes such a statement. Your comment also says the draft DRR (2005) does not satisfy the requirements of the settlement agreement. This report is the first one issued since the settlement agreement became effective in May, 2003 and updates an earlier report (The State Water Project Delivery Reliability Report–2002). The 2002 report was designed to meet the requirements of the attachment to the settlement agreement, which was very near final at that time. Both reports include useful information for State Water Project (SWP) contractors, planners and interested parties on the delivery capability of the SWP. The Department of Water Resources (Department) believes these reports fulfill the requirements of Principle 1 in Attachment B of the settlement agreement. It should be noted that, although not a requirement of the settlement agreement, drafts of each report underwent public review. We believe this process improves the final report. The final of the first report was revised in response to public comments and the comment letters and their responses were included as an appendix. The final DRR (2005) has been modified in a similar way.

You comment that the use of CalSim-II as the sole tool for determining reliability is inappropriate due to the lack of calibration and other deficiencies as identified in comments on the draft 2002 report and due to inadequacies mentioned in the peer-review report, *A Strategic Review of CalSim-II and its Use for Water Planning, Management, and Operations in Central California* (Close and others 2003). The final 2002 report includes thorough responses to the comments received on the draft 2002 report. Updated responses to the issues regarding CalSim-II mentioned in your letter are included in Attachment 2 to this letter. As mentioned in the draft DRR (2005), several studies have been conducted analyzing the ability of CalSim-II to simulate water project operations. The results support the conclusion that CalSim-II is a useful and appropriate tool for assessing the delivery capability of the SWP. You also comment that the peer reviewers should be reconvened to review the Department's written response to their review. The peer review of CalSim-II was an intensive and expensive effort involving many staff hours to develop the background information for the reviewers and handle the administrative details for the participation of the panel members and the two-day public meeting of the review itself. Some of the panel members, as well as other experts who were not on the panel, are and will continue to be a great resource to both the Department and Bureau of Reclamation modeling staff. We do not, however, believe conducting a peer review of the response is an effective use of the Department's staff resources.

Several of the concerns within your letter relate to the uncertainty in future conditions that may affect water supplies, such as levee failures in the Delta, climate change, or declines in the population of Delta fishes. Information relevant to these factors is evolving rapidly but has not reached a level at which it can be quantitatively incorporated into delivery projections of the SWP. The Department is working on two projects that will improve our ability to make qualitative or quantitative statements about the reliability of conveyance across the Sacramento-San Joaquin Delta. The first is the Delta Risk Management Strategy, which will assess risks to the Delta from floods, seepage, subsidence, and earthquakes; evaluate the consequences of levee failure; and develop recommendations to manage the risk. The second is a broader public process to develop a shared vision of a sustainable Delta that continues to support societal needs related to recreation, land use, water supply, transportation, energy, and environmental health. This Delta Vision process incorporates the requirements of AB 1200, passed by the legislature and signed by the Governor in 2005. None of these efforts will be completed before release of the next Reliability Report, but they may yield some preliminary results and conclusions in time for the next report, and will be fully incorporated into subsequent Reliability Reports.

As directed in the Governor's Executive Order S-3-05, the potential impacts of climate change are being analyzed. This effort and the results referenced in your letter are broad brush estimates of the potential impact upon the SWP 50 to 100 years into the future if no additional conveyance facilities or upstream reservoirs are built. This information is helpful in developing strategies for the future management and development of the State's water resources, including improvements to the SWP. The Department does not want to leave any reader of DRR (2005) with the impression that this developing information is being ignored. Therefore, the final report has been modified accordingly.

You comment that information planned to be used in the draft DRR (2005) should not have been given to the State Water Contractors in the spring of 2005 for incorporation into their Urban Water Management Plans. The Department provided the contractors results of the analyses planned to be used in the draft report because they were the best information available at that time. The information was conveyed in the Notice to State Water Project Contractors No. 05-08 as an excerpt from the draft technical chapter of an incomplete draft report. There was no intent of the Department to exclude this information from the public. This notice was not announced on the Department's Home page but all State Water Project Contractors' Notices are available at http://www.swpao.water.ca.gov/deliveries/. As soon as the Department learned that you wanted a copy of this information, it was provided to you. It is the Department's responsibility to provide the best available information to water supply contractors of the SWP.

You make the point that the report should be available to the public as a draft and finalized prior to deadlines for local agency Urban Water Management Plans. The Department agrees with this comment. It is unfortunate that the review of the draft report and completion of the final report could not be done in late 2004 or early 2005 for full incorporation into Urban Water Management Plans. The objectives of the Department for the Reliability Report are to encourage public discussion and understanding of the estimation of the SWP delivery capability, meet the conditions of the settlement agreement, and provide the best available quantification of SWP deliveries. Given the situation, the Department chose to provide the information to the contractors, as described above, and to delay the completion of the report to allow public review of a draft. The next time the Reliability Report is due in the same year as the Urban Water Management Plans, the Department will strive to complete it as early in the year as possible.

Your letter also makes the observation that the percentage of time the assumed demand is met decreases as the level of demand increases. This is correct. The results contained in the draft DRR (2005) are shown as percentages of the maximum Table A amount so the information can be easily interpreted by SWP contractors and incorporated into their analyses. Presenting the information as a percentage of the assumed demand would require additional calculations and would increase the potential for misinterpretation. For example, with the data presented as a percentage of the maximum Table A amount, a contractor can take this percentage and apply it to the specific maximum Table A amount for his or her district to determine how much water would be available to the district. If the information were presented as a percent of the demand, the amount of water that it equates to must be determined by referencing the assumed demand for a specific year and then calculating the amount of water associated with it. Attachment 1 is a plot of the results of the draft DRR (2005) as percentages of the assumed demand. It confirms your observation that the percentage of time the assumed demand is met decreases as the level of demand increases.

Your letter recommends the report include scenarios for future SWP demands that reflect the approach taken in the current California Water Plan. The Water Plan includes estimates for California's water demands which assume a continuation of current trends, a less intensive use of water, and a more intensive use of water. As noted in the Water Plan, the scenarios presented there are for demonstration of the kind of scenarios that should be looked at in more detail once the analytic tools are developed. The Department will undertake an effort to define a range of future demand scenarios for the SWP. This effort will not only provide information for future delivery reliability reports but also for the next Water Plan. As a point of clarification, your letter refers to the Tulare Lake hydrologic region analyzed in the Water Plan as an SWP service area. A few of the SWP agricultural contractors are in the Tulare Lake hydrologic region. Their service areas occupy a portion of the hydrologic region. The region is much larger than these service areas and includes the cities of Fresno, Visalia, and Bakersfield.

You express a concern about the consistency of the studies in the draft DRR (2005) with the description of the operation of the SWP in the Operations Criteria and Plan (OCAP), upon which the current biological opinions for the SWP and Central Valley Project are based. Studies 4 and 5 of the draft DRR (2005) use the same version of CalSim-II as the OCAP analyses and are, therefore, consistent with the OCAP project description. The Table A and Article 21 demands of the studies are within the range of the OCAP project description. If regulatory standards are modified in the future, the model will be updated to include any modified standards.

Your letter states that Article 21 should not be recommended as a supply to be integrated as a firm annual supply in planning documents. This comment is regarding the examples shown in Chapter 6 which illustrate how to calculate water supplies from the information presented in the report. In response to your concern, a footnote alerting the reader to the variability of Article 21 deliveries and referring back to the discussion in Chapter 5 has been added to the tables addressing average values. Chapter 5 thoroughly discusses the limitations of Article 21 supply.

The final report will be issued soon and will include an appendix containing the comment letters on the draft report and the Department's responses. Thank you for your comments and recommendations. If you wish to discuss this report further, please contact me at (916) 653-1099 or kkelly@water.ca.gov. Francis Chung, Chief of the Modeling Support Branch of the Bay-Delta Office, should be contacted for technical questions on the CalSim-II modeling studies. He may be reached at (916) 653-5924 or chung@water.ca.gov.

Sincerely,

Original signed by

Katherine F. Kelly, Chief
Bay-Delta Office

Attachments

cc: (See attached list.)

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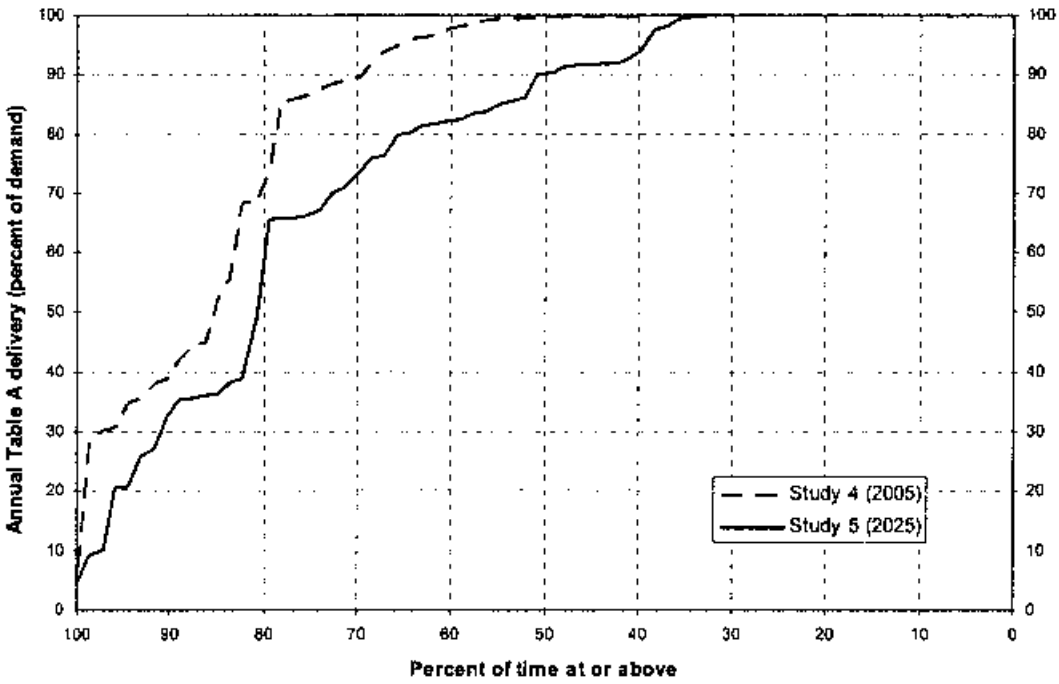
Will distribute to SWCs

Attachment 1
Planning and Conservation League

SWP Delta Table A delivery probability
for studies 4 and 5
as percent of Table A demand



Study 4 simulates a variable Table A demand of 2.3 – 3.9 million acre-feet (MAF) per year, dependent upon water-year type.

Study 5 simulates a variable Table A demand of 3.9 – 4.1 MAF/year, dependent upon water-year type.

Attachment 2
Response to PCL

Responses to comments from Planning and Conservation League (December 22, 2005) on Draft State Water Project Delivery Reliability Report – 2005

Responses to comments on the adequacy of CalSim-II

Comment: CalSim-II has not been calibrated or validated.

Response: CalSim-II is essentially a continuous accounting model, supplemented by a linear programming module to optimize the monthly operation of the system without foresight about the conditions in the next period. The primary physical law governing the simulation procedure is conservation of mass, maintaining a mass balance from one period to the next, while optimizing allocations of the available water in that period without foresight about the future periods of simulation. Models such as CalSim-II are inherently different from models that simulate hydrologic processes based on the physical laws governing the precipitation-runoff and the physical routing of water through a system of channels with defined geometry, roughness, streambed slope, etc. The classical model calibration process is difficult to apply to planning models, such as CalSim-II, that are primarily used to predict operations and water availability for a fixed level of development in the future. Continuing development of new supplies, along with changes in demands and the regulatory environment have all resulted in considerable changes to the management of the Central Valley Project (CVP)/State Water Project (SWP) system in the past 35 years. Project operations to meet future demands are often predicated on operation rules, storage and conveyance facilities, and demand levels which are necessarily different from historical conditions.

Although classical approach to model calibration can not be applied to models like CalSim-II, calibration of some of the important components of the model is possible, and has been done. For instance, one of the most important components of the model, its hydrologic component, has been calibrated by including closure terms in the form of local surface water accretions from every depletion study area (DSA) of the model network to match the historically available stream gage records. The routine used to determine the Sacramento River flows and the corresponding Delta exports that meet Delta water quality standards, is an Artificial Neural Network (ANN) model that is trained using the calibrated Delta Simulation Model (DSM2) prior to being used in CalSim-II simulation runs. Also, a revised groundwater-surface water interaction module is currently being developed that uses groundwater-surface water response functions produced by the simulation of the historical groundwater pumping

amounts that match the available historical data on groundwater levels and stream gage data. The above components of CalSim-II, that are either directly or indirectly calibrated, are three of the most important components of the model that have the most significant impacts on the simulation results, and as such, it would be inaccurate to claim that CalSim-II has not been calibrated. In the absence of a classical approach to calibration applicable to complex models like CalSim-II, the next best approach is generally to set model parameters for a simulation run relying on experience and then verifying the results of the simulation run by comparing to historical operations. To verify model results, the Department of Water Resources (DWR) conducted a 24-year simulation using historical input from 1975 to 1998. The results of this study showed remarkable matching of the simulated values of the major components of system operation to historical values. Components such as stream flows at key locations and the net Delta outflow index showed little difference between simulated and historical values. Therefore, it would be inaccurate to claim that CalSim-II has not been validated. For detailed examination of the validation study the reader is referred to *CalSim-II Simulation of Historical SWP/CVP Operations, Technical Memorandum Report*, November 2003.

Comment: **It is unclear whether CalSim-II incorporates limitations to groundwater use in the Sacramento Valley.**

Response: The issue of over-estimation of the water available in the Delta as a result of excessive pumping of groundwater in the Sacramento Valley was examined in the *CalSim-II Simulation of Historical SWP/CVP Operations, Technical Memorandum Report*, November 2003, and addressed in the *Peer Review Response* report of August 2004. The results of the simulation indicated that CalSim-II, in fact, under-estimates the long-term contribution of the groundwater when compared to the historical groundwater pumping in the Valley, and only slightly over-estimates this contribution in extended drought periods. The *Peer Review Response* report states:

> "The mix of surface water and groundwater used by the model to meet Sacramento Valley consumptive demands depends primarily on project water allocation decisions and levels of minimum groundwater pumping that are specified in the model. Over the 24-year period average annual net groundwater extraction in CalSim-II as compared to estimates based on the Central Valley Groundwater Surface Water Model (CVGSM) is lower by 378 thousand acre-feet (taf). The average annual net stream inflow from groundwater in CalSim-II is 190 taf greater than estimated by the CVGSM for the same period. The combined effect of dynamically modeling groundwater operations in CalSim-II (pumping, recharge and stream-aquifer interaction) leads to 188 taf per year <u>less water being available to the Delta</u>. For the 1987-92 period the combined effect results

in 46 taf per year additional water being available to the Delta. Thus the Historical Operations Study concludes that the current representation of groundwater in CalSim-II results, on average, in an under-estimation of water available at the Delta."

For more details on how groundwater-surface water interaction is modeled in CalSim-II, the reader is referred to pages A-2 and A-3 of the *Peer Review Response* report. As mentioned above, a revised groundwater-surface water interaction module is currently being developed and will be implemented in CalSim-III to use groundwater-surface water response functions produced by the simulation of the historical groundwater pumping amounts that match the available historical data on groundwater levels and stream gage data.

Comment: **The CalSim-II model should not be used to make absolute predictions, such as those incorporated into the Reliability Report.**

Response: It is true that a planning model like CalSim-II is best used in the comparative mode, when a "without project" scenario is compared with a "with project" scenario. However, this does not preclude the use of this model in studies like the ones used in the Delivery Reliability Report, provided that the users are sufficiently aware of the model assumptions and how to use the output data that CalSim-II simulations provide. The conversion of raw output data to usable information in planning studies requires judgment by the user. As discussed earlier, in the response to comments on the validation efforts by the Historical Operation Study, CalSim-II does very well in mimicking historical operations as evident by the comparisons made on the key system operation components. Furthermore, the reader is referred to the general comments made by the CALFED peer review panel in the executive summary of their December 2003 report. The panel proposes the following question: "Is the general CalSim modeling approach appropriate for predicting the performance of the general facilities and for use in allocation planning, assessing water supply reliabilities and for carrying out operational studies?" The panel's answer to this question is: "We believe the use of an optimization engine for simulating the hydrology and for making allocation decisions is an appropriate approach and is in fact the approach many serious efforts of this kind are using. It is a substantial improvement of the previous modeling approaches and provides a basis for consensus among federal and state interests. The modeling approach addresses many of the complexities of the CVP/SWP system and its water management decisions."

Comment: CalSim-II does not recognize or report uncertainty.

Response: Recognizing and addressing uncertainties in the CalSim-II simulations is an important issue that has been under consideration by the DWR and Bureau of Reclamation model development teams. After several discussions with the experts in the area, a research project is planned as a joint effort of DWR and the University of California at Davis to further investigate ways to identify and address uncertainties.

In addition to the planned joint effort with the UCD, DWR has recently completed the CalSim-II sensitivity analysis study focusing mainly on the Sacramento Valley hydrology, Sacramento-San Joaquin Delta water quality, and SWP operations. As a supplement to the sensitivity study, DWR will conduct a more focused statistical analysis of the impact of model input parameters on the modeled SWP.

Comment: CalSim-II may produce "cyber water."

Response: This comment does not indicate how the 75 percent exceedance level was estimated for the 2001 water supply. From the comments made later in Appendix A, it appears to refer to the Sacramento Valley water year index values for the period 1922 to 1994. The Sacramento Valley water year index data alone would not provide an accurate estimate of the capability of the SWP to deliver water since it does not consider project storage. Deliveries to the SWP south-of-Delta contractors in CalSim-II are not based on the Sacramento River Index, but on the storage in the SWP conservation facilities, Lake Oroville and SWP portion of San Luis Reservoir, the forecasted inflow to Lake Oroville, and other unregulated flows and accretions. Based on Figure 5-1 of the report, an annual delivery of 1.6 million acre-feet (maf) or more would occur in 85 percent of the years.

Responses to Comments in Appendix A

First comment regarding page 7 of the draft report

The report should highlight the weaknesses in the analysis and put the referenced statement in a text box.

The final Report (2005) has been modified to expound upon uncertainties associated with the analyses. Many of these modifications have been done in response to the comments of the PCL. We believe the final report sufficiently addresses the uncertainties associated with the projections.

Second comment regarding page 7 of the draft report

What analysis of current or future demand patterns is used to justify the assumption of a demand for full Table A allotments?

As stated on page 15 of the draft report, "The assumed demands for studies 4 and 5 were developed in discussions with SWP water contractors and stakeholders involved in the development of the analyses associated with the environmental documentation for the Monterey Agreement." SWP contractor's Table A requests for the real-time operations are developed and submitted to DWR by contracting agencies and their consultants. Examination of the historical requests show an increasing trend and they reach the full Table A request of 4.1 maf in 2001. As the following table indicates, contractors' requests were at full Table A amounts in 5 out of the 6 recent years.

Attachment 2
Response to PCL

Year	SWP Contractor's Table A Request (maf)
1986	2.4
1987	2.7
1988	2.6
1989	3.0
1990	3.1
1991	3.5
1992	3.6
1993	2.7
1994	2.7
1995	3.1
1996	2.7
1997	3.0
1998	3.2
1999	3.2
2000	3.6
2001	4.1
2002	3.9
2003	4.1
2004	4.1
2005	4.1
2006	4.1

Third comment regarding page 7 of the draft report

Statement: The following statement should be clarified or removed.

"Conversely, the current or projected delivery capability of the a water project would be less if (1) demand for water from a water project was at its maximum level for many years, (2) no new facilities were built, and (3) the supply of the main sources of water was recently reduced because another entity with a prior water right increased its use of that source."

The statement is revised as follows:
"Conversely, the projected deliveries of a water project would be less than the past if the water project had been operated at its maximum ability for many years, no new facilities were planned to be built, and the annual supply from one of its main sources of water was recently reduced and would remain at the reduced level."

Comment regarding page 8 of the draft report

The results of sensitivity analysis are not included in the report.
(See response to the last comment in this appendix.)

Response to comments regarding page 11 and page 74 of the draft report

Historical Operation Study as a means to validate CalSim-II

An objection is raised in Appendix A of the letter to the Department's claim that the results of the Historical Operation Study validate the CalSim-II model as an appropriate tool for planning studies. The specific objection seems to be to the statement in the Delivery Reliability Report, page 11 that states "The simulated deliveries in Figure 3-1 were adjusted for any differences between the historical and simulated carryover storage in the SWP system reservoirs, Lake Oroville and SWP's portion of San Luis Reservoir." The letter from the Planning and Conservation League raises the objection that "If the storage levels in SWP reservoirs were not faithfully reproduced and had to be adjusted in some unexplained way to generate the results in Figure 3-1, then the Technical Memorandum should not be used to build the credibility of the CalSim-II."

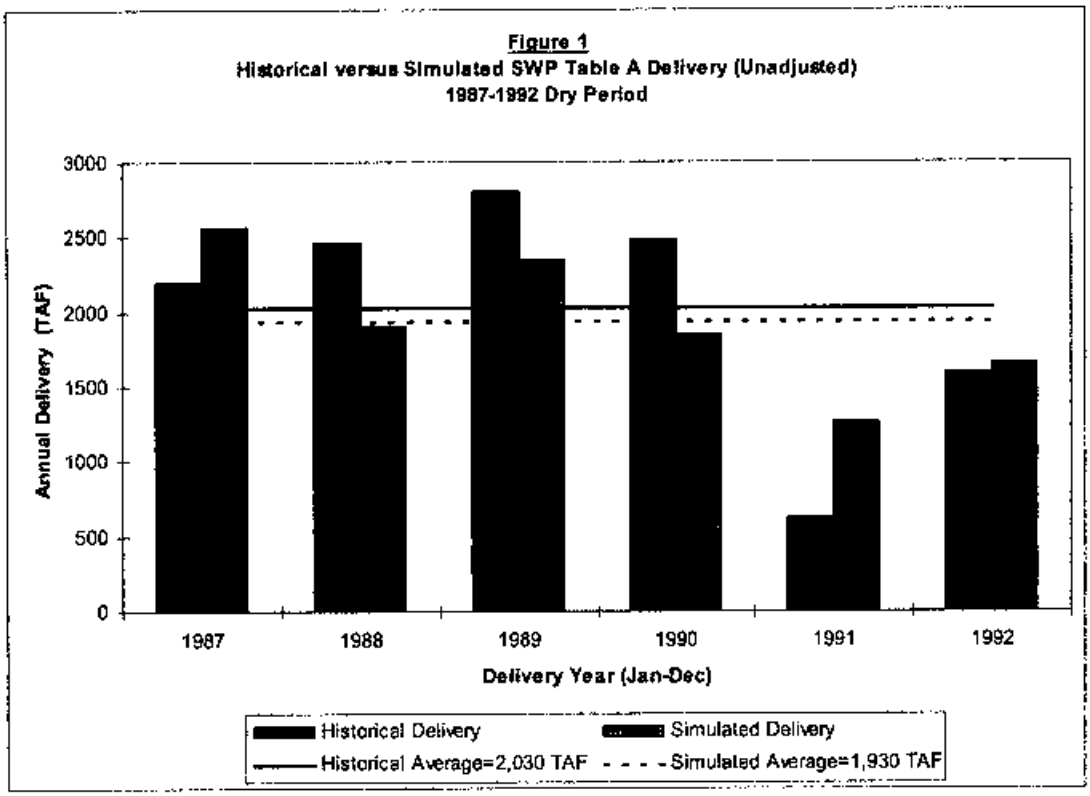
The detailed explanation of how and for what purpose the deliveries were adjusted to produce Figure 3-1 was deemed to be out of the scope of the 2005 update of the Delivery Reliability Report and the reader is referred to the Technical Memorandum Report, pages 18 and 19, for further detail. In summary, the resulting simulated annual deliveries during the 6-year drought of 1987-92 were adjusted by post-processing to account for the differences between the historical and simulated initial and end-of-year storages in the SWP system reservoirs. The adjustments were made to show the resulting year-to-year deliveries had the model's delivery for that particular year reflected identical use of stored water from the SWP reservoirs. In both the adjusted and the unadjusted case, however, the average annual delivery during the 6-year drought was 1,930 taf per year. The following table and the attached charts (Figure 1 for the unadjusted simulated deliveries, and Figure 2 for the resulting deliveries after adjustments) should clarify the post-processing procedure.

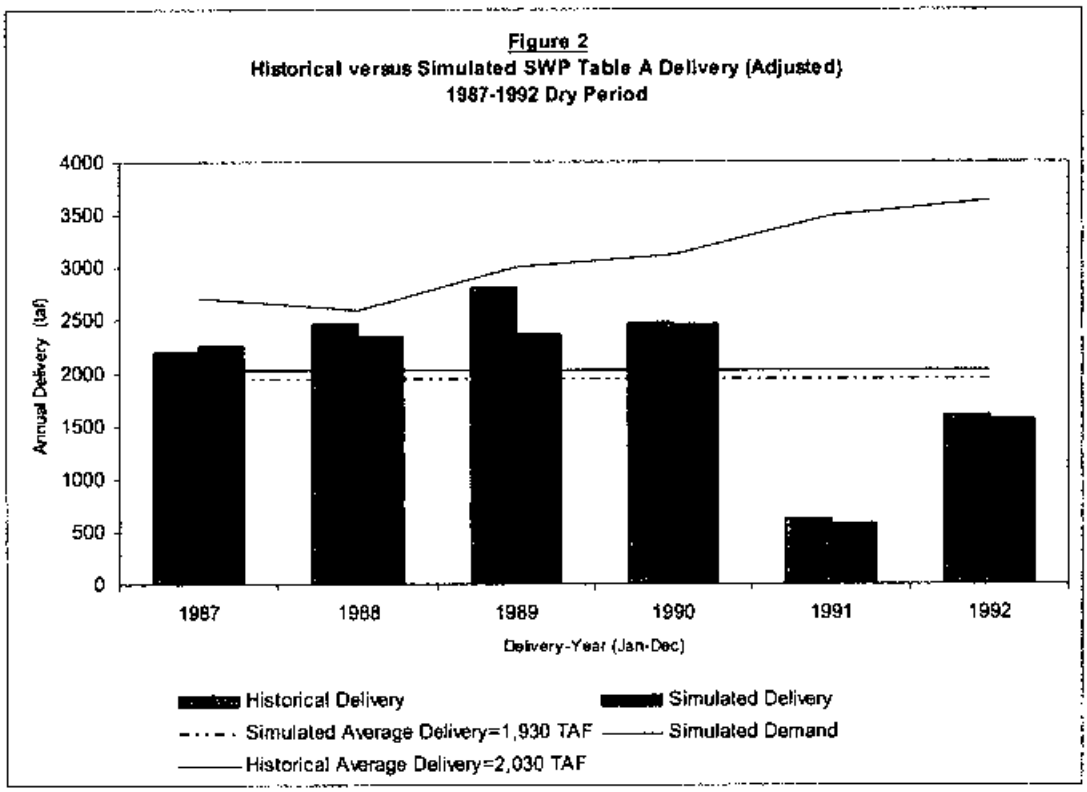
Calendar Year	Simulated SWP SOD Deliv (TAF)	Simulated January 1 Storage (TAF)	Simulated December 31 Storage (TAF)	Simulated Storage Withdrawal (TAF)	Historical Storage Withdrawal (TAF)	Storage Withdrawal Adjustment (Historical-Simulated) (TAF)	Adjusted Delivery (TAF)
1987	2567	4120*	2634	1486*	1182*	-304	2263
1988	1903	2634	2026	608	1050	442	2345
1989	2350	2026	2635	-609	-597	12	2362
1990	1851	2635	1738	897	1512	615	2466
1991	1266	1738	1730	8	-682	-690	576
1992	1652	1730	1748	-18	-110	-92	1560
Average**	**1930**						**1930**

* This storage and the corresponding withdrawals are from April 1, 1987 to December 1987, because the 6-year drought is assumed to have started from April 1, 1987, the last month before the onset of the drought in which the system's reservoirs were full.

** Rounded off to the nearest 10 taf.

Attachment 2
Response to PCL





The simulated month-to-month operation of the system may vary substantially from the actual historical operation, although the long-term average flows and deliveries are typically close. Therefore, post-processing of some of the raw data resulting from the simulation run is sometimes necessary to account for some of the unavoidable differences between the historical and simulated results. Some of the factors that could contribute to these differences in the month-to-month operation are:

- Delivery versus carryover storage rules
- Delta outflow requirements to comply with SWRCB standards
- South-of-Delta demand assumptions
- Level of north-of-Delta groundwater pumping
- Rule curves to transfer water from north-of-Delta reservoirs to San Luis Reservoir
- Crop consumptive use of applied water and agricultural water use efficiency
- Assumptions on historical land use, and project versus non-project demands
- Stream-aquifer interactions

- Historical operation based on decisions that are made in shorter time resolutions that the monthly simulation model captures, such as flood control operations, hydropower operations, export curtailments due to fish take limits, system scheduled and unscheduled outages, etc.
- CVP reservoirs balancing north of Delta
- Compliance with the provisions of the Coordinated Operations Agreement
- Drought water bank and water transfers

The following summary should be helpful in determining how well the Historical Operation Study was able to reproduce the actual historical records on the key components of the system operation. Figure 10 on page 46 of the Technical Memorandum Report shows that the simulated long-term average SWP delivery to the south-of-Delta contractors exceeded the historical average delivery by only 1.1 percent. Figure 12 on page 48 (same as Figure 2 in this response) shows that the simulated average annual delivery in the 1987-92 drought was less than the historical average delivery by 4.9 percent. Figure 26 on page 62 shows that the total project exports from the Delta during the 6-year drought was less than the historical average by only 0.2 percent. Figures 31 through 35 on pages 67 through 71 show that the simulated average annual flows in various key locations along the Sacramento River vary from the historical values by 0.5 percent to 4.5 percent. Figure 37 on page 73 shows that the simulated long-term average annual net Delta outflow index is less than the historical value by 3.1 percent. There were many other simulated variables that were compared to their historical values in the Technical Memorandum Report that reflect a more complete picture of how well CalSim-II was able to mimic historical operations. These results, of course, should be examined carefully with an eye on what caused the variation, and how significant the variations were. In other words, how close is close enough to validate CalSim-II as an appropriate model in long-term planning applications, and whether the model reflects the historical record on important system performance measures with sufficient accuracy.

<u>Response to comment regarding page 16 of the draft report</u>

Updated Article 21 demand should be explained.

The demand for Article 21 water is submitted to DWR by the contracting agencies and the increase of 50 taf in December through March is due to the increased requests submitted to DWR by the Metropolitan Water District of Southern California.

Responding to comment regarding page 25 of the draft report

There is nothing special about the thresholds used to reference the curve in Figure 5-2. They should be changed as recommended.

The percentages of 75, 50, and 25 are chosen as simple examples to illustrate how to read the curve. These percentages are at or near the mid-range of the curve and the results are surrounded by several data points. Using the end points of the curve for an illustration is not as effective and, in the case of the lowest delivery value, focuses on the result for a single year.

Response to comment regarding page 26 of the draft report

DWR's attempt at post-processing 1976-77 deliveries is not valid

As stated on page 25 of the draft report, CalSim-II is a planning model and is best used for estimating SWP performance over long periods of time. Considerable judgment should be applied when evaluating CalSim-II results for shorter periods of time. This is especially true for estimates for the single driest year on record in a 73-year sequence.

Response to comment regarding page 49 of draft report

It is inappropriate to speculate on what deliveries will be with new facilities.

The paragraph is deleted.

Response to comment regarding page 78 of the draft report

Results of the sensitivity analysis should be applied to interpreting the results of the reliability analysis.

The Sensitivity Analysis Study is discussed in the draft report to inform the reader of the status of DWR's commitment to conducting such a study. The sensitivity study will be further analyzed in view of the SWP Delta deliveries and the results of that analysis will be incorporated as appropriate in the next Reliability Report.

It should be noted that the summary results on SI and EI shown in the Table E-1 are strictly applicable to the long-term (1922-1994) performance of the project. It is not appropriate to apply these results to a single year. In addition, these results should be applied with caution since they are applicable only within the investigated range of variation of the input parameters. The sensitivity study analyzed the response of the SWP total and Delta delivery for a 5 percent reduction in the Banks pumping capacity and ±5 percent variation in Oroville inflow.

Order Granting Plaintiff's Application for Temporary Restraining Order
February 3, 2006;

United States District Court
For the Northern District of California

IN THE UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

PLANNING AND CONSERVATION LEAGUE,

Plaintiff,

v.

UNITED STATES BUREAU OF RECLAMATION,

Defendant;

SAN LUIS & DELTA-MENDOTA WATER AUTHORITY; and WESTLANDS WATER DISTRICT,

Defendants-Intervenors (remedies phase only).

_____/

No. C 05-3527 CW

ORDER GRANTING PLAINTIFF'S APPLICATION FOR TEMPORARY RESTRAINING ORDER

Plaintiff Planning and Conversation League moves for a temporary restraining order enjoining construction of the Intertie Project, discussed below, until its preliminary injunction motion is heard. Defendant United States Bureau of Reclamation has filed an opposition to Plaintiff's application for a temporary restraining order and motion for a preliminary injunction. Defendants-Intervenors San Luis & Delta-Mendota Water Authority and Westlands Water District (collectively, Intervenors) also oppose

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Plaintiff's application for a temporary restraining order. Having considered all of the papers filed by the parties, the Court grants Plaintiff's application for a temporary restraining order.

BACKGROUND

In this action, Plaintiff challenges an environmental review of a proposed 500-foot-long pipeline and related pumps, which would connect the main delivery canals of two water diversion projects -- the federal Central Valley Project (CVP) and California's State Water Project (SWP) -- in California's Central Valley. These diversion projects draw their water from the estuary formed by the discharge of the Sacramento and San Joaquin River systems into the San Francisco Bay (Bay-Delta). The proposed pipeline at issue is known as the Delta-Mendota Canal/California Aqueduct Intertie (Intertie Project).

In September, 2004, the Bureau and the San Luis & Delta-Mendota Water Authority completed a joint environmental review of the Intertie Project titled "Delta-Mendota Canal/California Aqueduct Intertie Proposed Finding of No Significant Impact/ Negative Declaration and Draft Environmental Assessment/Initial Study" (Intertie EA/IS). The Intertie EA/IS was released for public comment in November, 2004. Plaintiff and others submitted comments on this study. Plaintiff commented that, because increased pumping associated with the Intertie Project could have significant environmental effects on the Bay-Delta, a full Environmental Impact Statement (EIS) should be prepared as required by the National Environmental Policy Act (NEPA). The Bureau did not prepare an EIS; instead, it signed a Finding of No Significant

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Impact (FONSI).

Plaintiff filed this action on August 31, 2005. On January 12, 2006, the Court scheduled the parties' cross-motions for summary judgment for hearing on May 28, 2006.

On January 17, 2006, Defendant notified Plaintiff it had awarded the construction contract related to the Intertie Project. Construction on the Intertie Project is slated to begin on February 6, 2006.

LEGAL STANDARD

A temporary restraining order may be issued only if "immediate and irreparable injury, loss, or damage will result to the applicant" if the order does not issue. Fed. R. Civ. P. 65(b). To obtain a temporary retraining order, the moving party must establish either: (1) a combination of probable success on the merits and the possibility of irreparable harm, or (2) that serious questions regarding the merits exist and the balance of hardships tips sharply in the moving party's favor. See Baby Tam & Co. v. City of Las Vegas, 154 F.3d 1097, 1100 (9th Cir. 1998); Rodeo Collection, Ltd. v. West Seventh, 812 F.2d 1215, 1217 (9th Cir. 1987).

The test for granting a temporary restraining order, like that for a preliminary injunction, is a "continuum in which the required showing of harm varies inversely with the required showing of meritoriousness." Rodeo Collection, 812 F.2d at 1217 (quoting San Diego Comm. Against Registration & the Draft v. Governing Bd. of Grossmont Union High Sch. Dist., 790 F.2d 1471, 1473 n.3 (9th Cir. 1986)). The moving party ordinarily must show "a significant

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threat of irreparable injury," although there is "a sliding scale in which the required degree of irreparable harm increases as the probability of success decreases," United States v. Odessa Union Warehouse Co-op, 833 F.2d 172, 174, 175 (9th Cir. 1987), and vice versa.

DISCUSSION

I. Likelihood of Success on the Merits

Plaintiff asserts that Defendant violated NEPA by not preparing an EIS. "[A]n EIS must be prepared if 'substantial questions are raised as to whether a project . . . may cause significant degradation of some human environmental factor.'" Ocean Advocates v. U.S. Army Corps of Engineers, 402 F.3d 846, 864 (9th Cir. 2005) (quoting Idaho Sporting Cong. v. Thomas, 137 F.3d 1146, 1149 (9th Cir. 1998) (alterations and emphasis in original)). Plaintiff argues that it has a high probability of success on the merits because, to trigger the requirement for an EIS, it "need not show that significant effects will in fact occur." See id. at 865 (quoting Idaho Sporting, 137 F.3d at 1150)(emphasis in original). Instead, Plaintiff need only raise substantial questions regarding whether the project may have a significant effect. Id.

As noted by Defendant, however, in reviewing its decision not to prepare an EIS, this Court's role is "simply to ensure that the agency has adequately considered and disclosed the environmental impact of its actions and that its decision is not arbitrary or capricious." Baltimore Gas and Elec. Co. v. Natural Res. Def. Council, Inc., 462 U.S. 87, 97-98 (1983). The Court may not substitute its own judgment for that of the agency; if the Court

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determines that the agency took a "hard look" at a project's environmental consequences, the Court's review is at an end. See National Parks & Conservation Ass'n v. U.S. Dept. of Transp., 222 F.3d 677, 680 (9th Cir. 2000).

A. Significant Impacts

Plaintiff argues that the Intertie EA/IS itself shows that the Intertie Project may have significant impacts on the environment. For example, the Intertie EA/IS predicted that the Intertie Project would move the saltwater/freshwater boundary one kilometer and reduce the delta smelt's habitat by generally less than five percent. Plaintiff contends that these may be significant impacts, especially considering that the Bay-Delta environment is already vulnerable. See Grand Canyon Trust v. FAA, 290 F.3d 339, 343 (D.C. Cir. 2002) (noting that when an environment is already vulnerable even a slight increase in adverse conditions "may represent the straw that breaks the back of the environmental camel"). Plaintiff notes that Defendant has previously recognized that these impacts, which it now purports to be minor, are significant: CALFED Bay-Delta Program Final Programmatic Environmental Impact Statement/Environmental Impact Report, prepared by Defendant and other agencies in July, 2000, states, "For special-status species, such as species listed under federal and California ESAs, harm to individual organisms and their habitat is considered a potentially significant adverse impact."

Defendant does not dispute that the Intertie EA/IS documents that harm to the habitats of special-status species, like the delta smelt, could occur. Instead, it contends that it conducted a

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comprehensive and detailed analysis of the potential effects related to water quality and fisheries, and many other issues not discussed by Plaintiff, such as vegetation, wildlife and air quality, that its conclusion of no significance is supported by the record and that an EIS was not required. Defendant accuses Plaintiff of asking the Court to second-guess its conclusion that the Intertie Project will not have significant impacts on water qualities and fisheries, and reminds the Court that when reviewing a "scientific determination, as opposed to simple findings of fact, a reviewing court must generally be at its most deferential." Baltimore Gas, 462 U.S. at 103. The Ninth Circuit has instructed, "When specialists express conflicting views, an agency must have discretion to rely on the reasonable opinions of its own qualified experts even if, as an original matter, a court might find contrary views more persuasive." Wetlands Action Network v. U.S. Army Corps of Engineers, 222 F.3d 1105, 1121 (9th Cir. 2000). But that does not mean that the Court should merely rubber-stamp the conclusions reached by Defendant's specialists, especially if those conclusions may be unreasonable. As the Supreme Court explained in Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 378 (1989), courts "should not automatically defer" to an agency "without carefully reviewing the record and satisfying themselves that the agency has made a reasoned decision." "A contrary approach would not simply render judicial review generally meaningless, but would be contrary to the demand that courts ensure that agency decisions are founded on a reasoned evaluation of the relevant factors." Id. (inner quotations omitted).

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Thus, even providing Defendant with all the deference that it is due, the Court finds that serious questions regarding the merits of this argument exist.

B. Cumulative Effects

Plaintiff argues that the Intertie EA/IS inadequately addressed cumulative impacts and thus an EIS was required. It notes that NEPA does not allow projects to be analyzed in artificial isolation; instead, it requires a discussion of the cumulative impacts of the proposed project in combination with "past, present, and reasonably foreseeable future actions." See 40 C.F.R. § 1508.7. This discussion, however, "must be more than perfunctory." Kern v. U.S. Bureau of Land Management, 284 F.3d 1062, 1075 (9th Cir. 2002). The Ninth Circuit requires that the discussion of cumulative impacts provide some quantified or detailed information: "general statements about 'possible' effects and 'some risk' do not constitute a 'hard look' absent a justification regarding why more definitive information could not be provided." Id. (quoting Neighbors of Cuddy Mt. v. U.S. Forest Serv., 137 F.3d 1272, 1279-80 (9th Cir. 1998)).

Defendant contends that it adequately assessed the cumulative impacts of reasonably foreseeable projects. This contention, however, is based upon Defendant's definition of "reasonably foreseeable" and its determination of what is speculative. For example, Defendant states that it did not analyze the cumulative effects of the South Delta Improvements Project (SDIP) because, at the time it released the Intertie EA/IS, no published draft environmental document for the SDIP was available. According to

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Defendant, a project is not "reasonably foreseeable" until it is supported by published draft environmental documents. See also EA/IS 3-20 ("There are other actions and programs being evaluated and implemented by CALFED agencies that could conceivably contribute to cumulative impacts. However, these are relatively undefined at this time, and it would be speculative to include these other programs in a cumulative analysis.")

But the Ninth Circuit has held otherwise. In Muckleshoot Indian Tribe v. U.S. Forest Service, 177 F.3d 800, 812 (9th Cir. 1999), the court reversed the district court's determination that a project was too speculative to require analysis. It held that the project was reasonably foreseeable, and should have been considered, because a summary of the proposed project had been prepared the year before, and, five months before the EIS was issued, the Secretary of Agriculture formally announced the proposed project to the public.

In response to Plaintiff's allegations that the Intertie EA/IE contained only a perfunctory discussion of cumulative impacts, Defendant notes that a more detailed analysis of cumulative impacts is not required when the agency explains why definitive information could not be provided. Here, Defendant's justification was that various projects were "too speculative" to consider. But, based on the Ninth Circuit's holding in Muckleshoot Indian Tribe, the Court could find that this justification is arbitrary and capricious and that Defendant does not provide the necessary and detailed cumulative analysis, but only "broad and general statements devoid of specific, reasoned conclusions." Id. at 811. Thus, there is a

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strong likelihood that Plaintiff will succeed on the merits of this argument.

C. CALSIM II Modeling Studies

Plaintiff also argues that an EIS is required because the Intertie EA/IS, and the finding of no significant impact, were largely based on models which, while capable of predicting what might happen, are too unreliable to rule out the potential for significant impacts. Furthermore, NEPA requires advance disclosures of relevant short-comings in the data or models, which Plaintiff contends Defendant fails to disclose. See Lands Counsel v. Forester of Region One of the U.S. Forest Serv., 395 F.3d 1019, 1032 (9th Cir. 2004).

The Intertie EA/IS relies on CALSIM II, a model prepared by Defendant and California Department of Water Resources and used in most Central Valley water planning processes. In 2003, a panel of scientists prepared a peer review of CALSIM II and noted that, while the model's "strengths are many, so are its weaknesses." Plaintiff contends that, although Defendant relied almost exclusively on model-generated numbers to draw its conclusion that increasing Delta exports by thousands of acre-feet per year will not potentially create significant environmental impacts, the Intertie EA/IS did not disclose any weakness in the model, except when the model's predictions showed possible significant impacts.[1]

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[1]On pages 3-78 and 3-85, Defendant discounted the CALSIM II's finding that, under certain conditions, the Intertie Project could increase the entrainment, i.e., killing, of delta smelt and striped bass by greater than forty to fifty percent: "The increased entrainment is attributable to a simulated increase in SWP pumping in June . . . . The simulated change in pumping is attributable to

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When Plaintiff commented on this nondisclosure, and provided Defendant with a copy of the peer review, Defendant responded:

> We have used the best available data and the best available modeling tools. The data and modeling tools are similar and consistent with the data and modeling tools used in the NOAA BO. Consequently, the EA/IS analysis supports the conclusions to the extent required under CEQA/NEPA.

Defendant attacks Plaintiff's argument that the model is too unreliable by asserting that Plaintiff misconstrues the difference between using models for predictive purposes and for comparative purposes. Predictive models, it asserts, "are used to accurately represent physical systems and the potential that a range of physical inputs has to influence the state of physical systems"; whereas, comparative models "are used to identify trade-offs between the use of different operational alternatives for meeting system demands within the limits of allowable operations." Because Defendant used the model for comparative, not predictive, purposes, it asserts that Plaintiff's arguments regarding reliability and predictability are entirely misplaced. The scientific review of CALSIM II, however, rejected this assertion, noting that it was skeptical of the notion that, although the model might not generate a highly reliable absolute prediction, it could still produce a reasonably reliable estimate of the relative change in outcome. It noted that, for a predictive analysis, one runs the model once to predict an outcome; for a comparative analysis, one runs the model twice, first as a baseline and second with some specific change, in

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rules within the CALSIM II model and does not represent changes in SWP pumping that would be expected with actual implementation of the Proposed Action."

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order to compare the two results. CALSIM II is not a perfect model; no model is. But its use alone does not show that Defendant was arbitrary and capricious in reaching its finding of no significant impact. As Plaintiff acknowledges, an EA/IS can rely on a model, provided it discloses the assumptions and limitations of the model. See Sierra Club v. Castle, 657 F.2d 298, 332 (D.C. Cir. 1981) (upholding EPA's reliance on modeling because it provided necessary disclosure).

Defendant asserts that it sufficiently disclosed any assumptions and limitations. It points to Appendix B, "CALSIM II Modeling Studies of the Delta Canal/California Aqueduct Intertie," which describes the methodology and the assumptions used in the models, including the assumption that an Environmental Water Account adequately funded to allocate water for fish protection would continue to exist. It argues that it did not have to disclose any limitations of CALSIM II, because, as discussed above, it used the model to compare different alternatives and related environmental effects, not to predict a specific future environmental condition.

Defendant discounts Plaintiff's argument that it improperly assumed the existence of a long-term Environmental Water Account, asserting that the Environmental Water Account was properly included in the modeling scenarios. It notes that the Environmental Water Account is entering its sixth year of operation and that it has publicly committed to continuing the Environmental Water Account, or, if it is discontinued, to providing the same level of fish protection by some other means. But Defendant fails

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to note that the Intertie EA/IS listed the Environmental Water Account among programs that are "in the very early planning and feasibility stages" and therefore were too speculative to include in a qualitative analysis. Plaintiff points out the inconsistency of including the Environmental Water Account as an assumption in the model but not as a factor in a qualitative analysis. Defendant's opposition, however, fails to address it. Nor does Defendant address Plaintiff's exhibit, showing the Environmental Water Account's dire lack of funding.

The Court finds that there is a reasonable likelihood that Plaintiff will succeed on the merits of this argument. See Lands Council, 395 F.3d at 1032 (finding that nondisclosure of relevant shortcomings in model violated NEPA).

D. Intervenors' Argument

In addition to joining Defendant's arguments, Intervenors argue that Plaintiff cannot succeed because the Intertie Project does not alter the status quo. Intervenors note that the CVP Tracy Pumping Plant has a maximum authorized pumping capacity of 4,600 cubic feet per second (cfs) of water. Various constraints, however, have prevented it from operating at that capacity full-time; currently its pumping capacity is limited to approximately 4,200 cfs during the winter. The Intertie Project is intended to address one of these constraints and to enable the Tracy Pumping Plant to pump at its full capacity, which was approved before NEPA was enacted. See Westside Property Owners v. Schlesinger, 597 F.2d 1214, 1223-25 (9th Cir. 1979) (stating that, as a general matter, NEPA does not apply retroactively).

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Intervenors argue that, because the Intertie project will only restore the Tracy Pumping Plant to its full, and already approved, capacity, an EIS is not required.[2] The case they cite in support of this argument, however, is arguably distinguishable. In Upper Snake River Chapter of Trout Unlimited v. Hodel, 921 F.2d 232 (9th Cir. 1990), the court noted that previously it had "held that where a proposed federal action would not change the status quo, an EIS is not necessary," ruling that "an EIS need not discuss the environmental effects of mere continued operation of a facility." 921 F.2d at 235 (quoting Burbank Anti-Noise Group v. Goldschmidt, 623 F.2d 115, 116 (9th Cir. 1980)). The court in Upper Snake River determined that a dam's reduction in flow did not constitute a major federal action under NEPA because the reduction in flow was a routine and continuing operation of the dam. Here, however, it is not clear if pumping 4,600 cfs is a routine and continuing operation of the Tracy Pumping Plant.

The Intervenors fail to provide the Court with evidence to show that pumping 4,600 cfs is a routine and continuing operation of the Tracy Pumping Plant, and thus the Court finds that this argument does not make it less likely that Plaintiff will succeed on the merits.

II. Balance of Hardships

Plaintiff argues that the balance of hardships tips strongly in favor of the preliminary relief it seeks. The Ninth Circuit has

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[2]Intervenors contend that, although it was useful to informed decision-making, the Intertie EA/IS was not required under NEPA to analyze the effects of additional pumping at 4,600 cfs.

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instructed, "Where an EIS is required, allowing a potentially environmentally damaging project to proceed prior to its preparation runs contrary to the very purpose of the statutory requirement." National Parks & Conservation Ass'n v. Babbitt, 241 F.3d 722, 737-38 (9th Cir. 2001). Furthermore, as the Supreme Court has explained,

> Environmental injury, by its nature, can seldom be adequately remedied by money damages and is often permanent or at least of long duration, i.e., irreparable. If such injury is sufficiently likely, therefore, the balance of harms will usually favor the issuance of an injunction to protect the environment.

Amoco Production Co. v. Village of Gambell, 480 U.S. 531, 545 (1987).

Defendant, however, contends that Plaintiff has proven no irreparable harm and that the balance of harms imposed by an injunction favors Defendant. It asserts that the alleged harm at issue is not the harm imposed by construction of the Intertie Project, but rather the environmental impacts caused by the operational effects of the water flowing through the Intertie, which is not scheduled to occur until late December, 2006, months after the Court hears the cross motions for summary judgment. However, Plaintiff also argues that the construction threatens irreversible environmental harms, for "[a]fter major investment of both time and money, it is likely that more environmental harm will be tolerated." Save the Yaak Committee v. Block, 840 F.2d 714, 718 (9th Cir. 1988).

Plaintiff also cites Sierra Club v. Marsh, 872 F.2d 497, 504 (1st Cir. 1989), where then-Circuit Judge Breyer explained that

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"the risk implied by a violation of NEPA is that real environmental harm will occur through inadequate foresight and deliberation." See id. (finding that the "difficulty of stopping a bureaucratic steam roller, once started" is "a perfectly proper factor for a district court to take into account" on a motion for a preliminary injunction). Although perhaps not irreparable harm, Plaintiff has shown serious harm that will be caused by beginning construction on the Intertie Project before the Court rules on the cross motions. That harm, however, must be balanced with the harm to Defendant and Intervenors.

Plaintiff contends that Defendant and its contractors will suffer little or no harm from a delay. But Defendant has shown that it will suffer a financial hardship. If construction of the Intertie Project is halted, Defendant will either have to suspend or terminate the construction contract; both alternatives are costly. Under contract suspension, Defendant is still responsible for the contractor's daily cost; Defendant estimates that, given the size of the contract, the cost would amount to $3,000 to $5,000 per day. In addition, Defendant would be responsible for any escalated cost of material and labor. If Defendant terminated the contract, it would be responsible for all costs incurred by the contractor through the time the contract is terminated and for anticipatory profits, which it estimates would exceed one million dollars.

In addition to the financial harm it would experience, Defendant points to the harm that others, such as the public agencies who have advanced twenty-five million dollars toward

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project construction, would experience. Intervenors note that member districts are not earning any interest on that twenty-five million dollars, at a cost of about $2,600 per day. They further note that, if the Intertie Project is not completed for use from January through March of 2007, CVP water users south of the Delta stand to lose up to 793 acre-feet of water supply during those months. Defendant asserts that the public interests at stake weigh in favor of the Intertie Project moving forward. It does not address Plaintiff's argument that the general public would be benefitted by an injunction because agencies can make better decisions, and adopt better policies and projects, if informed by adequate, and required, environmental studies.

The Court regrets the tax-payer dollars that will have to be spent due to the granting of this temporary restraining order, but those dollars could have been saved had Defendant conducted an EIS or waited to commit to a construction contract until after the legal challenges were resolved. Balancing the hardships that each side will suffer, the Court finds that the balance tips sharply in Plaintiff's favor. Environmental injury, as noted above, generally cannot be adequately remedied by money damages and it is often permanent. Defendant has acknowledged that the Delta is a "critical resource" in "steady decline." CALFED Bay-Delta Program Final Programmatic Environmental Impact Statement/Environmental Impact Report, 1-2.

III. Bond

Plaintiff states that it is a non-profit corporation pursuing environmental litigation in the public interest and requests that

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the Court dispense with any security requirement. See People of State of Cal. ex rel. Van De Kamp v. Tahoe Regional Planning Agency, 766 F.2d 1319, 1325-26 (9th Cir. 1985) (finding that the district court properly exercised its discretion to allow a non-profit environmental group to proceed without posting a bond). Defendant objects to this request and asks the Court require a bond in the amount of at least $50,000, which would reflect the high-end amount of costs that Defendant would experience due to a temporary restraining order lasting ten days. Citing Save Our Sonoran, Inc. v. Flowers, 408 F.3d 1113 (9th Cir. 2005), Defendant notes that environmental organizations are not exempt from the bond requirement. In Save Our Sonoran, the court affirmed the district court's requirement of a $50,000 bond from an environmental organization. 408 F.3d at 1126. But the court also recognized that it has affirmed nominal bonds in public interest cases. Each case is fact-specific, and the court found that, as long as a district court does not set such a high bond that it serves to thwart citizen actions, it does not abuse its discretion. Id.

Intervenors also request that Plaintiff be required to post a bond. Noting that Plaintiff is a consortium of over one-hundred environmental organizations, Intervenors argue that, based on Plaintiff's size alone, it should have the resources to post a bond sufficient to protect the San Luis & Delta-Mendota Water Authority from any costs or damages resulting from being wrongfully restrained.

Because Plaintiff is a public interest organization, the Court will not require it to post a bond.

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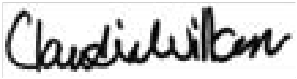
CONCLUSION

For the foregoing reasons, the Court grants Plaintiff's application for a temporary restraining order. Defendant is enjoined from beginning construction on the Intertie Project until the preliminary injunction hearing. Plaintiff's motion for a preliminary injunction will be heard on February 14, 2006, at 2:00 p.m. If Defendant and/or Intervenors wish to file additional briefing, they must do so before noon on February 7, 2006; Plaintiff has until noon on February 9, 2006, to reply. The parties may stipulate to a longer briefing schedule and later hearing date.

IT IS SO ORDERED.

Dated: 2/3/06



CLAUDIA WILKEN
United States District Judge

Order Granting Plaintiff's Motion for Preliminary Injunction
February 15, 2006

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IN THE UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

PLANNING AND CONSERVATION LEAGUE,

Plaintiff,

v.

UNITED STATES BUREAU OF RECLAMATION,

Defendant;

SAN LUIS & DELTA-MENDOTA WATER AUTHORITY; and WESTLANDS WATER DISTRICT,

Defendants-Intervenors (remedies phase only).

_____/

No. C 05-3527 CW

ORDER GRANTING PLAINTIFF'S MOTION FOR PRELIMINARY INJUNCTION

Plaintiff Planning and Conversation League moves for a preliminary injunction enjoining construction of the Intertie Project. Defendant United States Bureau of Reclamation and Defendants-Intervenors San Luis & Delta-Mendota Water Authority and Westlands Water District oppose Plaintiff's motion. The matter was heard on February 14, 2006.

Having considered all of the papers filed by the parties, oral argument on the motion and evidence presented, the Court

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GRANTS Plaintiff's motion (Docket No. 30). For the reasons explained in the Court's order granting Plaintiff's application for a temporary restraining order, Defendant is enjoined from beginning construction on the Intertie Project until this case is decided on the merits.

IT IS SO ORDERED.

Dated: 2/15/06

CLAUDIA WILKEN
United States District Judge

Governor Schwarzenegger's release issued July 17, 2007,
http://gov.ca.gov/index.php?/print-version/press-release/6972/

Office of the Governor

ARNOLD SCHWARZENEGGER
THE PEOPLE'S GOVERNOR

PRESS RELEASE

07/17/2007 GAAS:564:07 FOR IMMEDIATE RELEASE

Gov. Schwarzenegger Directs Immediate Actions to Improve the Deteriorating Delta, California's Water Supply

Governor Arnold Schwarzenegger today directed the Department of Water Resources to take immediate action steps to improve conditions in the Sacramento-San Joaquin Delta, to help restore its natural habitat and protect the Delta smelt and other species. The Governor also identified more than $120 million in specific Delta restoration projects to be part of his comprehensive water plan, which he is calling on the Legislature to pass by the end of this year. He made the announcements on Twitchell Island in the Delta.

"Today, I am calling for actions to help restore the Delta, the largest estuary on the West Coast and home to hundreds of native plant and animal species. The Delta is also one of the most vulnerable areas of our state. It faces dangers of contamination from a natural disaster or rising sea levels. And, we saw an example of its vulnerability when we had to shut off the pumps for nine days to protect the threatened Delta smelt," said Governor Schwarzenegger.

"The Delta is one of California's most important resources -- 25 million Californians rely on it for clean water. It also irrigates hundreds of thousands of acres of Central Valley farmland and is the heart of our $32 billion agricultural industry."

Without immediate changes, the Delta will fail as a reliable water source, according to state water experts. Climate models and current weather patterns require that we prepare for more severe floods, droughts and rising sea levels, which the Delta must be able to withstand to protect California's water supply.

Building on his Strategic Growth Plan from last year, the Governor introduced a $5.9 billion comprehensive water plan in January. The Governor's plan invests $4.5 billion to develop additional surface and groundwater storage. The plan also includes $1 billion toward restoration of the Delta, including development of a new conveyance system, $250 million to support restoration projects on the Klamath, San Joaquin and Sacramento rivers and the Salton Sea project and $200 million for grants to California communities to help conserve water for about 400,000 families.

Today, the Governor issued immediate directives to protect the Delta. Using existing resources, the Department of Water Resources will implement these actions:

- Prevent the spread of invasive species. Invasive species like the quagga mussel compete with native species like the smelt.
- Improve research on the Delta Smelt. State and federal agencies will upgrade and continue operation of a smelt culture laboratory.
- Screen Delta agricultural intakes to protect smelt. The state will install fish screens to protect the smelt when water is diverted from the Delta to irrigate state-owned lands on Sherman and Twitchell Islands.
- Restore the North Delta's natural habitat. The state will restore tidal wetlands and aquatic habitats at Cache Slough to provide spawning areas and promote the production of organisms that the smelt and other native fish eat. Dutch Slough is also a candidate for longer-term restoration.
- Improve Central Delta water flow patterns. The state will study and, if feasible, modify water circulation in the Central Delta near Frank's Tract to protect fish and improve water quality.
- Improve our ability to respond to Delta emergencies. The state will enhance Delta emergency response and levee failure plans and stockpile materials to repair damaged levees.

The Governor also called for additional actions to be included as part of a comprehensive water package, negotiated after the budget is passed. Totaling at more than $120 million, these actions could be funded out of the $1 billion proposed in the Governor's comprehensive plan, or by other funding sources:

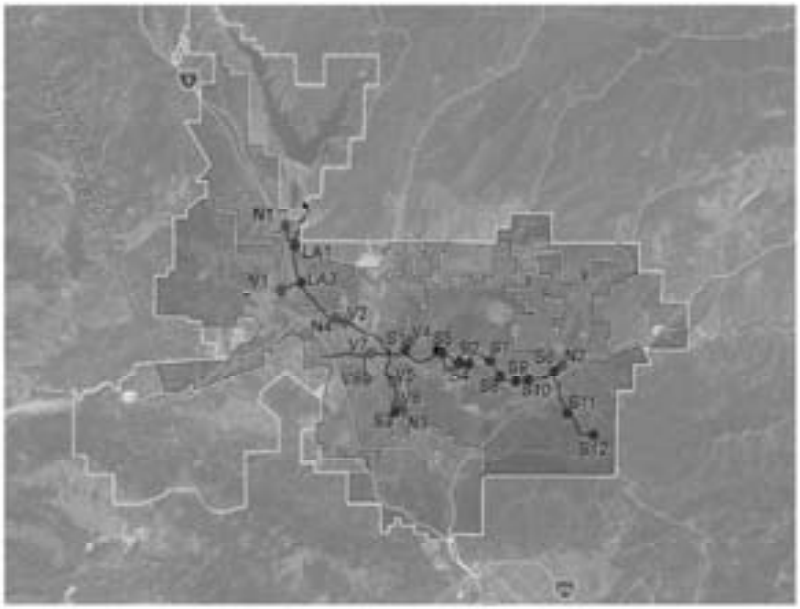
- Restoring additional Delta habitats such as Dutch Slough. ($48 million)
- Helping local water agencies take actions to conserve and manage limited water supplies.
- Improving emergency planning in the event of an earthquake or flood. ($74 million)
- Assessing the feasibility of additional screening at state facilities to protect Delta smelt and expediting projects to modify water circulation and improve water quality. ($2.25 million)
- Funding subsidence and carbon sequestration projects on Sherman and Twichell Islands and other Delta locations. ($3.5 million)

The actions are not intended to replace recommendations from ongoing Delta planning efforts. Instead, they are to make incremental improvements until long-term plans are in place. They will be compatible with any long-term Delta plan and will not preclude future restoration options.

The Governor has directed the Delta Vision Blue Ribbon Task Force to develop a Delta management plan. The task force will present its findings and recommendations by January 1, 2008 and its Strategic Plan by October 31, 2008. The Bay Delta Conservation Plan is also underway, being developed with broad participation from water agencies, environmental organizations and local representatives. The $1 billion proposed in the Governor's comprehensive plan will be used to fund their recommendations.

2006 Santa Clarita Valley Water Report
May 2007

2006
Santa Clarita Valley Water Report



Castaic Lake Water Agency (CLWA)
CLWA Santa Clarita Water Division
Los Angeles County Waterworks District 36
Newhall County Water District
Valencia Water Company

May, 2007

LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

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Executive Summary

This annual report, which is the ninth in a series that began in 1998, provides current information about the water requirements and water supplies of the Santa Clarita Valley. The report was prepared for the imported water wholesaler, Castaic Lake Water Agency (CLWA), and for the four local retail water Purveyors that serve the Valley: CLWA Santa Clarita Water Division, Los Angeles County Waterworks District 36, Newhall County Water District, and Valencia Water Company. These entities and representatives from the City of Santa Clarita and the County of Los Angeles meet as required to coordinate the management of imported water from the State Water Project (SWP) with local groundwater, now augmented by recycled water, to meet water requirements in the Valley.

This report provides information about local groundwater resources, SWP water supplies, water conservation, and recycled water. The report reviews the sufficiency and reliability of supplies in the context of existing water demand, with focus on actual conditions in 2006, and it provides a short-term outlook of water supply and demand for 2007.

ES.1 2006 Water Requirements and Supplies

In 2006, total water requirements in the Santa Clarita Valley were about 91,400 acre-feet (af), of which about 74,100 af (81 percent) were for municipal use and the remainder (17,300 af) was for agricultural and other (miscellaneous) uses, including individual domestic uses. Total demand in 2006 was about nine percent higher than in 2005, essentially identical to what was estimated in the 2005 Water Report. Water requirements in 2006 were also exactly consistent with projections in the 2005 Urban Water Management Plan (UWMP). The difference from 2005 water requirements is largely attributable to the significantly wet conditions that prevailed in 2005, which resulted in below-average water demand in that year. In other words, water requirements in 2006 reflected a return to near-average demand, consistent with projected demand in the 2005 UWMP, and not an anomalous “increase” that might be interpreted when compared to the immediately preceding year.

Total water requirements in 2006 were met by a combination of about 50,400 af from local groundwater resources (about 33,100 af for municipal and about 17,300 af for agricultural and other uses), about 40,600 af of SWP water, and about 400 af of recycled water.

Of the 50,400 af of total groundwater pumping in the Valley in 2006, about 43,000 af were pumped from the Alluvium and about 7,300 af were pumped from the underlying, deeper Saugus Formation. Alluvial pumping represented about a 5,000 af increase from 2005, and Saugus pumping was slightly higher than in 2005, by about 750 af. Neither pumping volume resulted in any notable overall change in groundwater conditions (water levels, water quality, etc.) in either aquifer system. SWP deliveries to the Purveyors increased by about 2,600 af from the previous year. Water uses and supplies in 2006 are summarized in the following Table ES-1.

Table ES-1
Santa Clarita Valley
Summary of 2006 Water Supplies and Uses
(acre-feet)

Municipal		
State Water Project		40,646
Groundwater (Total)		33,061
Alluvium	*27,189*	
Saugus	*5,872*	
Recycled Water		419
Subtotal		**74,126**
Agriculture/Miscellaneous		
State Water Project		-
Groundwater (Total)		17,312
Alluvium	*15,872*	
Saugus	*1,440*	
Subtotal		**17,312**
Total		***91,438***

In accordance with the California Urban Water Management Planning Act, the Valley-wide UWMP was updated in 2005 to extend projected water demands through 2030, and to describe the combination of local groundwater, imported water supplies from the State Water Project, local recycled water supplies, and other water supplies planned to meet those existing and projected water demands in the Valley. The 2005 UWMP describes the reliability of local groundwater resources and the adequacy of groundwater supplies to meet groundwater demand, including consideration of the impacts of perchlorate contamination on several municipal water

supply wells. The 2005 UWMP also describes the plans and ongoing work for integrated control of perchlorate migration and full restoration of perchlorate-impacted groundwater supply.[1]

Notable details about each component of water supply in the Valley, and about the water supply outlook for 2007, include the following.

ES.2 Alluvial Aquifer

The groundwater operating plan in the 2005 UWMP includes Alluvial pumping in the range of 30,000 to 40,000 acre-feet per year (afy) in average/normal years, and slightly reduced pumping (30,000 to 35,000 afy) in dry years. Pumping from the Alluvium was 43,000 af in 2006, slightly above the overall 2005 UWMP range due to high groundwater levels that allowed higher pumping in the eastern part of the basin.

On a long-term basis, continuing through 2006, there is no evidence of any historic or recent trend toward permanent water level or storage decline. In general, throughout a large part of the basin, Alluvial groundwater levels have generally remained near historic highs during the last 30 years. Higher than average precipitation in late 2004 and 2005 resulted in significant water level recovery in the eastern part of the basin, continuing the overall trend of fluctuating groundwater levels within a generally constant range over the last 30 years. These ongoing data indicate that the Alluvium remains in good operating condition and can continue to support pumping in the operating range included in the 2005 UWMP, or slightly higher, without adverse results (e.g., long-term water level decline or degradation of groundwater quality.)

Based on an integration of water quality records from multiple wells completed in the Alluvium, there have been historical fluctuations in groundwater quality, typically associated with variations in precipitation and streamflow. However, like groundwater levels, there has been no long-term trend toward groundwater quality degradation; groundwater produced from the Alluvial aquifer remains a viable municipal and agricultural water supply.

In 2002, as part of ongoing monitoring of wells for perchlorate contamination, perchlorate was detected in one Alluvial well (the SCWD Stadium Well) located near the former Whittaker-Bermite facility. The detected concentration was slightly below the Notification Level for

[1] The 2005 UWMP was challenged in a lawsuit filed in early 2006 by the California Water Impact Network and the friends of the Santa Clara River, ultimately seeking a mandate that the approval of the UWMP by CLWA and the Purveyors be invalidated. The 2005 UWMP remains valid unless affected by a future judgment or order of the court. CLWA and the Purveyors believe the lawsuit is without merit, and have been vigorously defending the plan in court.

perchlorate (6 ug/l), and the well has been inactivated for municipal water supply since the detection of perchlorate. In early 2005, perchlorate was detected in a second Alluvial well, VWC's Well Q2. Valencia's response plan for Well Q2 was to pursue permitting and installation of wellhead treatment, followed by return of the well to water supply service in October 2005. All other Alluvial wells operated by the Purveyors continue to be used for municipal water supply service; those wells near the Whittaker-Bermite property are sampled in accordance with drinking water regulations and perchlorate has not been detected. As detailed in the 2005 UWMP, the ongoing inactivation of one Alluvial well due to perchlorate contamination does not limit the Purveyors' ability to produce groundwater from the Alluvium in accordance with the groundwater operating plan in the 2005 UWMP.

The ongoing characterization and plan for control and cleanup of perchlorate in the Valley has focused on the Saugus Formation. In addition, however, on-site cleanup and control activities in 2006 included continuation of soil cleanup on one part of the Whittaker-Bermite site, and continuation of pumping and treatment in the Northern Alluvium on the Whittaker-Bermite site. Expanded pumping, with treatment, intended to effect perchlorate containment in the Northern Alluvium, is expected to be operational in 2007.

ES.3 Saugus Formation

The groundwater operating plan in the 2005 UWMP includes pumping from the Saugus in the range of 7,500 to 15,000 afy in average/normal years; it also includes planned dry-year pumping from the Saugus of 21,000 to 35,000 afy for one to three consecutive dry years. The 2005 UWMP recognizes the results of basin yield analyses in 2004 and 2005 which found that such short-term pumping can be recharged during subsequent wet/normal years to allow groundwater levels and storage to recover, as it has in historical periods.

Pumping from the Saugus Formation was about 7,300 af in 2006; on average, Saugus pumping has been about 6,700 afy since 1980. Both rates are near the lower end of the range included in the UWMP. As a result of long-term relatively low pumping from the Saugus Formation, groundwater levels in that aquifer have remained generally constant to slightly increasing over the last 35 to 40 years; those trends continued in 2006.

In 1997, ammonium perchlorate was discovered in four wells completed in the Saugus Formation in the vicinity of the former Whittaker-Bermite facility located generally toward the east, on the south side of the basin. All four of those impacted wells remain out of active supply service. In 2006, a very low level of perchlorate was detected in another Saugus municipal well

(NCWD's Well NC-13). That low level detection has been interpreted to not indicate anything new about the migration of perchlorate; however, it has also prompted additional monitoring well installation and a focused study of the Saugus Formation in that area. Results are expected to be integrated with other groundwater remediation to be submitted by the Whittaker-Bermite site owners and reviewed by the State Department of Toxic Substances Control (DTSC). All other Saugus wells owned and operated by the Purveyors are available for municipal water supply service. As part of regular operation, those wells are sampled in accordance with drinking water regulations and perchlorate has not been detected. Despite the inactivated Saugus wells, the Purveyors still have sufficient pumping capacity in other wells to meet the planned normal range of Saugus pumping in the 2005 UWMP.

Work toward the ultimate remediation of perchlorate contamination, including the restoration of impacted groundwater supply continued to progress in 2006, with focus on permitting of a jointly developed plan to "pump and treat" contaminated water from two wells to stop migration of the contaminant plume, and to deliver treated water to partially replace impacted well capacity. Environmental review of the project had been completed with adoption of a Mitigated Negative Declaration in September 2005. The Final Interim Remedial Action Plan was completed and approved by DTSC in January 2006. Construction of facilities and pipelines necessary to implement the pump and treat program and to also restore inactivated well capacity is now anticipated to be completed in 2008.

ES.4 Imported Water

CLWA's contractual Table A Amount is 95,200 af of water from the SWP. CLWA operates two water filtration and disinfection plants, with a total treatment capacity of 86 million gallons per day of capacity for subsequent distribution to the Purveyors.

CLWA's final allocation of Table A for 2006 was 100 percent, or a full 95,200 af. The total available SWP supply in 2006 was 99,105 af, including 3,905 af of 2005 carryover delivered in early 2006. CLWA deliveries were 40,646 af to the Purveyors and 20,000 af to the Rosedale-Rio Bravo Water Banking and Exchange Program.

CLWA has two groundwater banking agreements with the Semitropic Water Storage District in Kern County. In accordance with those agreements, over a ten-year period (until 2012/13), CLWA can withdraw up to 50,870 af of water that it stored in 2002 and 2003 to meet Valley demands when needed. In addition to the banking in Semitropic, CLWA finalized an agreement with the Rosedale-Rio Bravo Water Storage District in 2005, and has now banked 20,000 afy of

surplus Table A Amount in that District's Water Banking and Exchange Program in both 2005 and 2006. In accordance with the provisions of that agreement, CLWA can withdraw up to a total of 35,600 af of that water, at a rate up to 20,000 afy, to meet Valley water demands when needed. In addition, in early 2007, CLWA finalized a Water Acquisition Agreement with the Buena Vista Water Storage District (Buena Vista) and the Rosedale-Rio Bravo Water Storage District (Rosedale-Rio Bravo). Under this program, Buena Vista's high flow Kern River entitlements (and other acquired waters that may become available) are captured and recharged within the Rosedale-Rio Bravo's service area on an ongoing basis. CLWA will receive 11,000 af of these supplies annually either through exchange of Buena Vista's and Rosedale-Rio Bravo's SWP supplies or through direct delivery of water to the California Aqueduct via the Cross Valley Canal. Additionally, CLWA is entitled to 22,000 af of water that was stored in the Rosedale Rio-Bravo Water Banking and Exchange Program in 2005 and 2006 on CLWA's behalf as part of the Water Acquisition Agreement. With the addition of those supplies, CLWA now has a recoverable total of 57,600 af in the Rosedale Rio-Bravo Water Banking and Exchange Program.

Since SWP water deliveries are subject to reduction when dry conditions occur in Northern California, the UWMP includes programs, like the Semitropic and Rosedale-Rio Bravo programs, for enhancing water supply reliability during such occurrences. A capital improvement program funded by CLWA has been established to provide facilities and additional water supplies needed to firm up SWP water supplies during times of drought.

ES.5 Recycled Water

Recycled water service was initiated in July 2003 in accordance with CLWA's Draft Reclaimed Water System Master Plan (2002). The amount of recycled water used for irrigation purposes, at a golf course and in roadway median strips, was approximately 420 af in 2006. CLWA completed CEQA analysis in early 2007 of the various options for a recycled water system as outlined in the Master Plan.

ES.6 2007 Water Supply Outlook

In 2007, total water demands are expected to be on the order of 99,000 to 102,000 af, consistent with the growth rate and related water demand projections in the 2005 UWMP and reflective of notably dry conditions in early 2007. It is expected that water demands in 2007 will continue to be met with a generally similar mix of water supplies comprised of imported SWP water, local groundwater, and recycled water.

As of April 21, 2007, the allocation of water from the SWP is 60 percent of CLWA's Table A Amount, or 57,120 af. Combined with local groundwater from the two aquifer systems (42,500 af), total Flexible Storage Account (6,060 af), net carryover SWP water from 2006 (2,569 af), annual acquisition through the Buena Vista Water/Rosedale Rio-Bravo Water Acquisition Agreement (11,000 af), and recycled water (500 af), the total available water supplies for 2007 are nearly 120,000 af. As a result, CLWA and the Purveyors anticipate having more than adequate supplies to meet all water demands in 2007.

In October 2006, Watershed Enforcers, a legal project of the California Sportfishing Protection Alliance, filed a lawsuit in Alameda County Superior Court alleging that the California Department of Water Resources (DWR) was not in compliance with the State Endangered Species Act (CESA) and does not have the required State permit to "take" protected fish species in the Sacramento-San Joaquin Delta (Delta) as part of its pumping operations at the Banks Pumping Plant located near the town of Tracy. In April 2007, the court agreed with the plaintiffs and ordered a shutdown of pumping from the Delta if appropriate permits could not be obtained in 60 days. In May 2007, DWR filed an appeal of the lower court's decision, which automatically stayed that decision pending the outcome of the appeal. At the same time, DWR entered into a Memorandum of Understanding with the California Department of Fish and Game (DFG) to jointly work with the appropriate federal agencies to develop a federal biological opinion that complies with CESA. During the preparation of the new biological opinion, DWR committed itself to actions related to protecting species through the adaptive management provisions of the existing biological opinions. Upon completion of this effort, DWR plans to submit a request to DFG for a consistency determination under CESA that would allow for incidental take based on the new federal biological opinion. In terms of short-term water supply availability, CLWA does not anticipate that any of the preceding actions will cause a net reduction in delivery of imported water that would in turn result in a shortage of overall water supply to meet projected 2007 water demands.

In any given year, SWP supplies may be reduced due to dry weather conditions or regulatory factors. During such an occurrence, the remaining water demands are planned to be met by a combination of alternate supplies such as returning water from CLWA's accounts in the Semitropic Groundwater Storage Program and the Rosedale-Rio Bravo Water Banking and Exchange Program, deliveries from CLWA's flexible storage account in Castaic Lake Reservoir, local groundwater pumping, short-term water exchanges, and participation in DWR dry-year water purchase programs in accordance with the 2005 Urban Water Management Plan. CLWA has now banked excess 2002 and 2003 SWP Table A water in the Semitropic Groundwater

Storage Program; it has banked excess 2005 and 2006 SWP Table A water in the Rosedale-Rio Bravo Water Banking and Exchange Program; and it has banked water purchased in 2005 and 2006 through the Buena Vista/Rosedale-Rio Bravo Water Acquisition Agreement in the Rosedale-Rio Bravo Water Banking and Exchange Program. CLWA can draw upon its accounts as needed, pursuant to the terms of the banking agreements. The banked excess 2002 and 2003 SWP Table A water in Semitropic now represents nearly 51,000 af of recoverable water for drought water supply. The banked excess 2005 and 2006 SWP Table A water, augmented by water acquired through the Buena Vista/Rosedale-Rio Bravo Water Acquisition Agreement in 2005 and 2006, now represent a total of 57,600 af of recoverable water for drought water supply from the Rosedale-Rio Bravo Banking and Exchange Program.

Drought periods may affect available water supplies in any single year and for a duration usually not longer than three consecutive years. It is important to note that hydrologic conditions vary from region to region throughout the state. Dry conditions in Northern California affecting SWP supply may not affect local groundwater and other supplies in Southern California, and the reverse situation can also occur (as it did in 2002 and 2003). For this reason, CLWA and the Purveyors have emphasized developing water supplies that add diversity in water supply options, especially in dry years. Diversity of supply is considered a key element of reliability, giving Valley water Purveyors the ability to draw on multiple sources of supply during dry year conditions.

I. Introduction

1.1 Background

For most residents of the Santa Clarita Valley (Valley), domestic water service is provided by four retail water Purveyors. They are the Castaic Lake Water Agency's (CLWA) Santa Clarita Water Division (SCWD), Los Angeles County Waterworks District 36 (LA36), Newhall County Water District (NCWD), and Valencia Water Company (VWC). Together, the Purveyors provide water to nearly 68,000 service connections. Castaic Lake Water Agency (CLWA) contracts for State Water Project water from Castaic Lake where it is treated, filtered, and disinfected at two treatment plants before distribution to the Purveyors. Staff of these entities meet regularly to coordinate the supply of water in the Valley. Their respective service areas are shown in Figure I-1.

Water supply for a small fraction of Valley residents is provided by individual private water supply wells. The locations, construction details, annual pumpage and other information about these private wells are not currently available. CLWA has been working with private well owners to receive information about their wells for incorporation in future reports and for planning purposes. Pumping as reported herein includes an estimate of groundwater pumped from private wells; it is expected that this estimate will be refined in the future as more information about the private wells is obtained.

In addition to municipal and individual private water uses in the Valley, there remains an agricultural water demand that is predominately dependent on local groundwater for its water supply. Accordingly, ongoing agricultural water requirements and the use of local groundwater to meet those requirements are considered in analyses and reports on water supplies such as this report.

Over the last 20 years, CLWA and the Purveyors have reviewed and reported on the availability of water supplies to meet all water requirements in the Valley. Those reports have also addressed local water resources, most notably groundwater, in the region. Past studies have assessed the condition of local groundwater aquifers, their hydrogeologic characteristics, aquifer storage capacity, operational yield and recharge rate, groundwater quality and contamination, and the ongoing conjunctive use of groundwater and imported water resources.

Other efforts have included developing drought contingency plans, coordinating emergency response procedures and implementing Valley-wide conservation programs. In 1985, the Purveyors prepared the area's first Urban Water Management Plan (UWMP.) Information in the plan was coordinated among CLWA and the Purveyors to provide accurate, comprehensive and consistent water supply and demand information for long term planning purposes. In accordance with the California Urban Water Management Planning Act, the Valley-wide UWMP was most recently updated in 2005 to extend water demand projections through 2030, and to describe the combination of local groundwater, imported water supplies from the State Water Project, local recycled water supplies, and planned other water supplies to meet the existing and projected water demands in the Valley. The 2005 UWMP describes the reliability of local groundwater resources and the adequacy of groundwater supplies to meet that component of overall water supply. The 2005 UWMP also describes the impacts of perchlorate contamination on several municipal water supply wells, and the plans and ongoing work for integrated control of perchlorate migration and full restoration of perchlorate-impacted groundwater supply.[1]

1.2 Purpose and Scope of the Report

The purpose of this report, which is the ninth in a series of annual water reports that began in 1998, is to provide current information about the available water supplies and demands of the Santa Clarita Valley. CLWA and the Purveyors have prepared this series of reports in response to a request made by the Los Angeles County Board of Supervisors in 1998. Over the last few years, this series of reports has also served as an annual summary of groundwater conditions in the Valley in fulfillment of the commitment in the Santa Clarita Valley Groundwater Management Plan, adopted in 2003 to regularly report on implementation of that Plan. This report was prepared for Castaic Lake Water Agency, for CLWA's Santa Clarita Water Division, for Los Angeles County Waterworks District 36, for Newhall County Water District, and for Valencia Water Company. It continues a format for providing information regarding water uses and the availability of water supplies on an annual basis. It is intended to be a helpful resource for use by water planners and local planning agencies. This report is complemented by the more detailed UWMP for the area, which provides longer-term water supply planning over a 25-year period, and by a number of other technical reports, some of which are specifically referenced herein.

[1] The 2005 UWMP was challenged in a lawsuit filed in early 2006 by the California Water Impact Network and the friends of the Santa Clara River, ultimately seeking a mandate that the approval of the UWMP by CLWA and the Purveyors be invalidated. The 2005 UWMP remains valid unless affected by a future judgment or order of the court. CLWA and the Purveyors believe the lawsuit is without merit, and have been vigorously defending the plan in court.

1.3 Santa Clarita Valley Water Purveyors

As introduced above, four retail water Purveyors provide water service to most residents of the Santa Clarita Valley. Brief summary descriptions of those four Purveyors are as follows.

Castaic Lake Water Agency Santa Clarita Water Division has a service area that includes a portion of the City of Santa Clarita and unincorporated portions of Los Angeles County in the communities of Saugus, Canyon Country, and Newhall. Water is supplied from both groundwater and CLWA turnouts to about 27,600 service connections.

Los Angeles County Waterworks District 36 has a service area that encompasses approximately 7,635 acres in the Hasley Canyon area and the unincorporated community of Val Verde. LACWWD 36 has about 1,400 service connections. The District has traditionally obtained its full water supply from a connection to the CLWA's Castaic Conduit. In 2004 and 2005, the District supplemented its surface water supply with groundwater purchased from the Los Angeles County Peter J. Pitchess Detention Center. In 2006, however, the District returned to sole supply from CLWA.

Newhall County Water District's service area includes portions of the City of Santa Clarita and unincorporated portions of Los Angeles County in the communities of Newhall, Canyon Country, Saugus, and Castaic. NCWD supplies water from both groundwater and CLWA turnouts to approximately 9,350 service connections.

Valencia Water Company's service area serves about 29,100 service connections in a portion of the City of Santa Clarita and in the unincorporated communities of Castaic, Newhall, Saugus, Stevenson Ranch, and Valencia. VWC supplies water from both groundwater and CLWA turnouts; VWC also delivers recycled water for a small amount of non-potable use.

1.4 The Upper Santa Clara River Hydrologic Area and East Groundwater Subbasin

The Upper Santa Clara River Hydrologic Area (HA), as defined by the California Department of Water Resources (DWR), is located almost entirely in northwestern Los Angeles County. The area encompasses about 654 square miles comprised of flat valley land (about 6 percent of the total area) and hills and mountains (about 94 percent of the total area) that border the valley area. The mountains include the Santa Susana and San Gabriel Mountains to the south and the Sierra Pelona and Leibre-Sawmill Mountains to the north. Elevations range from about 800 feet on the

valley floor to about 6,500 feet in the San Gabriel Mountains. The headwaters of the Santa Clara River are at an elevation of about 3,200 feet at the divide separating this hydrologic area from the Mojave Desert.

The Santa Clara River and its tributaries flow intermittently from Lang Station westward about 35 miles to Blue Cut, just west of the Los Angeles-Ventura County line, where it forms the outlet for the Upper Santa Clara River Hydrologic Area. The principal tributaries of the River in the Santa Clarita Valley are Castaic Creek, San Francisquito Creek, Bouquet Creek, and the South Fork of the Santa Clara River. In the Santa Clarita Valley, the Santa Clara River receives treated wastewater discharge from the Saugus and Valencia Water Reclamation Plants, which are operated by the Sanitation Districts of Los Angeles County.

The Santa Clara River Valley East Groundwater Subbasin, beneath the Santa Clarita Valley in the Upper Santa Clara River HA, is the source of essentially all local groundwater used for water supply in the Santa Clarita Valley. Below Blue Cut, the Santa Clara River continues westward through Ventura County to its mouth near Oxnard. Along that route, the River traverses all or parts of six groundwater basins in Ventura County (Piru, Fillmore, Santa Paula, Oxnard Forebay, Oxnard Plain and Mound) as shown in Figure I-2.

There are two primary precipitation gages in the Santa Clarita Valley, the Newhall-Soledad 32c gage and the Newhall County Water District gage (Figure I-3). The National Climatic Data Center (NCDC) and Los Angeles County Department of Public Works (LADPW) have maintained records for the Newhall-Soledad 32c gage since 1931. Newhall County Water District has maintained records for the NCWD gage since 1979. The cumulative records from these two gages correlate very closely, with the NCWD gage recording approximately 25 percent more precipitation than the Newhall-Soledad 32c gage. This is likely due to the location of the NCWD gage, which is at the base of the mountains rimming the southern edge of the Santa Clarita Valley.

The Santa Clarita Valley is characterized as having an arid climate. Historically, intermittent periods of less-than-average precipitation have typically been followed by periods of greater-than-average precipitation in a cyclical pattern, with each wetter or drier period typically lasting from one to five years. Long-term precipitation records for the Newhall-Soledad 32c gage are illustrated in Figure I-3. The long-term average precipitation is 18.1 inches (1931-2006). Figure I-3 also shows the yearly departure from mean annual precipitation. In general, periods of less-than-average precipitation have been longer and more moderate than periods of greater-than-average precipitation. Recently, the periods from 1971 to 1976, 1984 to 1991 and 1999 to 2003

have been drier than average; the periods from 1977 to 1983 and 1992 to 1996 have been wetter than average. Wet conditions that began in late 2004 continued into early 2005. Significant storm events in January 2005 produced over 13 inches of measured precipitation, or more than 70 percent of average annual precipitation in the first month of the year. Significant storm events continued in February, resulting in nearly 17 inches of additional measured precipitation, or nearly 100 percent of average annual precipitation in February alone. In total, 2005 had about 37 inches of measured precipitation, or slightly more than 200 percent of long-term average precipitation. Those significantly wet conditions contributed to substantial groundwater recharge and decreased water demand that year. In contrast, total precipitation in 2006 was slightly less than 14 inches, or about 4 inches below the long-term average, resulting in water requirements that can be described as “normal” (as projected in the 2005 UWMP) and no dramatic changes in groundwater conditions, as described herein.

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Figure I-1
CLWA and Purveyor Service Areas

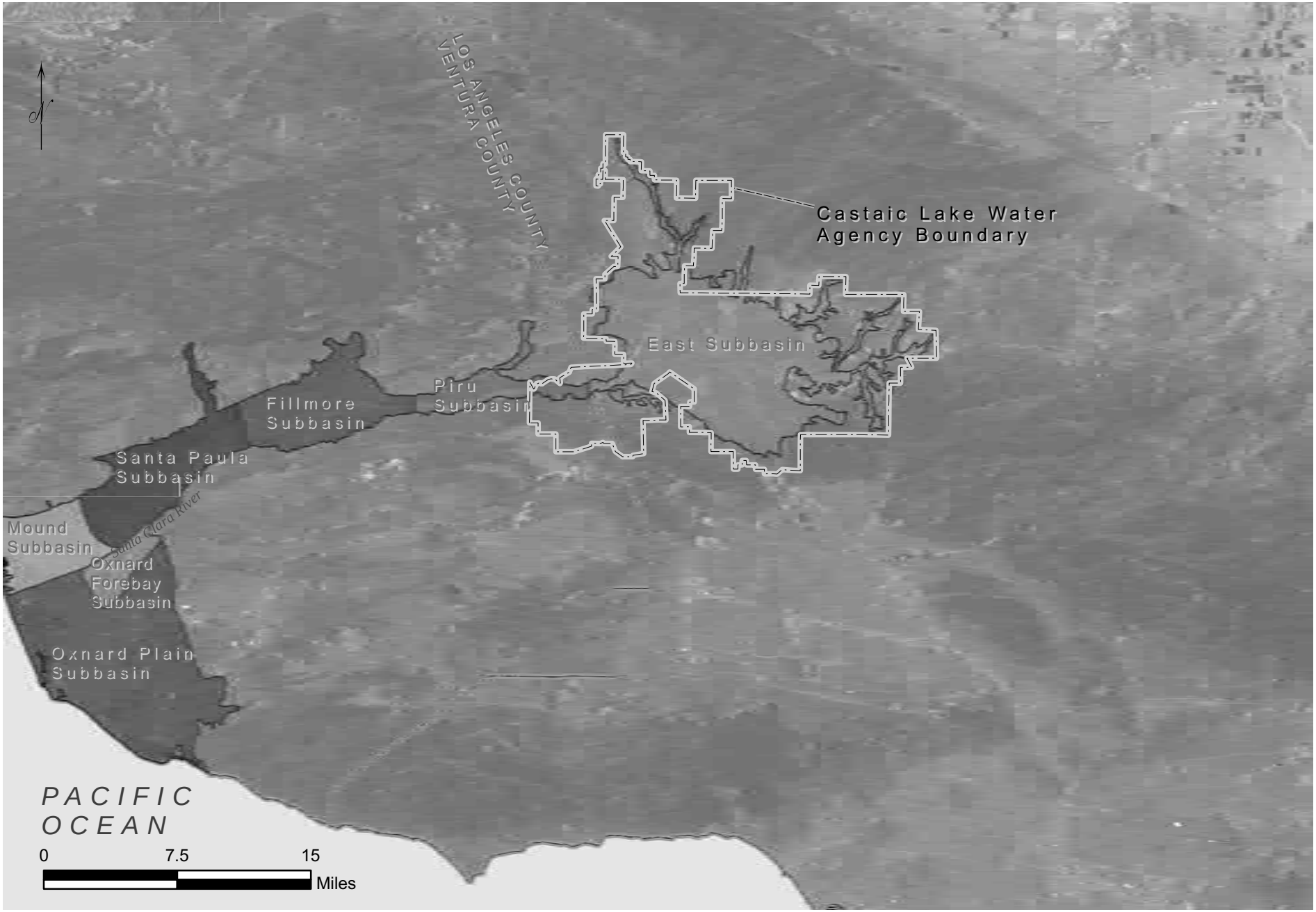

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Figure I-2
Santa Clara River Groundwater Subbasins

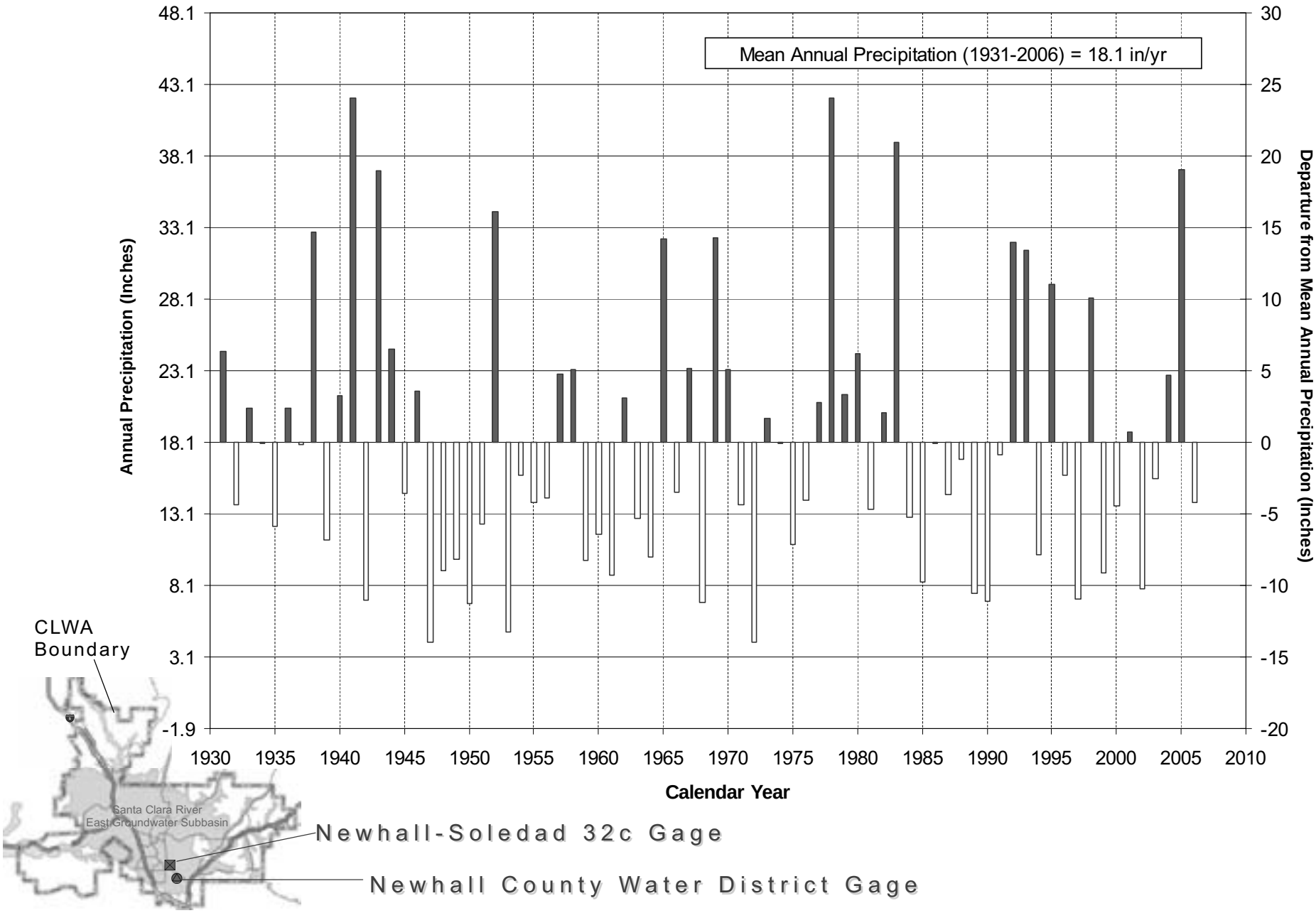

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Figure I-3
Annual Precipitation and Departure from Mean Annual Precipitation
Newhall-Soledad 32c Gage *

II. 2006 Water Requirements and Supplies

In 2006, total water use in the Santa Clarita Valley was 91,400 af, an increase of nearly 7,800 af from the previous year. Of the total water demand, 74,100 af (81 percent) was for municipal use and the remaining 17,300 af (19 percent) was for agricultural and other (miscellaneous) uses, including individual domestic uses. These total water demands were met by a combination of 50,400 af from local groundwater resources (about 33,000 af for municipal supply and about 17,300 af for agricultural and other uses), about 40,600 af of SWP water, and about 400 af of recycled water.

Compared to the previous year, total water demand in the Santa Clarita Valley increased by about nine percent in 2006. Actual water use in 2006 was essentially identical to the short-term projected water requirement of 91,500 acre-feet presented in last year's Water Report. The increase in water use in 2006 is attributed to an increase of about 1,300 municipal service connections, from 66,300 in 2005 to 67,600 in 2006, and a return to a more typical use of water for agricultural irrigation after the notable decrease in 2005 as a result of extremely wet conditions in that year. The magnitude of increased water use in 2006 was consistent with the analysis of weather impacts on water usage in the 2005 Urban Water Management Plan, and is reflected in an overall water requirement that is consistent with the projections in the 2005 UWMP. As summarized in that Plan, examination of historical water use patterns in the Valley since 1980, when State Water Project deliveries began, shows that weather variations have influenced water use by nine to ten percent of normal, or average, use. In hotter, dry years, water demands have been as much as nine percent higher than normal while in cooler, wet years, water demands have been as much as ten percent less than normal. In the immediately preceding year, 2005, extended and significantly wet conditions resulted in a water demand that was about six percent below the average projection in the 2005 UWMP. In 2006, although precipitation was slightly below average, total water requirements for all uses in the Valley were the same as both the average projections in the 2005 UWMP and the short-term projection in the 2005 Water Report.

The uses of local and imported water supplies to meet municipal water requirements since 1980, when the importation of SWP water began, are summarized in Table II-1. Water supply utilization by each individual municipal Purveyor is tabulated in Tables II-2 through II-5 for the same period of time. Notable with regard to municipal water requirements is that, through 2006, total municipal demand (74,100 af) was slightly below (by about 2,000 af) the projections in the 2005 UWMP.

Water supply utilization for all agricultural and other non-municipal uses is summarized in Table II-6 and tabulated by three categories of agricultural and other users in Table II-7. The latter category of Small Private Domestic, Irrigation and Golf Course Uses in Table II-7 includes an estimated 500 af of small private pumping from the Alluvium.

Water supply utilization for all uses in the Santa Clarita Valley, again for the period 1980 to present, is summarized in Table II-8. The trends in utilization of local groundwater and imported SWP water, complemented by the recent addition of recycled water, are graphically illustrated in Figure II-1. As can be seen by inspection of Table II-8 and Figure II-1, total water use in the Valley has nearly linearly increased since the early 1980's, with some weather-related fluctuations in certain years. The resultant increase in total water demand, since the inception of supplemental SWP importation, has been from about 37,000 acre-feet in 1980 to the mid-80,000 acre-feet per year range over the prior four years, to slightly more than 90,000 acre-feet in 2006. As can also be seen by inspection of Table II-8 and Figure II-1, most of that increase in water demand has been met with increasing importation of SWP water. Since the early 1990's, following a decade of decreased groundwater use during the initial period of SWP importation, total groundwater pumping has remained within a fairly narrow range of about 39,000 to 46,000 acre-feet per year through 2005. After the significantly wet conditions in 2005 and the resultant high groundwater levels, total local groundwater pumping increased to slightly more than 50,000 acre-feet in 2006.

Table II-1
Water Supply Utilization by Municipal Purveyors*
(Acre-Feet)

* includes CLWA-SCWD, LACWD 36, NCWD and VWC

Year	*State Water Project*	*Alluvium*	*Saugus Formation*	*Recycled Water*	**Total**
1980	1,125	16,625	4,569	-	**22,319**
1981	5,816	14,056	4,950	-	**24,822**
1982	9,659	8,684	3,569	-	**21,912**
1983	9,185	8,803	3,398	-	**21,386**
1984	10,996	12,581	3,809	-	**27,386**
1985	11,823	12,519	4,140	-	**28,482**
1986	13,759	12,418	4,975	-	**31,152**
1987	16,285	12,630	4,962	-	**33,877**
1988	19,033	12,197	6,404	-	**37,634**
1989	21,618	13,978	7,217	-	**42,813**
1990	21,613	13,151	8,302	-	**43,066**
1991	7,968	17,408	14,417	-	**39,793**
1992	13,911	16,897	10,458	-	**41,266**
1993	13,393	19,808	10,151	-	**43,352**
1994	14,389	20,068	11,531	-	**45,988**
1995	16,996	20,590	8,087	-	**45,673**
1996	18,093	24,681	7,373	-	**50,147**
1997	22,148	25,273	6,752	-	**54,173**
1998	20,254	23,898	4,706	-	**48,858**
1999	27,282	27,240	2,728	-	**57,250**
2000	32,579	25,216	3,193	-	**60,988**
2001	35,369	22,055	3,267	-	**60,691**
2002	41,768	22,097	4,360	-	**68,225**
2003	44,419	19,397	3,581	50	**67,447**
2004	47,205	18,970	5,701	420	**72,296**
2005	38,034	26,368	5,948	418	**70,768**
2006	40,646	27,189	5,872	419	**74,126**

Percent Contribution of Water Supplies

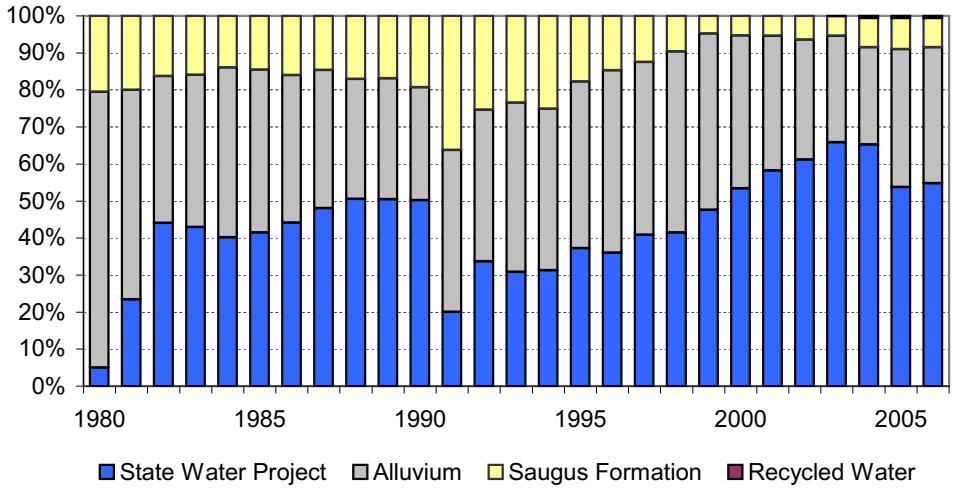


Table II-2
Water Supply Utilization by CLWA Santa Clarita Water Division
(Acre-Feet)

Year	*State Water Project*	*Alluvium*	*Saugus Formation*	**Total**
1980	1,125	9,460	0	**10,585**
1981	4,602	7,109	0	**11,711**
1982	6,454	4,091	0	**10,545**
1983	5,214	4,269	0	**9,483**
1984	6,616	6,057	0	**12,673**
1985	6,910	6,242	0	**13,152**
1986	8,366	5,409	0	**13,775**
1987	9,712	5,582	0	**15,294**
1988	11,430	5,079	63	**16,572**
1989	12,790	5,785	0	**18,575**
1990	12,480	5,983	40	**18,503**
1991	6,158	5,593	4,781	**16,532**
1992	6,350	8,288	2,913	**17,551**
1993	3,429	12,016	2,901	**18,346**
1994	5,052	10,996	3,863	**19,911**
1995	7,955	10,217	1,726	**19,898**
1996	9,385	10,445	2,176	**22,006**
1997	10,120	11,268	1,068	**22,456**
1998	8,893	11,426	0	**20,319**
1999	10,772	13,741	0	**24,513**
2000	13,751	11,529	0	**25,280**
2001	15,648	9,896	0	**25,544**
2002	18,921	9,513	0	**28,434**
2003	20,668	6,424	0	**27,092**
2004	22,045	7,146	0	**29,191**
2005	16,513	12,408	0	**28,921**
2006	17,146	13,156	0	**30,302**

Percent Contribution of Water Supplies

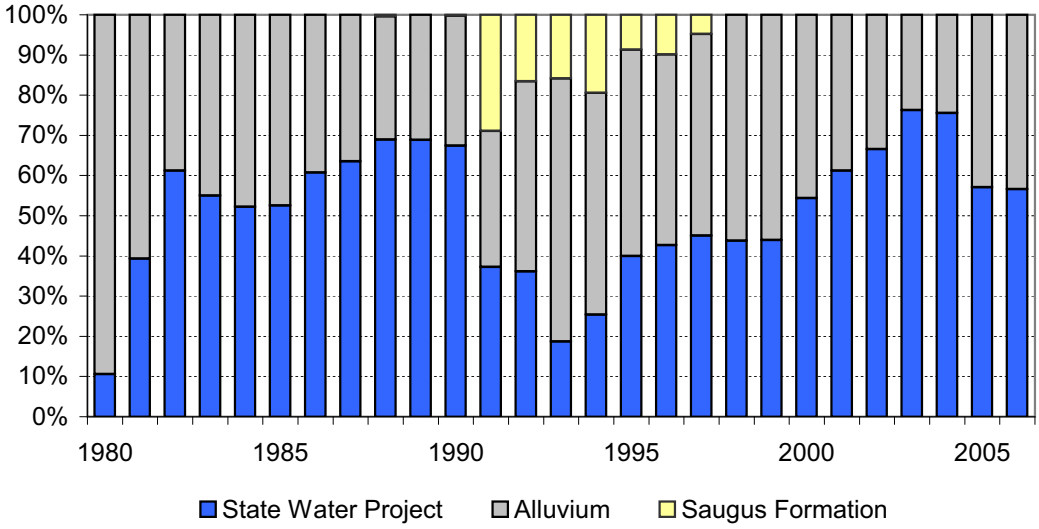


Table II-3
Water Supply Utilization by Los Angeles County Waterworks District 36
(Acre-Feet)

Year	*State Water Project*	*Alluvium*	*Saugus Formation*	**Total**
1980	0	-	-	**0**
1981	0	-	-	**0**
1982	145	-	-	**145**
1983	207	-	-	**207**
1984	240	-	-	**240**
1985	272	-	-	**272**
1986	342	-	-	**342**
1987	361	-	-	**361**
1988	434	-	-	**434**
1989	457	-	-	**457**
1990	513	-	-	**513**
1991	435	-	-	**435**
1992	421	-	-	**421**
1993	465	-	-	**465**
1994	453	-	-	**453**
1995	477	-	-	**477**
1996	533	-	-	**533**
1997	785	-	-	**785**
1998	578	-	-	**578**
1999	654	-	-	**654**
2000	800	-	-	**800**
2001	907	-	-	**907**
2002	1,069	-	-	**1,069**
2003	1,175	-	-	**1,175**
2004	854	380	-	**1,234**
2005	857	343	-	**1,200**
2006	1,289	-	-	**1,289**

Groundwater purchased from Los Angeles County Honor Farm

Percent Contribution of Water Supplies

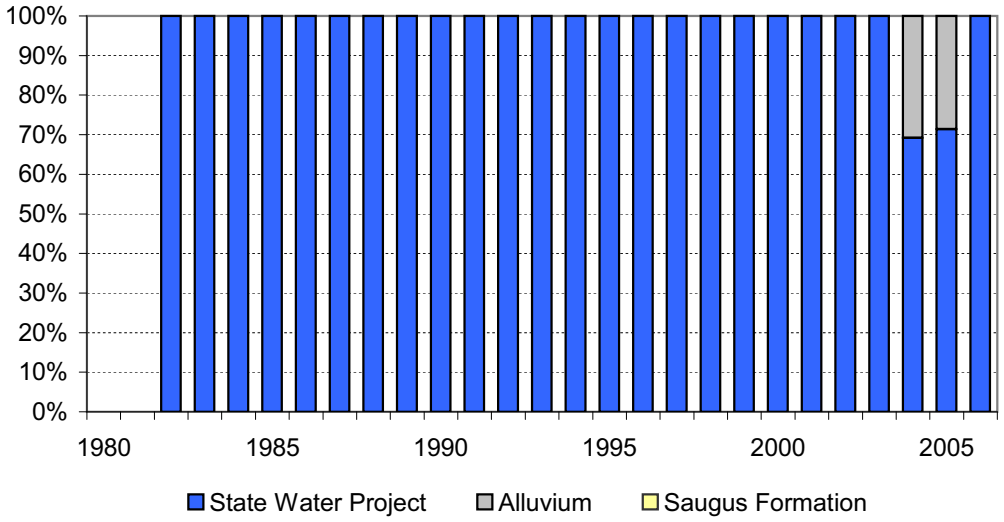


Table II-4
Water Supply Utilization by Newhall County Water District
(Acre-Feet)

Year	*State Water Project*	*Alluvium*	*Saugus Formation*	**Total**
1980	0	1,170	2,363	**3,533**
1981	0	1,350	2,621	**3,971**
1982	0	1,178	2,672	**3,850**
1983	0	1,147	2,787	**3,934**
1984	0	1,549	2,955	**4,504**
1985	0	1,644	3,255	**4,899**
1986	0	1,842	3,548	**5,390**
1987	22	2,127	3,657	**5,806**
1988	142	2,283	4,041	**6,466**
1989	428	2,367	4,688	**7,483**
1990	796	1,936	4,746	**7,478**
1991	675	1,864	4,994	**7,533**
1992	802	1,994	5,160	**7,956**
1993	1,075	1,977	5,068	**8,120**
1994	906	2,225	5,103	**8,234**
1995	1,305	1,675	4,775	**7,755**
1996	1,213	1,803	4,871	**7,887**
1997	1,324	2,309	5,168	**8,801**
1998	1,769	1,761	4,557	**8,087**
1999	5,050	1,676	2,622	**9,348**
2000	6,024	1,508	2,186	**9,718**
2001	5,452	1,641	2,432	**9,525**
2002	5,986	981	3,395	**10,362**
2003	6,572	1,266	2,513	**10,351**
2004	5,896	1,582	3,739	**11,217**
2005	5,932	1,389	3,435	**10,756**
2006	5,898	2,149	3,423	**11,470**

Percent Contribution of Water Supplies

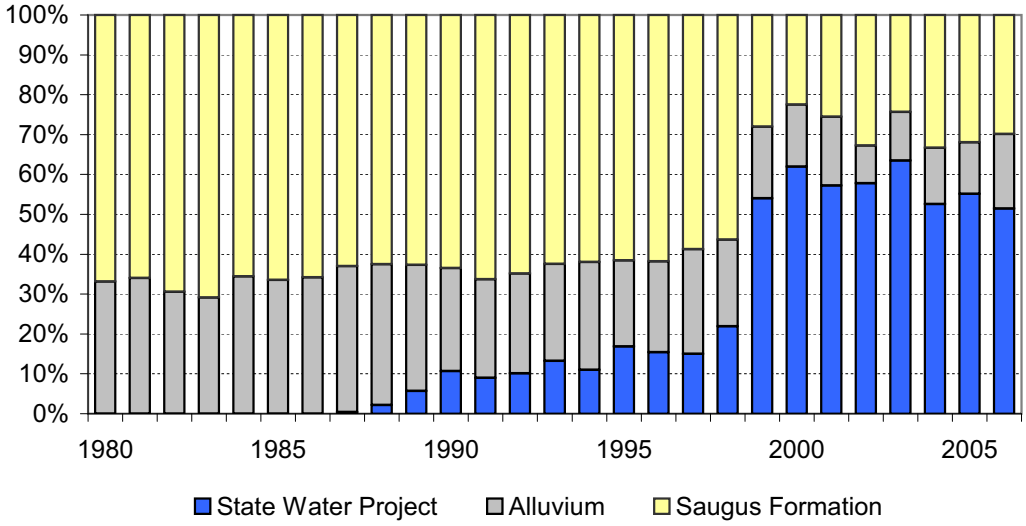


Table II-5
Water Supply Utilization by Valencia Water Company
(Acre-Feet)

Year	*State Water Project*	*Alluvium*	*Saugus Formation*	*Recycled Water*	**Total**
1980	0	5,995	2,206	-	**8,201**
1981	1,214	5,597	2,329	-	**9,140**
1982	3,060	3,415	897	-	**7,372**
1983	3,764	3,387	611	-	**7,762**
1984	4,140	4,975	854	-	**9,969**
1985	4,641	4,633	885	-	**10,159**
1986	5,051	5,167	1,427	-	**11,645**
1987	6,190	4,921	1,305	-	**12,416**
1988	7,027	4,835	2,300	-	**14,162**
1989	7,943	5,826	2,529	-	**16,298**
1990	7,824	5,232	3,516	-	**16,572**
1991	700	9,951	4,642	-	**15,293**
1992	6,338	6,615	2,385	-	**15,338**
1993	8,424	5,815	2,182	-	**16,421**
1994	7,978	6,847	2,565	-	**17,390**
1995	7,259	8,698	1,586	-	**17,543**
1996	6,962	12,433	326	-	**19,721**
1997	9,919	11,696	516	-	**22,131**
1998	9,014	10,711	149	-	**19,874**
1999	10,806	11,823	106	-	**22,735**
2000	12,004	12,179	1,007	-	**25,190**
2001	13,362	10,518	835	-	**24,715**
2002	15,792	11,603	965	-	**28,360**
2003	16,004	11,707	1,068	50	**28,829**
2004	18,410	9,862	1,962	420	**30,654**
2005	14,732	12,228	2,513	418	**29,891**
2006	16,313	11,884	2,449	419	**31,065**

Percent Contribution of Water Supplies

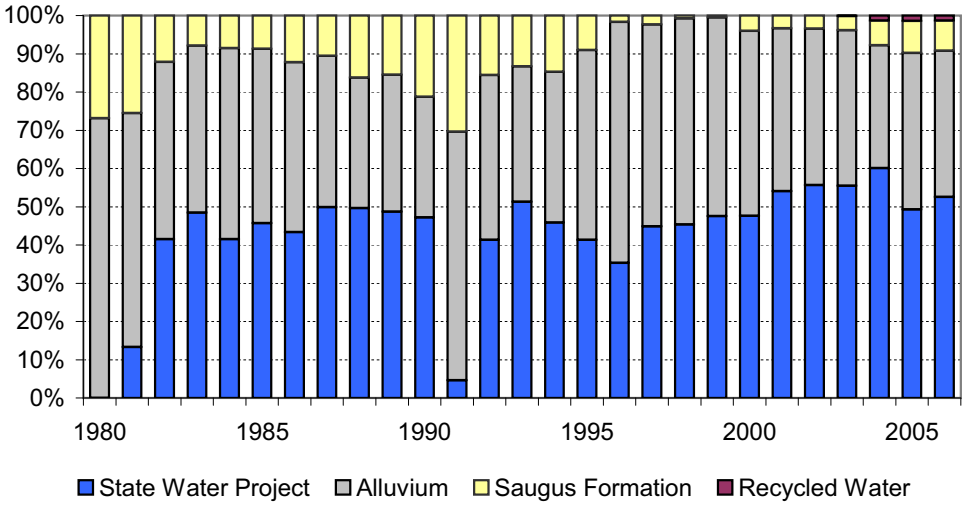


Table II-6
Water Supply Utilization for Agricultural and Other Uses
(Acre-Feet)

Year	*State Water Project*	*Alluvium*	*Saugus Formation*	**Total**
1980	0	14,831	20	**14,851**
1981	0	16,737	20	**16,757**
1982	0	13,184	521	**13,705**
1983	0	11,483	454	**11,937**
1984	0	14,737	640	**15,377**
1985	0	12,828	575	**13,403**
1986	0	11,787	510	**12,297**
1987	0	10,012	599	**10,611**
1988	0	9,451	524	**9,975**
1989	0	9,743	542	**10,285**
1990	0	10,725	559	**11,284**
1991	0	9,779	500	**10,279**
1992	987	10,694	466	**12,147**
1993	443	10,318	459	**11,220**
1994	311	13,065	494	**13,870**
1995	6	13,874	473	**14,353**
1996	780	13,757	813	**15,350**
1997	1,067	14,326	993	**16,386**
1998	12	12,750	849	**13,611**
1999	20	16,166	988	**17,174**
2000	3	14,721	887	**15,611**
2001	0	15,489	873	**16,362**
2002	0	16,179	800	**16,979**
2003	0	14,203	626	**14,829**
2004	0	14,787	803	**15,590**
2005	0	12,280	505	**12,785**
2006	0	15,872	1,440	**17,312**

Percent Contribution of Water Supplies

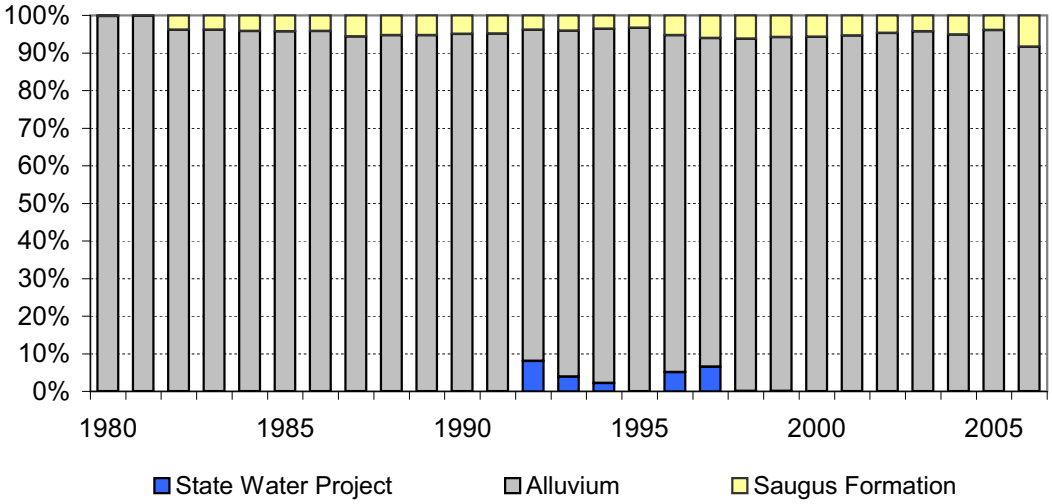


Table II-7
Individual Water Supply Utilization by Agricultural and Other Users
(Acre-Feet)

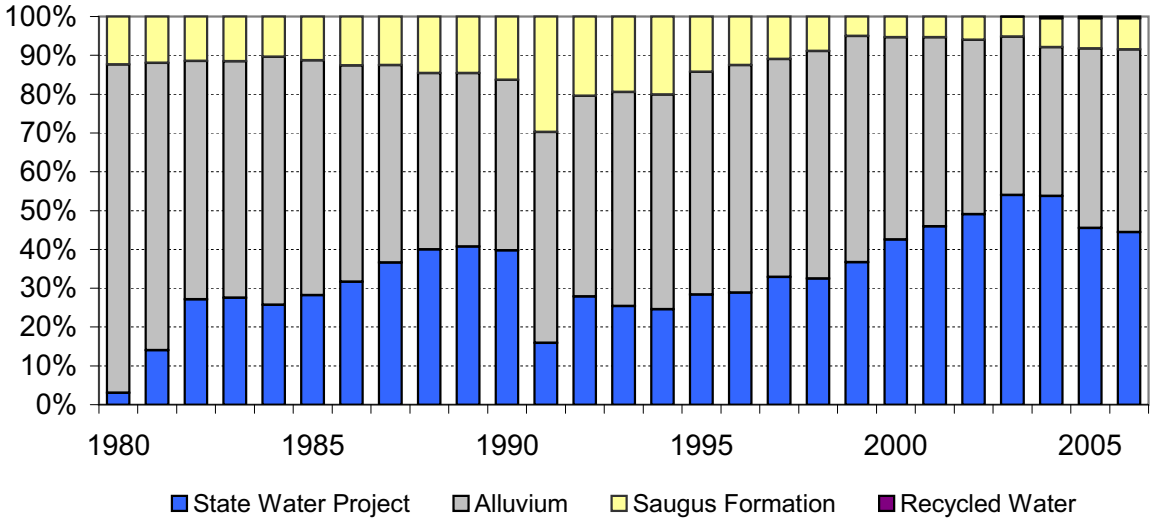
	Newhall Land and Farming			***Los Angeles County Honor Farm***			***Small Private Domestic, Irrigation and Golf Courses Uses***		
Year	*Alluvium*	*Saugus Formation*	**Total**	*Alluvium*	*State Water Project*	**Total**	*Alluvium* [1]	*Saugus Formation* [2]	**Total**
1980	11,331	20	**11,351**	3,000	0	**3,000**	500	0	**500**
1981	13,237	20	**13,257**	3,000	0	**3,000**	500	0	**500**
1982	9,684	20	**9,704**	3,000	0	**3,000**	500	501	**1,001**
1983	7,983	20	**8,003**	3,000	0	**3,000**	500	434	**934**
1984	11,237	20	**11,257**	3,000	0	**3,000**	500	620	**1,120**
1985	9,328	20	**9,348**	3,000	0	**3,000**	500	555	**1,055**
1986	8,287	20	**8,307**	3,000	0	**3,000**	500	490	**990**
1987	6,512	20	**6,532**	3,000	0	**3,000**	500	579	**1,079**
1988	5,951	20	**5,971**	3,000	0	**3,000**	500	504	**1,004**
1989	6,243	20	**6,263**	3,000	0	**3,000**	500	522	**1,022**
1990	8,225	20	**8,245**	2,000	0	**2,000**	500	539	**1,039**
1991	7,039	20	**7,059**	2,240	0	**2,240**	500	480	**980**
1992	8,938	20	**8,958**	1,256	987	**2,243**	500	446	**946**
1993	8,020	20	**8,040**	1,798	443	**2,241**	500	439	**939**
1994	10,606	20	**10,626**	1,959	311	**2,270**	500	474	**974**
1995	11,174	20	**11,194**	2,200	6	**2,206**	500	453	**953**
1996	12,020	266	**12,286**	1,237	780	**2,017**	500	547	**1,047**
1997	12,826	445	**13,271**	1,000	1,067	**2,067**	500	548	**1,048**
1998	10,250	426	**10,676**	2,000	12	**2,012**	500	423	**923**
1999	13,824	479	**14,303**	1,842	20	**1,862**	500	509	**1,009**
2000	11,857	374	**12,231**	1,644	3	**1,647**	1,220	513	**1,733**
2001	12,661	300	**12,961**	1,604	0	**1,604**	1,224	573	**1,797**
2002	13,514	211	**13,725**	1,602	0	**1,602**	1,063	589	**1,652**
2003	10,999	122	**11,121**	2,273	0	**2,273**	931	504	**1,435**
2004	10,991	268	**11,259**	2,725	0	**2,725**	1,071	535	**1,606**
2005	8,648	6	**8,654**	2,499	0	**2,499**	1,133	499	**1,632**
2006	11,477	934	**12,411**	3,026	0	**3,026**	1,369	506	**1,875**

1. Robinson Ranch Golf Course irrigation and estimated private pumping.
2. Valencia Country Club and Vista Valencia Golf Course irrigation.

Table II-8
Total Water Supply Utilization for Municipal, Agricultural and Other Uses
(Acre-Feet)

Year	*State Water Project*	*Alluvium*	*Saugus Formation*	*Recycled Water*	**Total**
1980	1,125	31,456	4,589	-	**37,170**
1981	5,816	30,793	4,970	-	**41,579**
1982	9,659	21,868	4,090	-	**35,617**
1983	9,185	20,286	3,852	-	**33,323**
1984	10,996	27,318	4,449	-	**42,763**
1985	11,823	25,347	4,715	-	**41,885**
1986	13,759	24,205	5,485	-	**43,449**
1987	16,285	22,642	5,561	-	**44,488**
1988	19,033	21,648	6,928	-	**47,609**
1989	21,618	23,721	7,759	-	**53,098**
1990	21,613	23,876	8,861	-	**54,350**
1991	7,968	27,187	14,917	-	**50,072**
1992	14,898	27,591	10,924	-	**53,413**
1993	13,836	30,126	10,610	-	**54,572**
1994	14,700	33,133	12,025	-	**59,858**
1995	17,002	34,464	8,560	-	**60,026**
1996	18,873	38,438	8,186	-	**65,497**
1997	23,215	39,599	7,745	-	**70,559**
1998	20,266	36,648	5,555	-	**62,469**
1999	27,302	43,406	3,716	-	**74,424**
2000	32,582	39,937	4,080	-	**76,599**
2001	35,369	37,544	4,140	-	**77,053**
2002	41,768	38,276	5,160	-	**85,204**
2003	44,419	33,599	4,207	50	**82,276**
2004	47,205	33,757	6,503	420	**87,885**
2005	38,034	38,648	6,453	418	**83,553**
2006	40,646	43,061	7,312	419	**91,438**

Percent Contribution of Water Supplies



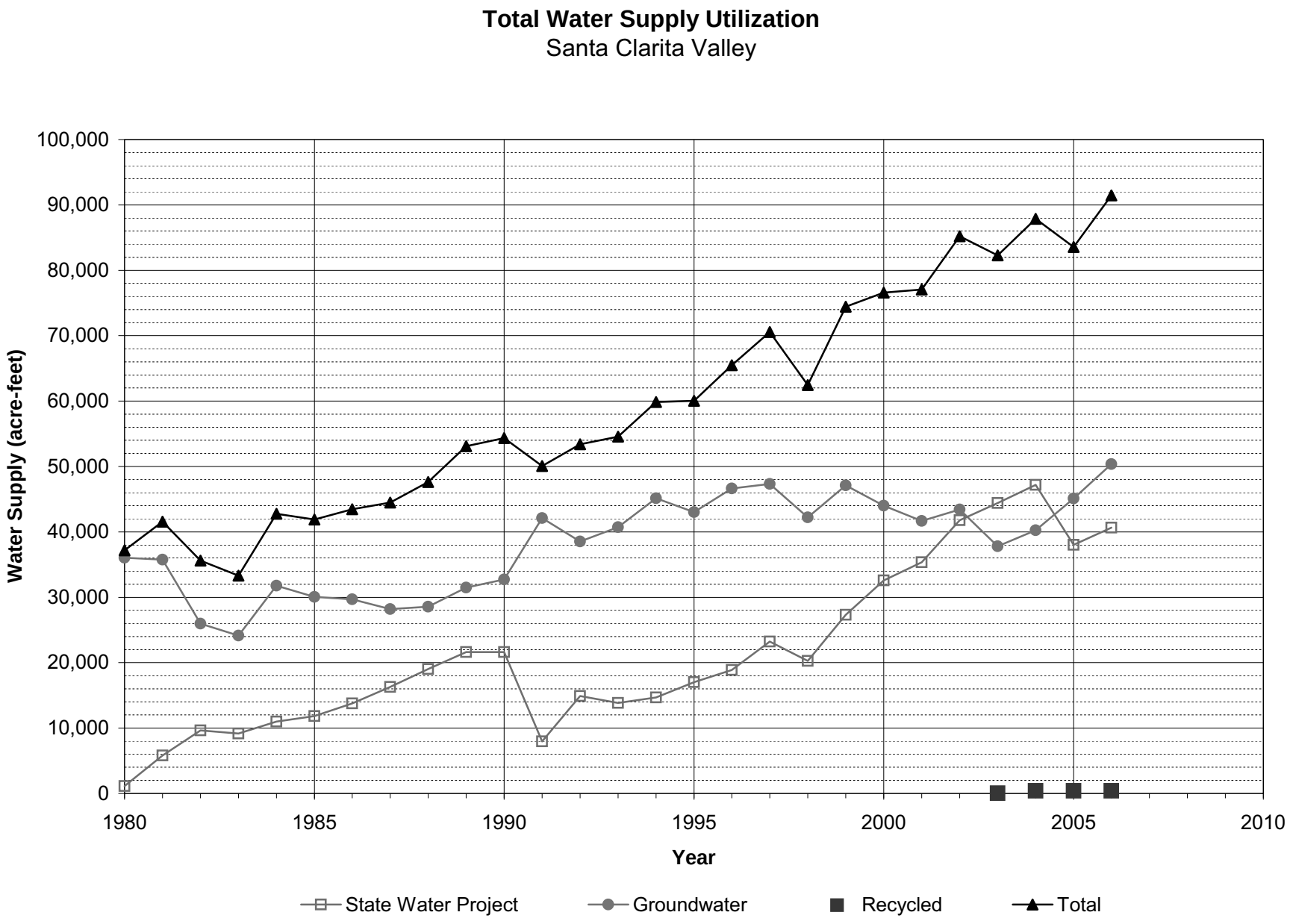

Total Water Supply Utilization
Santa Clarita Valley
Water Supply (acre-feet)
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
1980
1985
1990
1995
2000
2005
2010
Year
State Water Project
Groundwater
Recycled
Total

Figure II-1

III. Water Supplies

Prior to 1980, local groundwater extracted from the Alluvium and the Saugus Formation was the sole source of water supply in the Santa Clarita Valley. Since 1980, local groundwater supplies have been supplemented with imported SWP water supplies. Those water supplies were further augmented by the initiation of deliveries from CLWA's recycled water program in 2003. This section describes the groundwater resources of the Santa Clarita Valley, SWP water supplies, and CLWA's recycled water program.

3.1 Groundwater Basin Yield

The groundwater basin generally beneath the Santa Clarita Valley, identified in the State Department of Water Resources' Bulletin 118 as the Santa Clara River Valley Groundwater Basin, East Subbasin (Basin No. 4-4.07), is comprised of two aquifer systems. The Alluvium generally underlies the Santa Clara River and its several tributaries, and the Saugus Formation underlies practically the entire Upper Santa Clara River area. The mapped extent of the Santa Clara River Valley East Subbasin in DWR Bulletin 118 and its relationship to the extent of the CLWA service area are illustrated in Figure III-1. The subbasin boundary approximately coincides with the outer extent of the Alluvium and Saugus Formation.

A 2001 Update Report on both the Alluvium and Saugus Formation Aquifers (Slade, 2002), which updated analyses and interpretation of hydrogeologic conditions from earlier reports (Slade, 1986 and 1988), included extensive detail on major aspects of the groundwater basin. Notable parts of the Update Report relative to groundwater supply included:

- Analysis of historical groundwater levels and production indicates that there have been no conditions that would be illustrative of groundwater overdraft;

- Utilization of operational yield (as opposed to perennial yield) as a basis for managing groundwater production would be more applicable in this basin to reflect fluctuating utilization of groundwater in conjunction with imported SWP water;

- Operational yield of the Alluvium would typically be 30,000 to 40,000 afy for wet and normal rainfall years, with an expected reduction into the range of 30,000 to 35,000 afy in dry years;

- Operational yield of the Saugus Formation would typically be in the range of 7,500 to 15,000 afy on a long-term basis, with possible short-term increases during dry periods into a range of 15,000 to 25,000 afy, and to 35,000 afy if dry conditions continue.

Following on the 2001 Update Report, the groundwater component of overall water supply in the Valley derives from a groundwater operating plan to meet water requirements (municipal, agricultural, small domestic) while maintaining the basin in a sustainable condition (i.e., no long-term depletion of groundwater or interrelated surface water). This operating plan also addresses groundwater contamination issues in the basin, all consistent with the adopted Groundwater Management Plan. The groundwater operating plan is based on the concept that pumping can vary from year to year to generally rely on increased groundwater use in dry periods and increased recharge during wet periods, and to collectively assure that the groundwater basin is adequately replenished through various wet/dry cycles.

The groundwater operating plan, summarized in Table III-1, is as follows:

Alluvium – Pumping from the Alluvial Aquifer in a given year is related to local hydrologic conditions in the eastern Santa Clara River watershed. Pumping is expected to typically range between 30,000 and 40,000 afy during normal and above-normal rainfall years. Due to hydrogeologic constraints in the eastern part of the Basin, pumping is expected to be typically reduced to between 30,000 and 35,000 afy during locally dry years.

Saugus Formation – Pumping from the Saugus Formation in a given year is related to the availability of other water supplies, particularly from the SWP. During average-year conditions within the SWP system, Saugus pumping is expected to typically range between 7,500 and 15,000 afy. Planned dry-year pumping from the Saugus Formation is expected to range between 15,000 and 25,000 afy during a drought year and can increase to between 21,000 and 25,000 afy if SWP deliveries are reduced for two consecutive years, and between 21,000 and 35,000 afy if SWP deliveries are reduced for three consecutive years. Such high pumping is expected to typically be followed by periods of reduced (average-year) pumping, at rates between 7,500 and 15,000 afy, to further enhance the effectiveness of natural recharge processes that would recover water levels and groundwater storage volumes after the higher pumping during dry years.

Table III-1
Groundwater Operating Plan for the Santa Clarita Valley

Aquifer	Groundwater Production (af)			
	Normal Years	**Dry Year 1**	**Dry Year 2**	**Dry Year 3**
Alluvium	30,000 to 40,000	30,000 to 35,000	30,000 to 35,000	30,000 to 35,000
Saugus	7,500 to 15,000	15,000 to 25,000	21,000 to 25,000	21,000 to 35,000
Total	**37,500 to 55,000**	**45,000 to 60,000**	**51,000 to 60,000**	**51,000 to 70,000**

In 2004, as part of analyzing the restoration of perchlorate-impacted groundwater supply in the Valley, a numerical groundwater flow model was developed and calibrated for use in analyzing the response of the groundwater basin to long-term operation at the operational yields noted above, with focus on perchlorate extraction and the control of perchlorate migration in the basin. That groundwater flow model was then utilized in 2005 to specifically analyze the sustainability of groundwater supplies in both the Alluvium and the Saugus Formation through a long-term (78 year) hydrologic period that was selected to examine groundwater basin response to variations in pumping in accordance with the operating plan. Resultant projections of groundwater levels, groundwater storage, and surface water flows showed the basin to respond in a long-term sustainable manner, with no chronic depletion of groundwater levels, storage, or stream flows. The analysis of groundwater sustainability was summarized in a Basin Yield Report (CH2M Hill and LSCE, 2005), which included the following findings:

- The groundwater basin has historically been, and continues to be, in good operating condition and not in overdraft conditions, as indicated by historical data.

- The groundwater plan is sustainable over varying hydrologic conditions, because it is feasible to intermittently exceed a long-term average yield for one or more years without creating long-term adverse impacts to the groundwater system and the Santa Clara River.

- The groundwater operating plan for the Alluvium and the Saugus Formation can be used for long-term water supply planning purposes. In particular, although increased pumping from the Saugus Formation during dry periods can be expected to cause short-term declines in groundwater levels, it is not projected to cause permanent declines in groundwater discharges or streamflow. Saugus groundwater levels can be expected to recover to pre-drought conditions when pumping is reduced in subsequent wet to normal years.

- The strategy around which the groundwater operating plan was designed (maximizing the use of Alluvial Aquifer and imported water during years of normal or above-normal availability of these supplies, while limiting the use of the Saugus Formation during these periods, then temporarily increasing Saugus pumping during years when SWP supplies are significantly reduced because of drought conditions) is viable on a long-term basis.

- The historical observations of basin conditions and the model simulations together support the historical and ongoing confidence that groundwater can continue to be a sustainable source of water supply under the groundwater operating plan.

3.2 Alluvium – General

The spatial extent of the aquifers used for groundwater supply in the Valley, the Alluvium and the Saugus Formation, are illustrated in Figure III-1. Geologic descriptions and hydrogeologic details related to both aquifers are included in several technical reports including Slade (1986, 1988 & 2002), CH2M Hill (2005) and LSCE (2005), and in the 2005 Urban Water Management Plan.

Consistent with the 2001 Update Report (Slade), the 2005 Basin Yield Report (CH2M Hill and LSCE), and the 2005 UWMP, the management practice of the Purveyors continues to be to rely on groundwater from the Alluvium for part of the overall municipal water supply, whereby total pumping from the Alluvium (by municipal, agricultural, and small private pumpers) is in accordance with the groundwater operating plan, 30,000 to 40,000 afy in wet and normal years, with possible reduction to 30,000 to 35,000 afy in dry years. Such operation will maximize use of the Alluvium because of the aquifer's ability to store and produce good quality water on a sustainable basis, and because the Alluvium is capable of rapid recovery of groundwater storage in wet periods. As with many groundwater basins, it is possible to intermittently exceed a long-term average yield for one or more years without long-term adverse effects. Higher pumping for short periods may temporarily lower groundwater storage and related water levels, as has been the case in the Alluvium several times since the 1930's. However, subsequent decreases in pumping limit the amount of water level decline. Normal to wet-period recharge results in a rapid return of groundwater levels to historic highs. Historical groundwater data collected from the Alluvium over numerous hydrologic cycles continue to provide assurance that groundwater elevations, if locally lowered during dry periods, recover in subsequent average or wet years. Such water level response to rainfall is a significant characteristic of permeable, porous, alluvial aquifer systems that occur within large watersheds. In light of these historical observations,

complemented by the long-term sustainability analysis using the numerical groundwater flow model, there is ongoing confidence that groundwater will continue to be a sustainable source of water supply at the rates of pumping described in the Basin Yield Report, now incorporated in the 2005 UWMP.

Long-term adverse impacts to the Alluvium could occur if the amount of water extracted from the aquifer were to exceed the amount of water that recharges the aquifer over an extended period. However, the quantity and quality of water in the Alluvium and all significant pumping from the Alluvium are routinely monitored, and no long-term adverse impacts have ever been evident. Ultimately, the Purveyors have identified cooperative measures to be taken, if needed, to ensure sustained use of the aquifer. Such measures include but are not limited to the continuation of conjunctive use of imported SWP surface water with local groundwater, artificial recharge of the aquifer with local runoff or other surface water supplies, financial incentives discouraging extractions above a selected limit, expanded use of other water supplies such as recycled water, and expanded implementation of demand-side management, including conservation.

3.2.1 Alluvium – Historical and Current Conditions

Total pumping from the Alluvium in 2006 was about 43,000 af, an increase of about 4,300 af from the preceding year. Total Alluvium pumping was thus slightly above the groundwater operating plan range. Of the total Alluvial pumpage in 2006, about 27,200 af (63 percent) was for municipal water supply, and the balance, about 15,800 af (37 percent), was for agriculture and other smaller uses, including individual domestic uses. Most of the increased pumping from the Alluvium in 2006, when compared to the preceding year, was attributable to an increase in pumping for agricultural irrigation. In a longer-term context, there has been a change in municipal/agricultural pumping distribution since SWP deliveries began in 1980, toward a slightly higher fraction for municipal water supply (from about 50 percent to more than 60 percent of Alluvial pumpage), which reflects the general land use changes in the area. Ultimately, on a long-term average basis since the importation of SWP water, total Alluvial pumping has been almost 31,500 afy, which is at the lower end of the range of operational yield of the Alluvium. The overall historic record of Alluvial pumping is illustrated in Figure III-2.

Groundwater levels in various parts of the basin have historically exhibited different responses to both pumpage and climatic fluctuations. During the last 20 to 30 years, depending on location, Alluvial groundwater levels have remained nearly constant (generally toward the western end of the basin), or have fluctuated from near the ground surface when the basin is full, to as much as

100 feet lower during intermittent dry periods of reduced recharge (generally toward the eastern end of the basin). For illustration of the various groundwater level conditions, the Alluvial wells have been grouped into areas with similar groundwater level patterns as illustrated in Figure III-3. Figures III-4 and III-5 present historical groundwater levels organized into hydrograph form (groundwater elevation vs. time) for four areas throughout the basin. The other areas shown in Figure III-3 exhibit groundwater level responses that are similar to those illustrated in the four areas.

The ‘Mint Canyon’ area, located at the far eastern end of the groundwater basin, and the nearby ‘Above Saugus WRP’ and ‘Bouquet Canyon’ areas generally exhibit similar groundwater level responses. Those parts of the Alluvium have historically experienced a number of alternating wet and dry hydrologic conditions (Figure III-4) during which groundwater level declines have been followed by returns to historic highs. When water levels are low, well yields and pumping capacities in this area can be impacted. The affected Purveyors typically respond by increasing use of Saugus Formation and imported (SWP) supplies, as shown in Table II-8. The Purveyors also shift a fraction of the Alluvial pumping that would normally be supplied by ‘Mint Canyon’ area wells to areas further west, where well yields and pumping capacities remain fairly constant because of smaller groundwater level fluctuations. As shown in Figure III-6, the Purveyors decreased total Alluvial pumping from the ‘Mint Canyon’ area steadily from 2000 through 2003, and correspondingly increased pumping in the ‘Below Saugus WRP’ and ‘Below Valencia WRP’ areas. In spite of a continued period of below-average precipitation from 1999 to 2003, that progressive decrease in pumping resulted in a cessation of groundwater level decline in the ‘Mint Canyon’ area in 2002 and 2003. Subsequently, wet conditions in late 2004, continuing into 2005, resulted in full recovery of groundwater storage. With such high groundwater levels, pumping in the ‘Mint Canyon’ area was increased in 2005 and further increased in 2006, with no significant change in groundwater levels in 2005 and a slight decrease in 2006.

The ‘Below Saugus WRP’ area (Figure III-4), along the Santa Clara River immediately downstream of the Saugus Water Reclamation Plant, and the ‘San Francisquito Canyon’ area generally exhibit similar groundwater levels. In this middle part of the basin, historical groundwater levels were lower in the 1950's and 60's than current levels. Groundwater levels in this area notably recovered as pumping declined through the 1960's and 1970's. They have subsequently sustained generally high levels for much of the last 30 years, with three dry-period exceptions: mid-1970's, late 1980's to early 1990's, and the late 1990’s to early 2000’s. Recoveries to previous high groundwater levels followed both of the short dry-period declines in the 1970's and 1990's. Most recently, groundwater levels recovered significantly following a

wetter-than-average year in 2004 and significantly wet 2005. In 2006, groundwater levels remained largely unchanged in this area.

The ‘Castaic Valley’ area is located along Castaic Creek below Castaic Lake. In that area, groundwater levels have remained fairly constant, with slight responses to climatic and other fluctuations, since the 1950’s (Figure III-5). Small changes in groundwater levels in 2006 were consistent with other short-term historical fluctuations. The long-term, generally constant trend remained through 2006.

The ‘Below Valencia WRP’ area is located along the Santa Clara River downstream of the Valencia Water Reclamation Plant, where discharges of treated effluent from the Valencia WRP to the Santa Clara River contribute to groundwater recharge. Groundwater levels in this area exhibit slight, if any, response to climatic fluctuations, and have remained fairly constant since the 1950’s despite, over the last 20 years, a notable increase in pumping that continued through 2006 in that area (Figure III-5 and III-6).

In summary, depending on the period of available data, all the history of groundwater levels in the Alluvium shows the same general picture: recent (last 30 years) groundwater levels have exhibited historic highs; in some locations, there are intermittent dry-period declines (resulting from use of some groundwater from storage) followed by wet-period recoveries (and associated refilling of storage space). On a long-term basis, whether over the last 27 years since importation of supplemental SWP water, or over the last 40 to 50 years (since the 1950's - 60's), the Alluvium shows no signs of water level-related overdraft, i.e., no trend toward decreasing water levels and storage. Consequently, pumping from the Alluvium has been and continues to be sustainable, well within the operational yield of that aquifer on a long-term average basis, and also within the operating yield in almost every individual year.

3.3 Saugus Formation – General

Saugus wells operated by the Purveyors are located in the southern portion of the basin south of the Santa Clara River (Figure III-7). Consistent with the 2001 Update Report (Slade) and the 2005 Basin Yield Report (CH2M Hill and LSCE), the management practice of the Purveyors is to utilize the Saugus in accordance with the groundwater operating plan, in the range of 7,500 to 15,000 afy in average/normal years, and planned dry-year pumping of 15,000 to 35,000 afy for one to three consecutive dry years, when shortages to CLWA’s SWP water supplies could occur. Such high pumping would be followed by periods of lower pumping (7,500 to 15,000 afy in average/normal years as noted above) in order to allow recharge to recover water levels and

storage in the Saugus. Maintaining the substantial volume of water in the Saugus Formation is an important strategy to help maintain water supplies in the Santa Clarita Valley during drought periods.

3.3.1 Saugus Formation – Historical and Current Conditions

Total pumping from the Saugus in 2006 was about 7,300 af, or about 750 af more than in the preceding year. Of the total Saugus pumping in 2006, most (nearly 5,900 af) was for municipal water supply, and the balance (1,400 af) was for agricultural and other irrigation uses. Historically, groundwater pumping from the Saugus peaked in the early 1990's and then steadily declined through the remainder of that decade. Since then, Saugus pumping had been in the range of about 4,000 to 6,500 afy, with the increase to about 7,300 af in 2006. On a long-term average basis since the importation of SWP water, total pumping from the Saugus Formation has ranged between a low of about 3,700 afy (in 1999) and a high of nearly 15,000 afy (in 1991); average pumping from 1980 to present has been about 6,700 afy. These pumping rates remain well within, and generally at the lower end of the range of operational yield of the Saugus Formation. The overall historic record of Saugus pumping is illustrated in Figure III-8.

Unlike the Alluvium, which has an abundance of wells with extensive water level records, the water level data for the Saugus Formation are limited by both the distribution of the wells in that Formation and the periods of water level record. The wells that do have water level records extending back to the mid-1960's indicate that groundwater levels in the Saugus Formation were highest in the mid-1980's and are currently higher than they were in the mid-1960's (Figure III-9). Based on these data, there is no evidence of any historic or recent trend toward permanent water level or storage decline.

Consistent with the 2001 Update Report (Slade), the 2005 Basin Yield Report (CH2M Hill and LSCE), and the 2005 UWMP, the management practice of the Purveyors continues to be to maintain groundwater storage and associated water levels in the Saugus Formation so that supply is available during drought periods, when Alluvial pumping might be reduced and SWP supplies also could be decreased. The period of increased pumping during the early 1990's is a good example of this management strategy. Most notably, in 1991, when SWP deliveries were substantially reduced, increased pumping from the Saugus made up almost half of the decrease in SWP deliveries. The increased Saugus pumping over several consecutive dry years (1991-1994) resulted in short-term declining groundwater levels, reflecting the use of water from storage. However, groundwater levels subsequently recovered when pumping declined, reflecting recovery of groundwater storage in the Saugus Formation.

3.4 Imported Water

CLWA obtains water supplies from the State Water Project (SWP), which is owned and operated by the California Department of Water Resources (DWR). CLWA is one of 29 contractors holding long-term SWP contracts with DWR. SWP water originates as rainfall and snowmelt in northern and central California. Runoff is stored in Lake Oroville, which is the project's largest storage facility. The water is then released from Lake Oroville down the Feather River to the Sacramento River and through the Sacramento-San Joaquin Delta. Water is diverted from the Delta into the Clifton Court Forebay, and then pumped into the 444-mile long California Aqueduct. SWP water is temporarily stored in San Luis Reservoir, which is jointly operated by DWR and the U.S. Bureau of Reclamation. Prior to delivery to CLWA, SWP supplies are stored in Castaic Lake, located at the end of the West Branch of the California Aqueduct.

CLWA's service area covers approximately 195 square miles (124,800 acres), including the City of Santa Clarita and surrounding unincorporated communities. CLWA obtains SWP water from a SWP terminal reservoir, Castaic Lake. The water is treated, filtered and disinfected at CLWA's Earl Schmidt Filtration Plant and Rio Vista Water Treatment Plant, which have a combined treatment capacity of 86 million gallons per day. Treated water is delivered from the treatment plants by gravity flow to each of the four Purveyors through a distribution network of pipelines and turnouts. At present, CLWA delivers water to the four Purveyors through 25 turnouts as schematically illustrated in Figure III-10.

In 2006, CLWA fulfilled the following major accomplishments in order to enhance, preserve, and strengthen the quality and reliability of existing and future supplies:

- completed construction of the Sand Canyon Pipeline and Pump Station, and commenced construction on the Sand Canyon Reservoir;
- certified an Environmental Impact Report and initiated design for the Rio Vista Water Treatment Plant expansion;
- delivered 20,000 af of surplus SWP Table A water into the Rosedale-Rio Bravo Water Banking and Exchange Program;
- certified an Environmental Impact Report for acquisition of 11,000 afy of Kern River supplies through the Buena Vista/Rosedale-Rio Bravo Water Acquisition Agreement;
- exercised the right to utilize 1,376 af of flexible storage in Castaic Lake through an agreement with Ventura County SWP contractors;

- continued implementation of various water supply programs recommended in the UWMP;
- continued implementation of the AB 3030 Groundwater Management Plan;
- continued implementation of the water conservation Best Management Practices;
- continued cooperative effort with the U.S. Army Corps of Engineers for characterization studies of the former Whittaker-Bermite site and in a task force effort with the City of Santa Clarita, local legislators, and state agencies to effect the cleanup and remediation of all aspects of the former Whittaker-Bermite site, including perchlorate contamination of local groundwater; and
- continued work on the design and construction of facilities for restoration of groundwater supply wells impacted by perchlorate contamination.

3.4.1 State Water Project Table A Supplies

Each SWP contractor has a specified water supply amount shown in Table A of its contract that currently totals approximately 4.1 million af. The term of the CLWA contract is through 2038 and is renewable after that year. Although the SWP has not been fully completed, the SWP can deliver all of the 4.1 million af of Table A Amounts during very wet years.

CLWA has a contractual Table A Amount of 95,200 af per year of water from SWP.[2] CLWA's final allocation of Table A Amount for 2006 was 100 percent. On November 22, 2005, the

[2] 41,000 af of CLWA's 95,200 af Table A Amount was acquired from the Wheeler Ridge-Maricopa Water Storage District by way of a Table A water transfer agreement executed in March 1999. CLWA prepared an environmental impact report (EIR) to address the environmental consequences of the transfer agreement. The environmental review for the project by CLWA was the subject of litigation in Los Angeles Superior Court. CLWA prevailed in the EIR litigation at the trial court; however, the project opponents (Friends of the Santa Clara River) filed an appeal.

In January 2002, the Court of Appeal issued a decision ordering the Superior Court to decertify the EIR for the transfer agreement on the grounds that it had tiered off of another EIR that had been subsequently decertified in other litigation. In doing so, however, the Court of Appeal also examined all of the plantiffs' other arguments, found them to be without merit, and held that, if the tiering problem had not arisen, it would have affirmed the earlier trial court judgment upholding the EIR.

The Court of Appeal did not invalidate any portion of the completed 41,000 afy transfer agreement. Instead, the Court directed the trial court to vacate certification of the EIR, and to retain jurisdiction until CLWA corrects the tiering technicality by preparing a new EIR. In September 2002, the Los Angeles Superior Court refused to prohibit CLWA from using the 41,000 af of Table A water while a new EIR is being prepared. The Superior Court decision on remand was appealed by Friends of the Santa Clara River to the appellate court in January 2003. In December 2003, the appellate court denied any relief to Friends and affirmed the trial court's ruling.

The revised EIR was released for public review and comment in April 2004. It was subsequently certified by the CLWA Board of Directors on December 23, 2004. On January 24, 2005, separate lawsuits challenging the environmental review for this same project were filed by California Water Impact Network and Planning and

initial allocation for 2006 was announced as 55 percent. On December 14, 2005, it was raised to 65 percent. On January 17 and March 23, 2006 the allocation was increased to 70 percent and 80 percent, respectively. On April 18, 2006 the final allocation of 100 percent was announced.

In addition to its Table A Amount, CLWA also has access to 4,684 af of "flexible storage" in Castaic Lake. In addition, during 2005 CLWA negotiated an agreement with the Ventura County SWP contractors to allow CLWA to utilize their flexible storage account of 1,376 af. In combination, this provides total flexible storage of 6,060 af, which is maintained in Castaic Lake for use in a future dry period or an emergency. This amount was available in 2006, but was not utilized due to wet conditions statewide.

As delineated in Table III-2, due to the 100 percent allocation, CLWA had excess SWP water in 2006. As DWR increased the allocation through the year, and due to a net 3,905 af of carryover from 2005, the total available SWP supply in 2006 was 99,105 af. CLWA deliveries were 40,646 af to the Purveyors and 20,000 af to its account in the Rosedale-Rio Bravo Water Banking and Exchange Program, leaving more than 34,484 af of Table A Amount available for carryover to 2007. Portions of the carryover water from 2005 were utilized for local deliveries to the Purveyors, as well as Rosedale-Rio Bravo banking program deliveries.

As described in the 2005 Water Report, CLWA completed an agreement in 2005 to participate in a long-term water banking program with Rosedale-Rio Bravo Water Storage District in Kern County. CLWA delivered 20,000 af of its Table A water into storage in 2005. As noted above, CLWA delivered another 20,000 af into that storage account in 2006. This long-term program will allow the storage of 100,000 af at any one time, and will provide significant dry year reliability for the Santa Clarita Valley.

3.4.2 Other Imported Water Supplies

In early 2007, CLWA finalized a Water Acquisition Agreement with the Buena Vista Water Storage District (Buena Vista) and the Rosedale-Rio Bravo Water Storage District (Rosedale-Rio Bravo) in Kern County. Under this Program, Buena Vista's high flow Kern River entitlements (and other acquired waters that may become available) are captured and recharged within

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Conservation League in the Ventura County Superior Court. On March 19, 2007, the Los Angeles Superior Court ruled that the 2004 EIR was properly prepared except for one defect – it failed to show an adequate analytical basis for the assumed impacts of the Monterey Amendments on the SWP allocations. The court also ruled that the transfer contract should not be set aside but ordered that certification of the EIR should be set aside and corrected to include the analytical basis for the three allocation scenarios in the EIR. CLWA is evaluating the method of correction to the EIR on this limited issue.

Table III-2
2006 CLWA State Water Project Supply and Disposition
(acre-feet)

Supply		
Net 2005 Carryover to 2006 [1]		3,905
CLWA 2006 Final Allocation [2]		95,200
Total 2006 SWP Supply		**99,105**
Disposition		
Purveyor Deliveries (Total)		40,646
CLWA SCWD	*17,146*	
Valencia Water Company	*16,313*	
Newhall County Water District	*5,898*	
Los Angeles County WWD 36	*1,289*	
CLWA/DWR/Purveyor Metering[3]		(25)
Rosedale – Rio Bravo Water Banking and Exchange Program		20,000
2005 Table A Carryover to 2006[4]		38,484
Total 2006 SWP Disposition		**99,105**

1. Amount used by CLWA, based on final DWR delivery accounting; total 2005 carryover was 31,377 af.

2. Final 2006 allocation was 100% of contractual Table A amount of 95,200 acre-feet, which progressed as follows:

Initial allocation, November 22, 2005	55%
Allocation increase, December 14, 2005	65%
Allocation increase, January 17, 2006	70%
Allocation increase, March 23, 2006	80%
Allocation increase, April 18, 2006	100%

Does not include 2,089 af of Article 21 water used at CLWA's Devil's Den Ranch in Kern and Kings Counties.

3. Reflects meter reading differences.

4. Total 2006 Table A carryover to 2007.

*

Rosedale-Rio Bravo's service area on an ongoing basis. CLWA will receive 11,000 af of these supplies annually through either exchange of Buena Vista's and Rosedale-Rio Bravo's SWP supplies or through direct delivery of water to the California Aqueduct via the Cross Valley Canal. Additionally, CLWA is entitled to 22,000 af of water that was stored in the Rosedale-Rio Bravo Water Banking and Exchange Program in 2005 and 2006 on CLWA's behalf as part of the Water Acquisition Agreement.

3.4.3 Imported Water Supply Reliability

In April 2006, the Department of Water Resources updated its State Water Project Delivery Reliability Report. That report is intended to assist SWP contractors in assessing the adequacy of the SWP component of their overall supplies. The report is updated with new information and calculations of delivery reliability every two years. A discussion of the Reliability Report, as well as the most significant opportunities for meeting the future water supply needs of the Santa Clarita Valley, is provided in the 2005 UWMP.

Groundwater banking and conjunctive use offer significant opportunities to improve water supply reliability for CLWA. Groundwater banking is the process of storing available supplies of water in groundwater basins during wet years or when supplemental water is otherwise available. During dry periods, or when normal imported water supplies are not otherwise available, banked water can be recovered from groundwater storage to replace, or firm up, the normal imported water supply.

As described herein, CLWA has entered into two groundwater banking programs and now has, in aggregate, over 100,000 acre-feet of recoverable water in banked groundwater storage outside the local groundwater basin. The first component of overall groundwater banking is the result of two 10-year agreements between CLWA and Semitropic Water Storage District whereby, in dry years, CLWA can withdraw up to 50,870 af of 2002 and 2003 SWP Table A water that it stored in Semitropic to meet Valley demands when needed.[3] More recently, after banking 20,000 acre-feet of its SWP Table A water in each of the last two years in the long-term Rosedale-Rio Bravo Water Banking and Exchange Program in Kern County, augmented by the acquisition of 22,000 acre-feet as part of the Buena Vista/Rosedale-Rio Bravo Water Acquisition Agreement, also banked in the Rosedale-Rio Bravo Water Banking and Exchange Program, CLWA now has a recoverable total of 57,600 acre-feet in that groundwater storage bank (i.e. 67,000 af less contractual losses).

[3] Legal challenges to the 2002 banking program with Semitropic were resolved by the appellate court in favor of CLWA on all issues.

Somewhat conceptually similar to groundwater banking, conjunctive use is the purposeful integrated use of surface water and groundwater supplies to maximize water supply from the two sources. CLWA and the Purveyors have been conjunctively utilizing local groundwater and imported (SWP) surface water since the initial importation of SWP water in 1980. The groundwater banking programs described above allow CLWA to firm up the SWP component of conjunctive use in the Valley by storing surplus SWP water, in wet years, in groundwater basins outside the Valley, thus allowing recovery and importation of that water as needed in dry years to maintain a greater overall amount of imported surface water to be used conjunctively with local groundwater, further supporting the sustainable use of local groundwater at the rates in the groundwater operating plan.

3.5 Water Quality – General

Water delivered by the Purveyors consistently meets drinking water standards set by the Environmental Protection Agency (EPA) and the California Department of Health Services (DHS). An annual Consumer Confidence Report is provided to all Santa Clarita Valley residents who receive water from one of the four water retailers. There is detailed information in that report, about the results of quality testing of the groundwater and treated SWP water supplied to the residents of the Santa Clarita Valley during 2006. Several constituents of particular local interest are discussed in more detail below.

Total Trihalomethanes

In 2002, the United States Environmental Protection Agency implemented the new Disinfectants and Disinfection Byproducts Rule. In part, this rule establishes a new MCL of 80 ug/L (based on an annual running average) for Total Trihalomethanes (TTHM). TTHMs are byproducts created when chlorine is used as a means for disinfection. CLWA and the Purveyors implemented an alternative method of disinfection, chloramination, in 2005 to maintain compliance with the new rule and future regulations relating to disinfection byproducts. TTHM concentrations have remained significantly below the MCL since implementation of alternative disinfection.

Perchlorate

Perchlorate has been a water quality concern in the Valley since 1997 when it was originally detected in four Saugus wells operated by the Purveyors in the eastern part of the Saugus Formation, near the former Whittaker-Bermite facility. In late 2002, perchlorate was detected in a fifth municipal well, in this case an Alluvial well (SCWD's Stadium Well) also located near the former Whittaker-Bermite site. In early 2005, perchlorate was detected in a second Alluvial

well (VWC's Well Q2) near the former Whittaker-Bermite site. In 2006, a very low concentration of perchlorate was detected in another Saugus well (NCWD's Well NC-13), near one of the originally impacted wells. However, that detection has been interpreted to not be an indication of continued perchlorate migration in a westerly direction. Subsequent monitoring well installation has been completed and a focused study of the Saugus Formation near this latest detection has been commenced. Results of this study and any subsequent recommended actions will be incorporated into the overall groundwater remediation and removal actions submitted by Whittaker-Bermite and reviewed by the State Department of Toxic Substances Control (DTSC) as discussed below.

Wells with perchlorate concentrations exceeding the then-applicable Action Level (18 ug/l) or, more recently, the Notification Level (6 ug/l) were removed from active water supply service. One of the Alluvial wells was returned to active water supply service, with treatment, in late 2005 as discussed below; the other impacted wells remain out of service. The 2005 UWMP specifically addressed the adequacy of groundwater supply in light of the inactivation of the impacted Alluvial and Saugus wells; and it addressed the plan and schedule for restoration of perchlorate-impacted wells, including the protection of existing non-impacted wells. As summarized in the 2005 UWMP, the inactivation of the impacted wells does not constrain the ability to meet the groundwater component of water supply in the Valley.

In 2000, CLWA and the impacted Purveyors had filed a lawsuit against Whittaker Corporation (the former owner of the contaminated property) and Santa Clarita LLC and Remediation Financial, Inc. (the owners of record at that time). The lawsuit sought to have defendants pay all necessary costs of response, removal of the contaminant, remedial actions, and any liabilities or damages associated with the contamination. An Interim Settlement and Funding Agreement was reached in 2003. Although that Agreement expired in January 2005, the parties, under DTSC oversight, jointly developed a plan to "pump and treat" contaminated water from two of the Purveyors' impacted wells to stop migration of the contaminant plume and to restore the municipal groundwater supply that has been impacted by perchlorate. The parties also continued negotiations intended to achieve a long term settlement to the litigation through 2006, and a final settlement was completed and executed in April 2007.

In 2006, the impacted Purveyors (SCWD, NCWD, and VWC) and CLWA continued working toward implementation of a jointly developed plan that will combine pumping from two of the impacted wells and a water treatment process to restore the impacted pumping capacity and control the migration of contamination in the aquifer. The development and implementation of a cleanup plan for the Whittaker-Bermite site and the impacted groundwater is being coordinated

among CLWA, the impacted Purveyors, the State DTSC, and U.S. Army Corps of Engineers. DTSC is the lead agency responsible for regulatory oversight of the Whittaker-Bermite site. In February 2003, DTSC and the impacted Purveyors entered into a voluntary cleanup agreement entitled *Environmental Oversight Agreement*. Under the Agreement, DTSC is providing review and oversight of the response activities being undertaken by the Purveyors related to the detection of perchlorate in the impacted wells. Under the Agreement's Scope of Work, the impacted Purveyors have prepared a Work Plan for sampling the production wells, prepared a report on the results and findings of the production well sampling, prepared a draft Human Health Risk Assessment, prepared a draft Remedial Action Workplan, completed the evaluation of treatment technologies, and completed an analysis to show the integrated effectiveness of a project to restore impacted pumping capacity, extract perchlorate for treatment, and control the migration of perchlorate in the Saugus Formation. Environmental review of that project was completed in 2005 with adoption of a mitigated Negative Declaration. The Final Interim Remedial Action Plan for containment and extraction of perchlorate was completed and approved by DTSC in January 2006. Design of the treatment facilities and related pipelines is complete. Construction of those facilities and pipelines to implement the pump and treat program and to also restore inactivated well capacity is anticipated to commence in mid-2007 and conclude in mid-2008, with the facilities on line by fall 2008.

On the Whittaker-Bermite site, soil remediation activities in operating unit subareas started in 2005. Groundwater pump and treat operations in the Northern Alluvium, which also started in 2005, continued through 2006. Expanded pumping, intended to effect perchlorate containment in the Northern Alluvium, is expected to be operational in 2007.

As noted above, perchlorate was detected in a second Alluvial well, VWC's Well Q2, in early 2005. In response, Valencia removed the well from active service, and commissioned the preparation of an analysis and report assessing the impact of, and response to, the perchlorate contamination of that well. Valencia's response for Well Q2 was to obtain permitting for installation of wellhead treatment, followed by installation of treatment facilities and returning the well to water supply service in October 2005. Well Q2 continues to be operated, with wellhead perchlorate treatment under permit from DHS, as part of Valencia's regular Alluvial groundwater supply. Ongoing treatment of water from Well Q2 is expected to continue until DHS determines that it is no longer needed. Depending on timing, the Perchlorate Treatment System at Well Q2 is planned to be relocated and integrated with the CLWA containment/restoration program described above after it is no longer needed at Well Q2.

3.5.1 Groundwater Quality – Alluvium

Groundwater quality is, of course, a key factor in assessing the Alluvial aquifer as a municipal and agricultural water supply. Groundwater quality details and long-term conditions, examined by integration of individual records from several wells completed in the same aquifer materials and in close proximity to each other, have been discussed in previous annual Water Reports and in the 2005 UWMP. There were no changes in groundwater quality in 2006 that would change any of the fluctuations, trends, or other groundwater quality conditions as illustrated in Figures III-11 and III-12. In summary, those conditions include: no long-term overall trend and, most notably, no long-term decline in Alluvial groundwater quality; a general groundwater quality "gradient" from east to west, with lowest dissolved mineral content to the east, increasing in a westerly direction; and periodic fluctuations in some parts of the basin, where groundwater quality has inversely varied with precipitation and stream flow. Those variations are typically characterized by increased mineral concentrations through dry, lower stream flow, and lower recharge conditions, followed by lower mineral concentrations through wetter, higher stream flow, higher recharge conditions.

The presence of long-term consistent water quality patterns, although intermittently affected by wet and dry cycles, supports the conclusion that the Alluvial aquifer remains a viable ongoing water supply source in terms of groundwater quality.

3.5.2 Groundwater Quality – Saugus Formation

As discussed above for the Alluvium, groundwater quality is a key factor in also assessing the Saugus Formation as a municipal and agricultural water supply. As with groundwater level data, long-term Saugus groundwater quality data are not sufficiently extensive to permit any sort of basin-wide analysis or assessment of pumping-related impacts on quality. However, integration of individual records from several wells has been used to examine general water quality trends. Based on those records, water quality in the Saugus Formation has not historically exhibited the precipitation-related fluctuations seen in the Alluvium. Based on available data over the last 50 years, groundwater quality in the Saugus has exhibited a slight overall increase in dissolved mineral content as illustrated in Figure III-13. More recently, several wells within the Saugus Formation have exhibited an additional increase in dissolved mineral content, similar to short-term changes in the Alluvium, possibly as a result of recharge to the Saugus Formation from the Alluvium. Dissolved mineral concentrations in the Saugus Formation remain below the Secondary (aesthetic) Upper Maximum Contaminant Level. Groundwater quality within the

Saugus will continue to be monitored to ensure that degradation to the long-term viability of the Saugus as an agricultural or municipal water supply does not occur.

3.5.3 Imported Water Quality

CLWA operates two water treatment plants, the Earl Schmidt Filtration Plant located near Castaic Lake and the Rio Vista Water Treatment Plant located in Saugus. CLWA produces water that meets drinking water standards set by the U.S. EPA and California DHS. SWP water has different aesthetic characteristics than groundwater with lower dissolved mineral concentrations (total dissolved solids) of approximately 280 to 314 mg/L, and lower hardness (as calcium carbonate) of 130 to 170 mg/l.

3.6 Recycled Water

Recycled water is available from two existing water reclamation plants operated by the Sanitation Districts of Los Angeles County. In 1993, CLWA prepared a draft Reclaimed Water System Master Plan that outlined a multi-phase program to deliver recycled water in the Valley. CLWA has completed environmental review on the construction of Phase I of the project, which will deliver 1,700 afy of water. Deliveries of recycled water began in 2003 for irrigation water supply at a golf course and in roadway median strips. In 2006, recycled water deliveries were 419 af.

Surveys conducted by CLWA indicate an interest for recycled water by existing water users as well as future development when it becomes available. In 2002, CLWA produced an updated Draft Recycled Water Master Plan. Overall, the program is expected to ultimately recycle up to 17,400 af of treated (tertiary) wastewater suitable for reuse on golf courses, landscaping and other non-potable uses, as set forth in the UWMP.

CLWA has completed California Environmental Quality Act (CEQA) analysis of the Recycled Water Master Plan (2002). This analysis consisted of a Program Environmental Impact Report (PEIR) covering the various options for a recycled water system as outlined in the Master Plan. The PEIR was certified by the CLWA Board in March 2007.

3.7 Santa Clara River

The Memorandum of Understanding (MOU) between the Santa Clarita Valley Purveyors and the United Water Conservation District, which manages surface and groundwater resources in seven

groundwater basins in the Lower Santa Clara River Valley Area, was a significant accomplishment when it was prepared and executed in 2001. The MOU initiated a collaborative and integrated approach to data collection; database management; groundwater flow modeling; assessment of groundwater basin conditions, including determination of basin yield amounts; and preparation and presentation of reports, including continued annual reports such as this one for current planning and consideration of development proposals, and also including more technically detailed reports on geologic and hydrologic aspects of the overall stream-aquifer system. Meetings of the MOU participants have continued, and integration of the Upper (Santa Clarita Valley) and Lower (United WCD) Santa Clara River databases has been accomplished. As discussed above, a numerical groundwater flow model of the entire Santa Clarita groundwater basin was developed and calibrated in 2002-2004. Subsequent to its initial use in 2004 for assessing the effectiveness of various operating scenarios to restore pumping capacity impacted by perchlorate contamination (by pumping and treating groundwater for water supply while simultaneously controlling the migration of contaminated groundwater), the model was used in 2005 for evaluation of basin yield under varying management actions and hydrologic conditions. The results completed the determination of sustainable operating yield values for both the Alluvium and the Saugus Formation, which are now incorporated in the 2005 UWMP.

On occasion, issues have been raised about whether use and management of groundwater in the Santa Clarita Valley have adversely impacted surface water flows into Ventura County. Part of the groundwater modeling work has addressed the surface water flow question as well as groundwater levels and storage. While the sustainability of groundwater has logically derived primarily from projected long-term stability of groundwater levels and storage, it has also derived in part from modeled simulations of surface water flows and the lack of stream flow depletion by groundwater pumping. In addition, the long-term history of groundwater levels in the western and central part of the basin, as illustrated in Figures III-4 and III-5, supports the modeled analysis and suggests that groundwater has not been lowered in such a way as to induce infiltration from the river and thus impact surface water flows. Finally, long-term stream flow data gauged near the County line show notably higher flows from the Santa Clarita Valley into the uppermost downstream basin, the Piru Basin, over the last 30 to 35 years, as illustrated in Figure III-14.

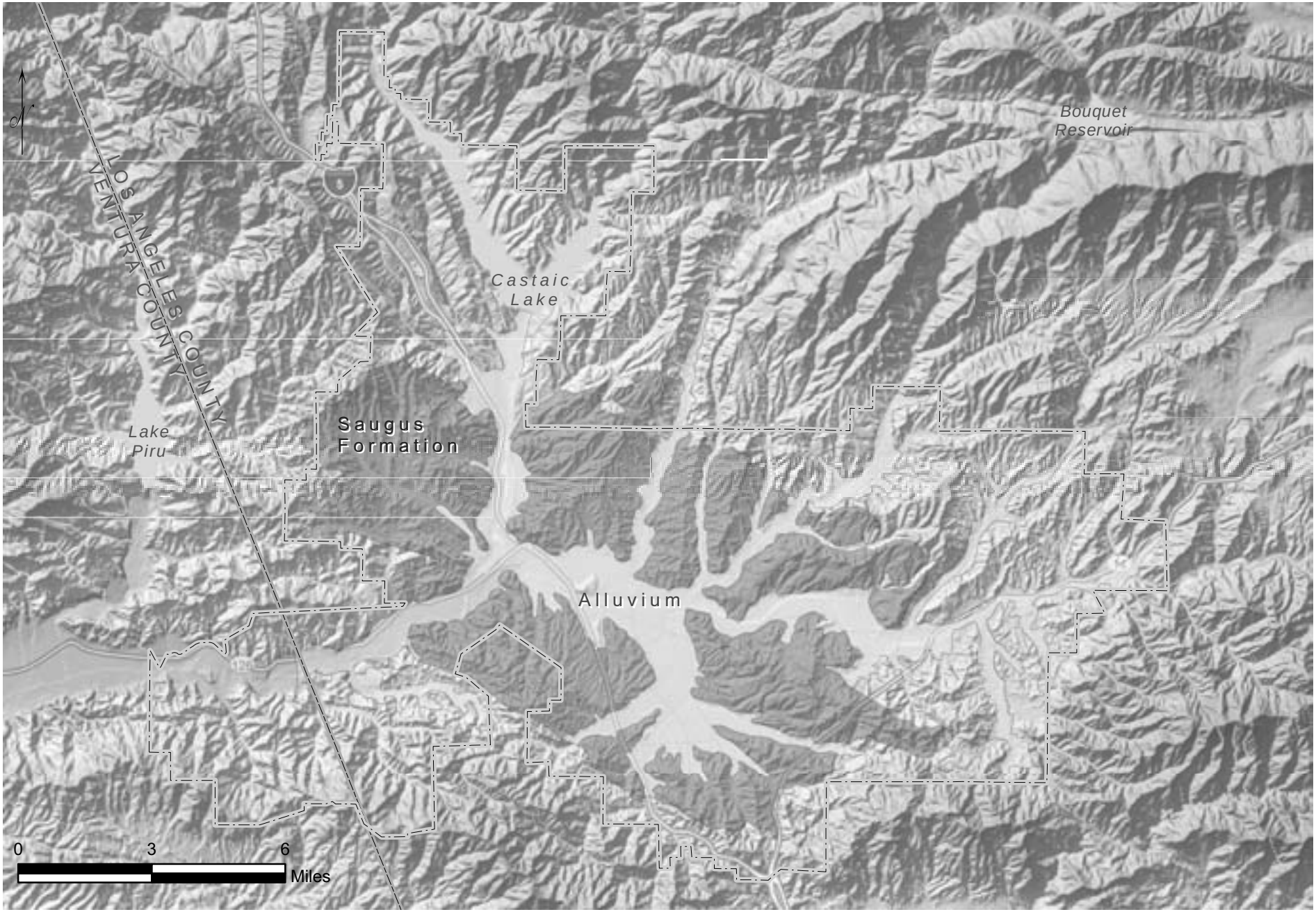

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Figure III-1
Alluvium and Saugus Formation
Santa Clara River Valley, East Groundwater Subbasin

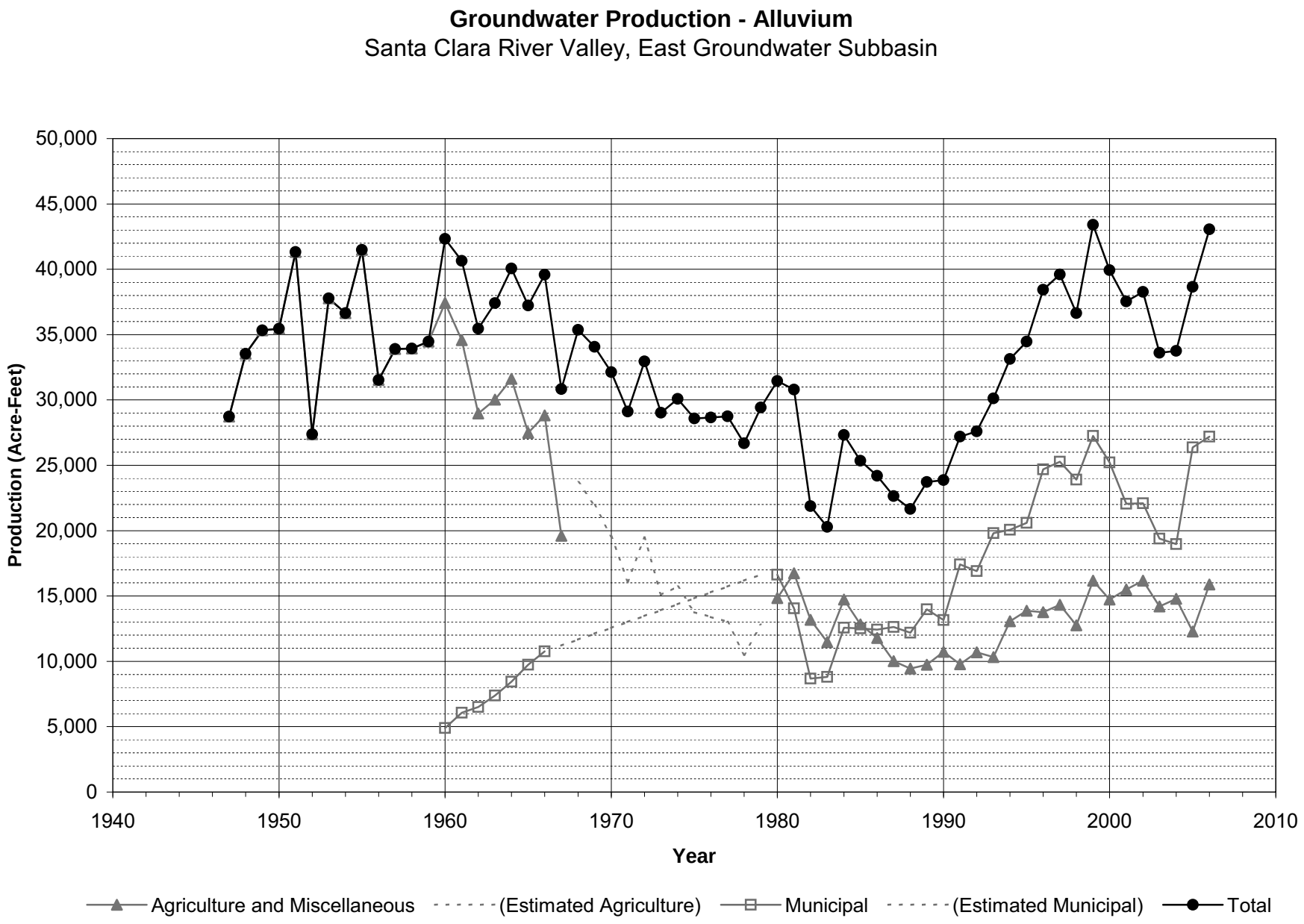
Groundwater Production - Alluvium
Santa Clara River Valley, East Groundwater Subbasin
Production (Acre-Feet)
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
1940
1950
1960
1970
1980
1990
2000
2010
Year
Agriculture and Miscellaneous
(Estimated Agriculture)
Municipal
(Estimated Municipal)
Total

Figure III-2

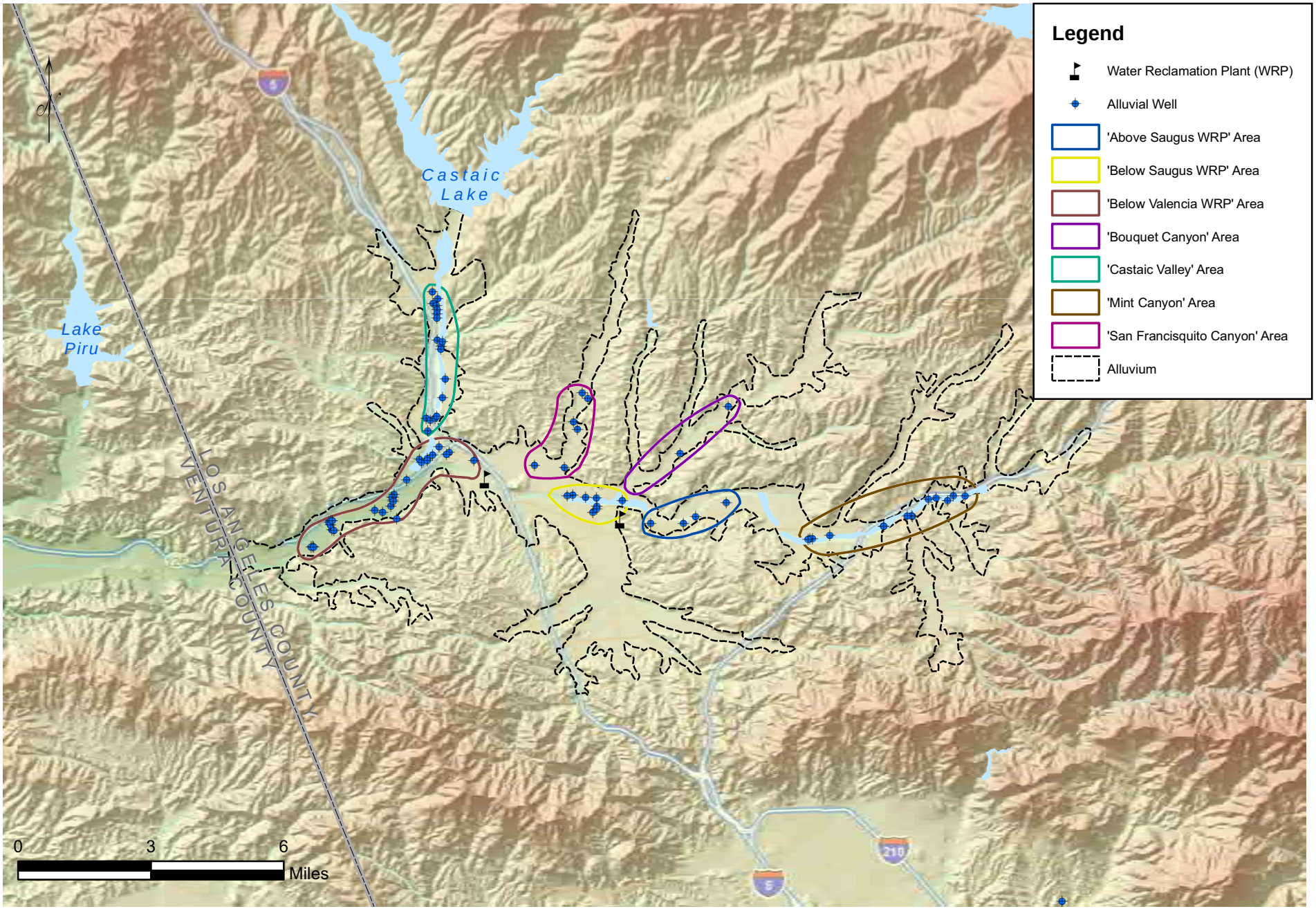

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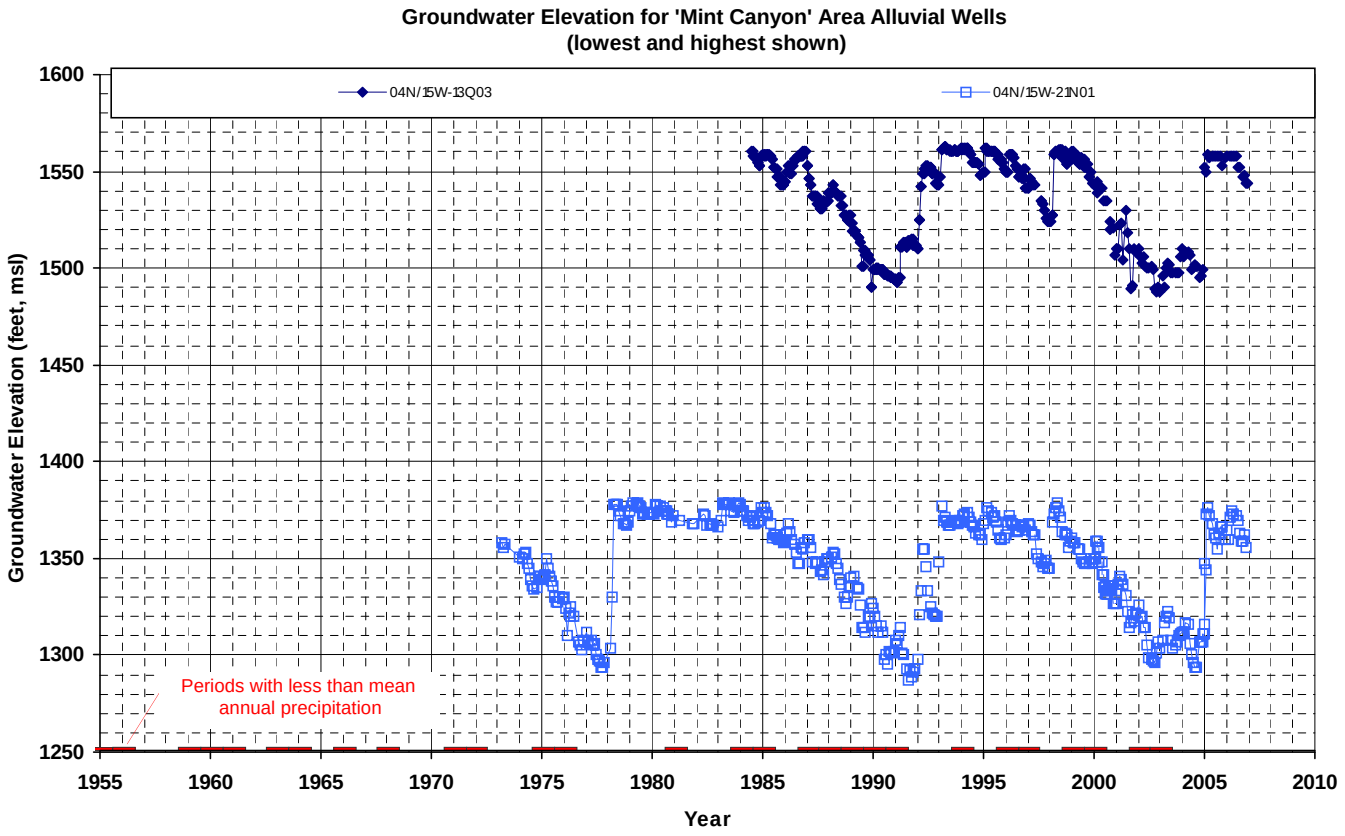
Figure III-3
Alluvial Well Locations By Area
Santa Clara River Valley, East Groundwater Subbasin


Groundwater Elevation for 'Mint Canyon' Area Alluvial Wells
(lowest and highest shown)
04N/15W-13Q03
04N/15W-21N01
Groundwater Elevation (feet, msl)
1600
1550
1500
1450
1400
1350
1300
1250
Periods with less than mean annual precipitation
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
Year

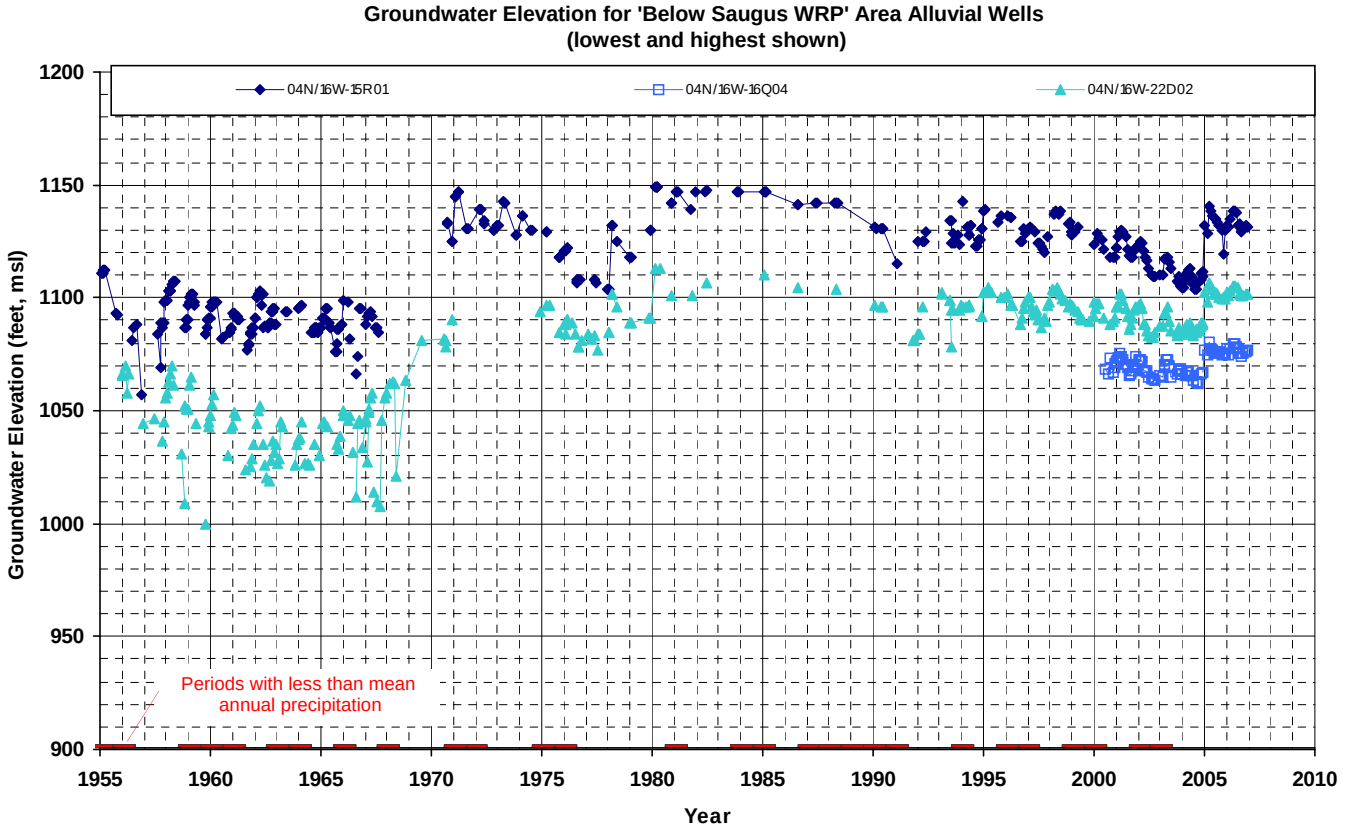
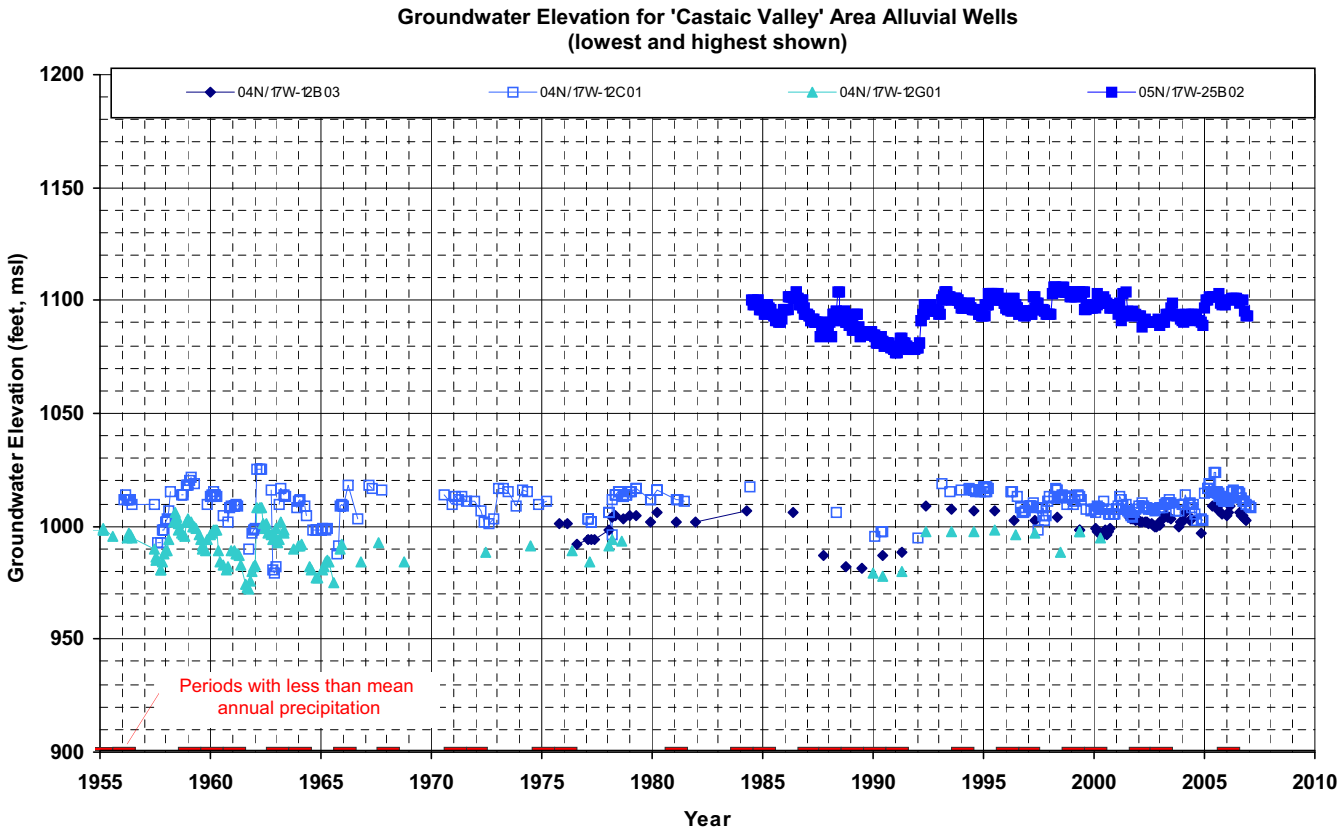

Groundwater Elevation for 'Below Saugus WRP' Area Alluvial Wells
(lowest and highest shown)
04N/16W-15R01
04N/16W-16Q04
04N/16W-22D02
Groundwater Elevation (feet, msl)
1200
1150
1100
1050
1000
950
900
Periods with less than mean annual precipitation
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
Year

Figure III-4


Groundwater Elevation for 'Castaic Valley' Area Alluvial Wells
(lowest and highest shown)
04N/17W-12B03
04N/17W-12C01
04N/17W-12G01
05N/17W-25B02
Groundwater Elevation (feet, msl)
1200
1150
1100
1050
1000
950
900
Periods with less than mean annual precipitation
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
Year

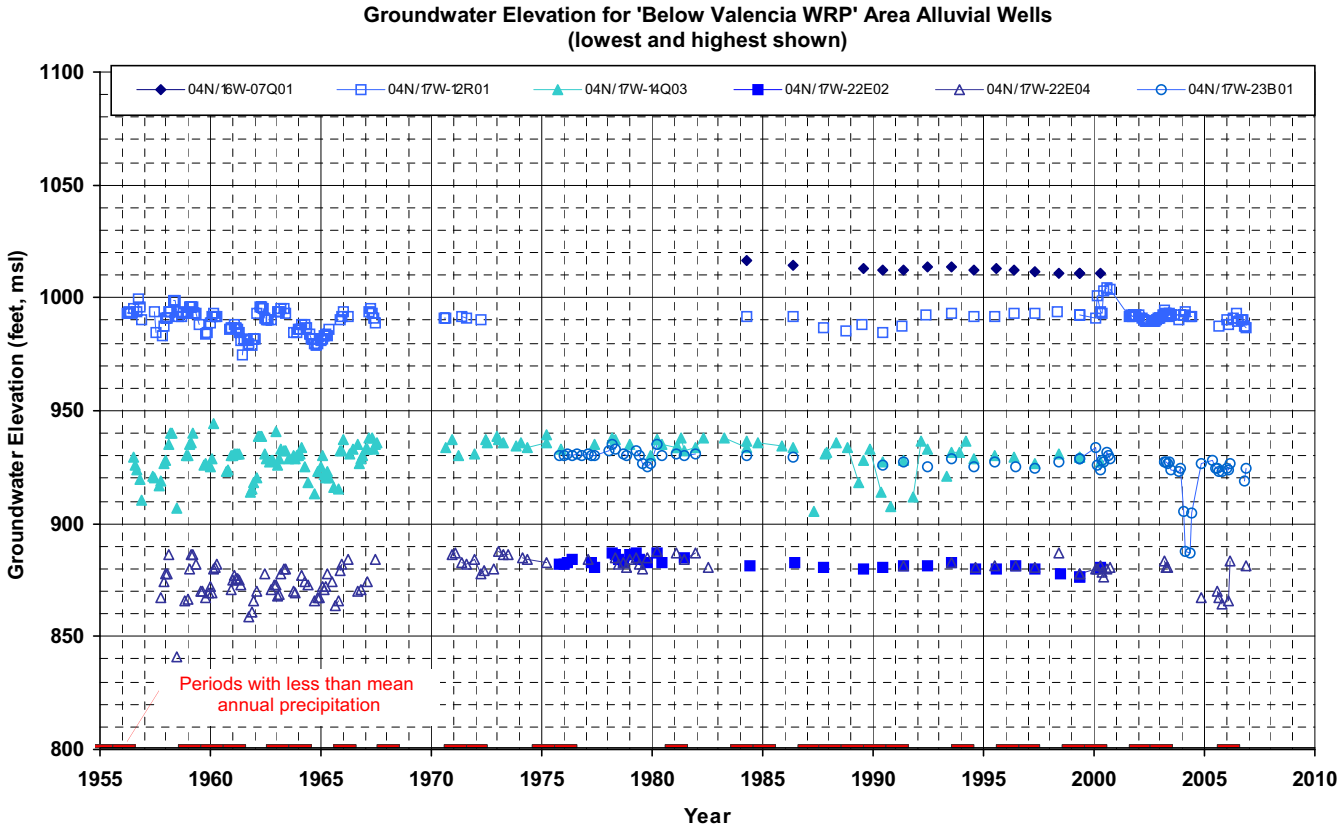

Groundwater Elevation for 'Below Valencia WRP' Area Alluvial Wells
(lowest and highest shown)
04N/16W-07Q01
04N/17W-12R01
04N/17W-14Q03
04N/17W-22E02
04N/17W-22E04
04N/17W-23B01
Groundwater Elevation (feet, msl)
1100
1050
1000
950
900
850
800
Periods with less than mean annual precipitation
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
Year

Figure III-5

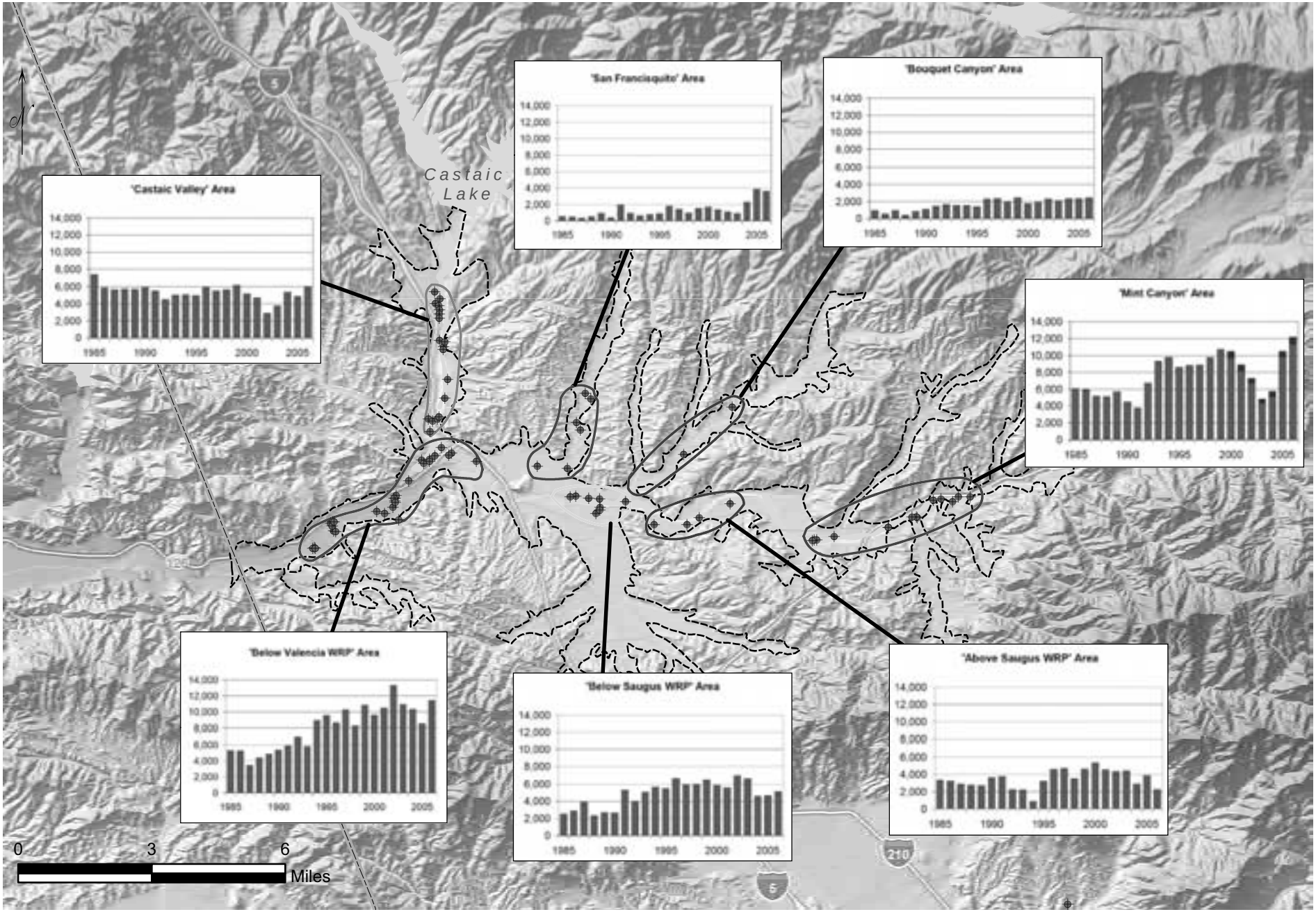


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Figure III-6
Annual Groundwater Production from Alluvium by Area (Acre-feet)
Santa Clara River Valley, East Groundwater Subbasin

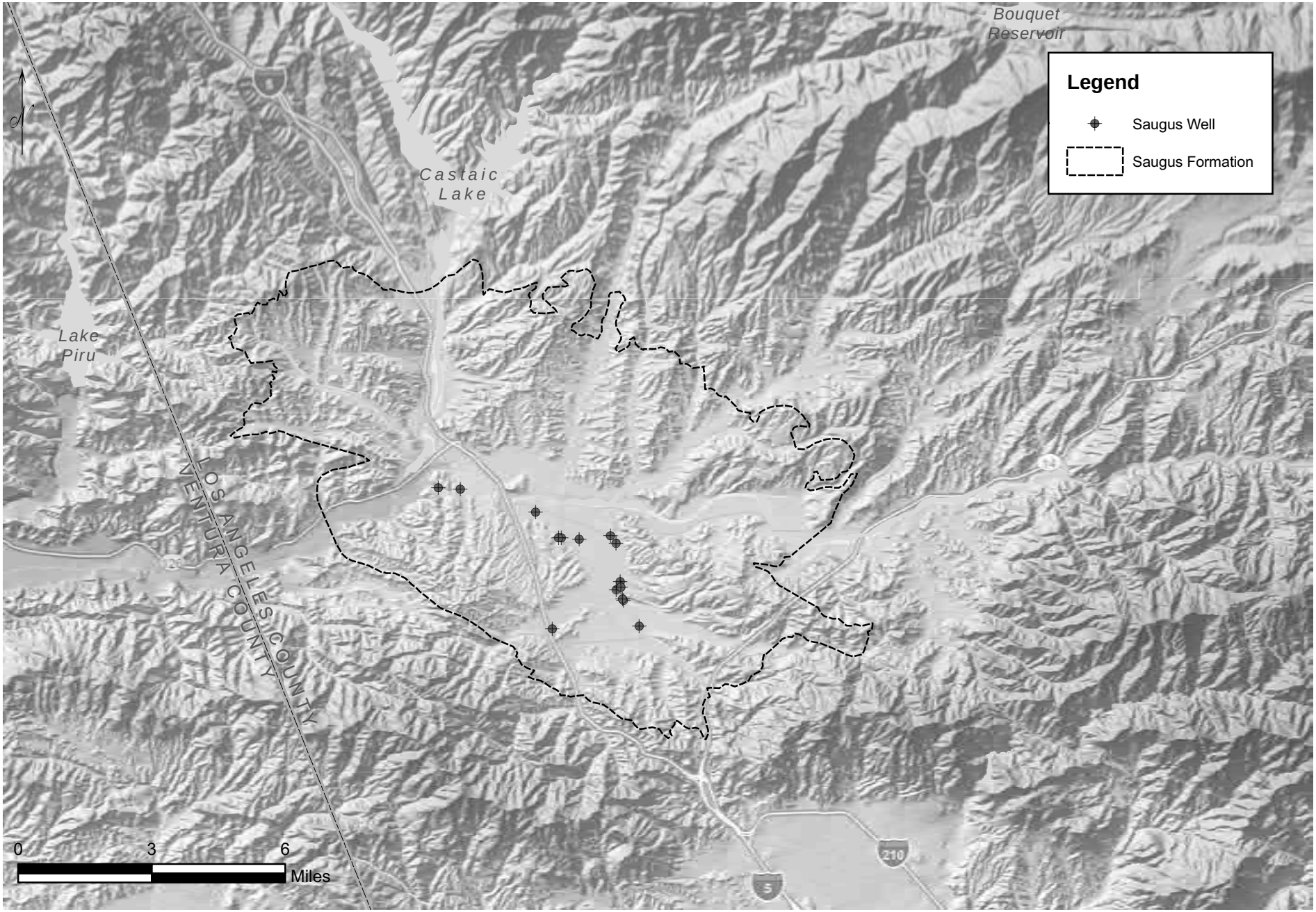

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Figure III-7
Saugus Well Locations
Santa Clara River Valley, East Groundwater Subbasin

Groundwater Production - Saugus Formation
Santa Clara River Valley, East Groundwater Subbasin

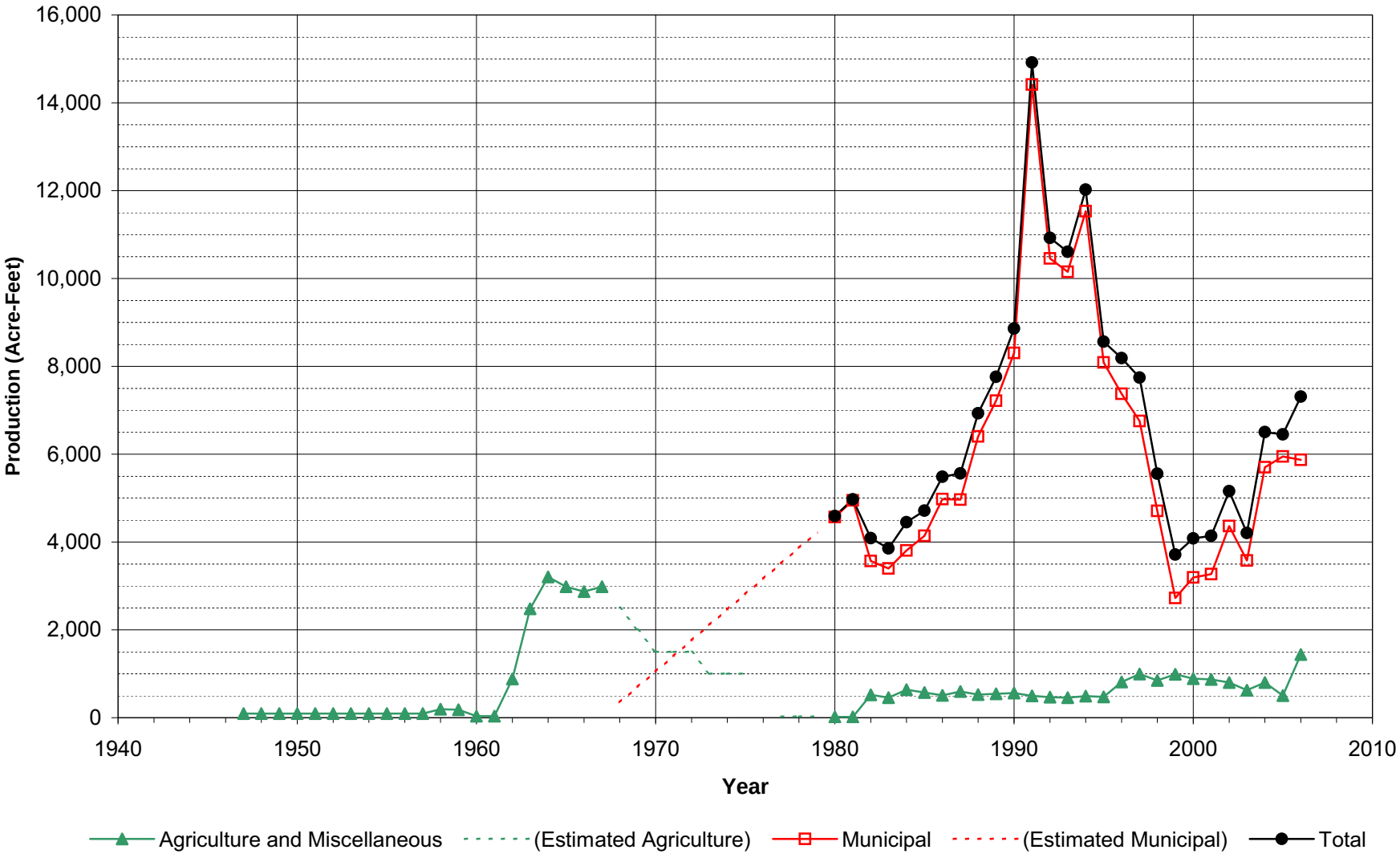
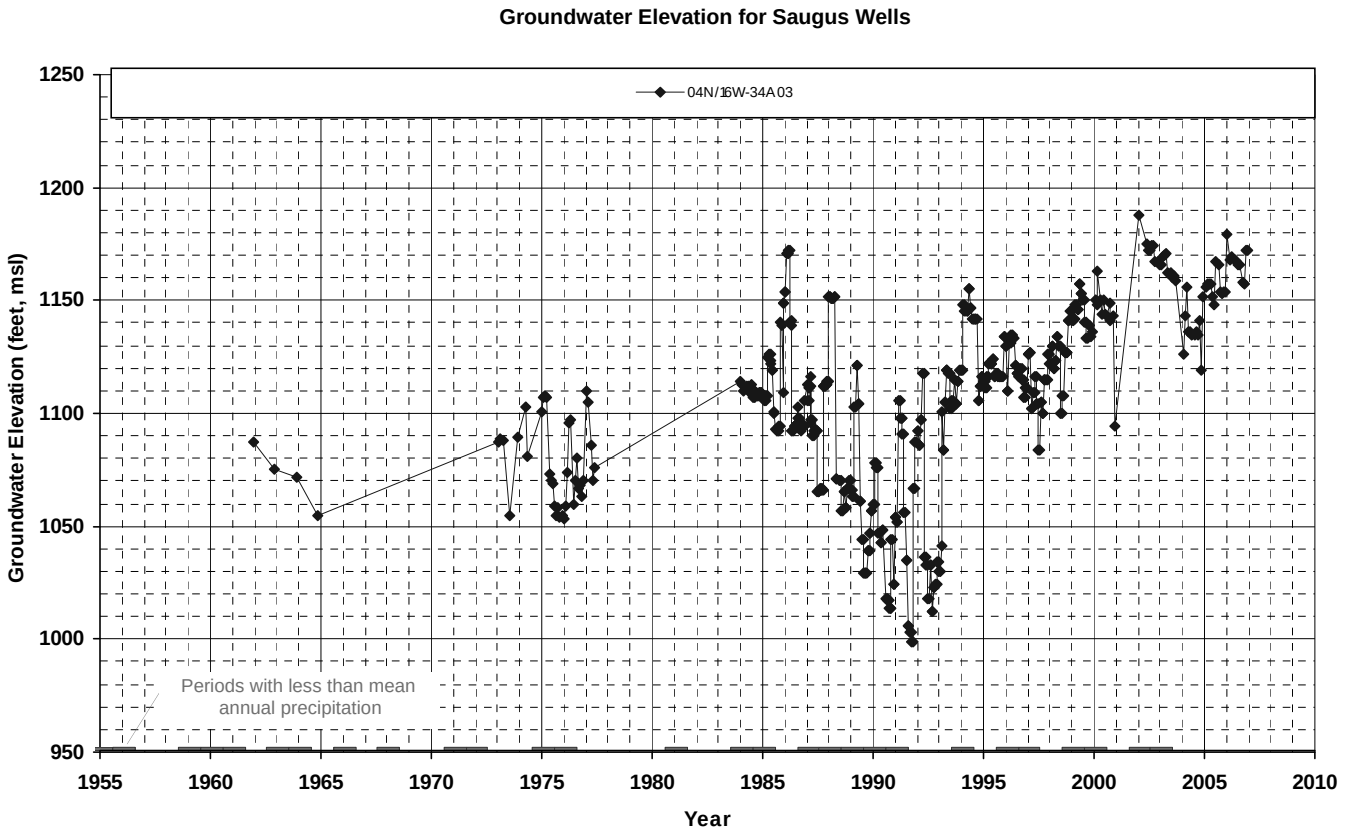


Figure III-8


Groundwater Elevation for Saugus Wells
04N/16W-34A03
Groundwater Elevation (feet, msl)
1250
1200
1150
1100
1050
1000
950
Periods with less than mean annual precipitation
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
Year

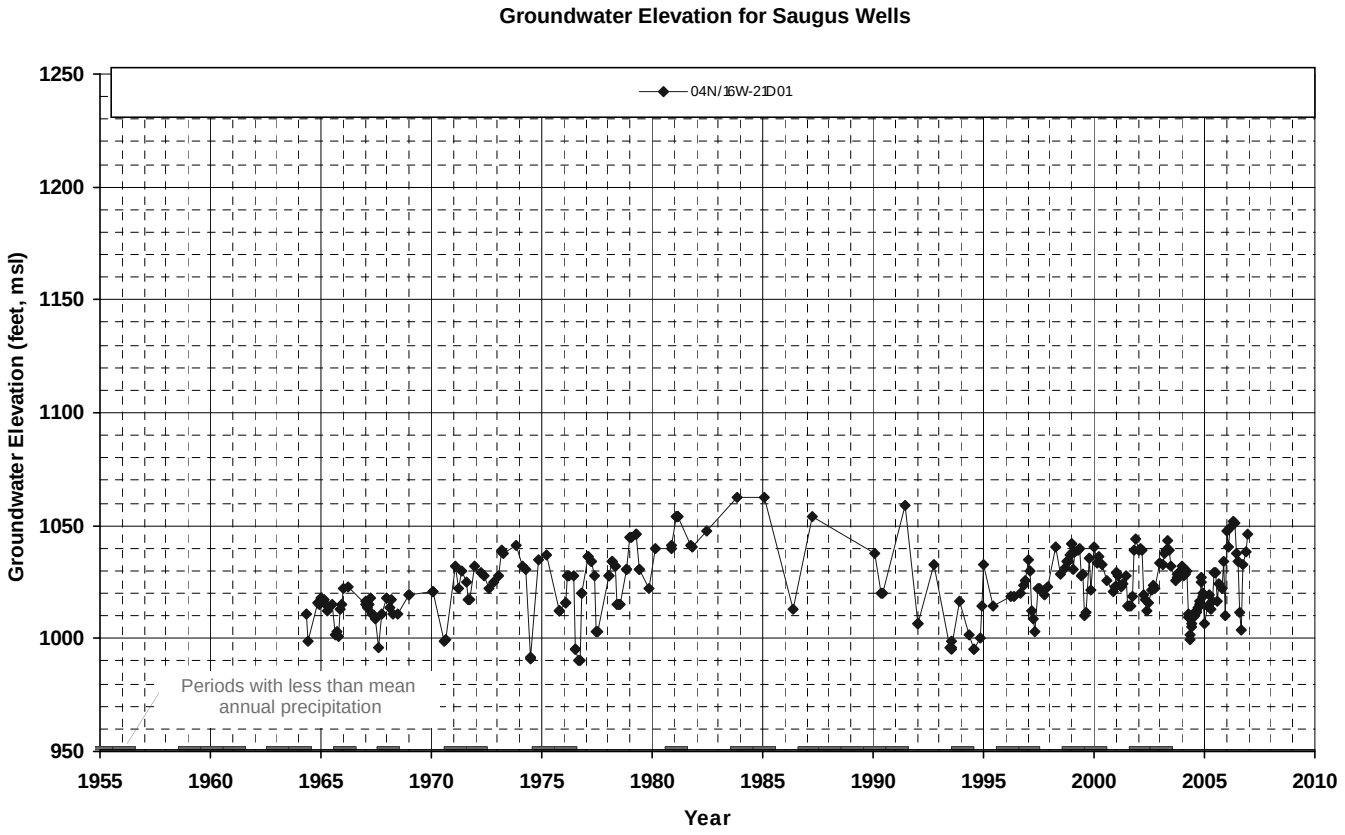

Groundwater Elevation for Saugus Wells
04N/16W-21D01
Groundwater Elevation (feet, msl)
1250
1200
1150
1100
1050
1000
950
Periods with less than mean annual precipitation
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
Year

Figure III-9

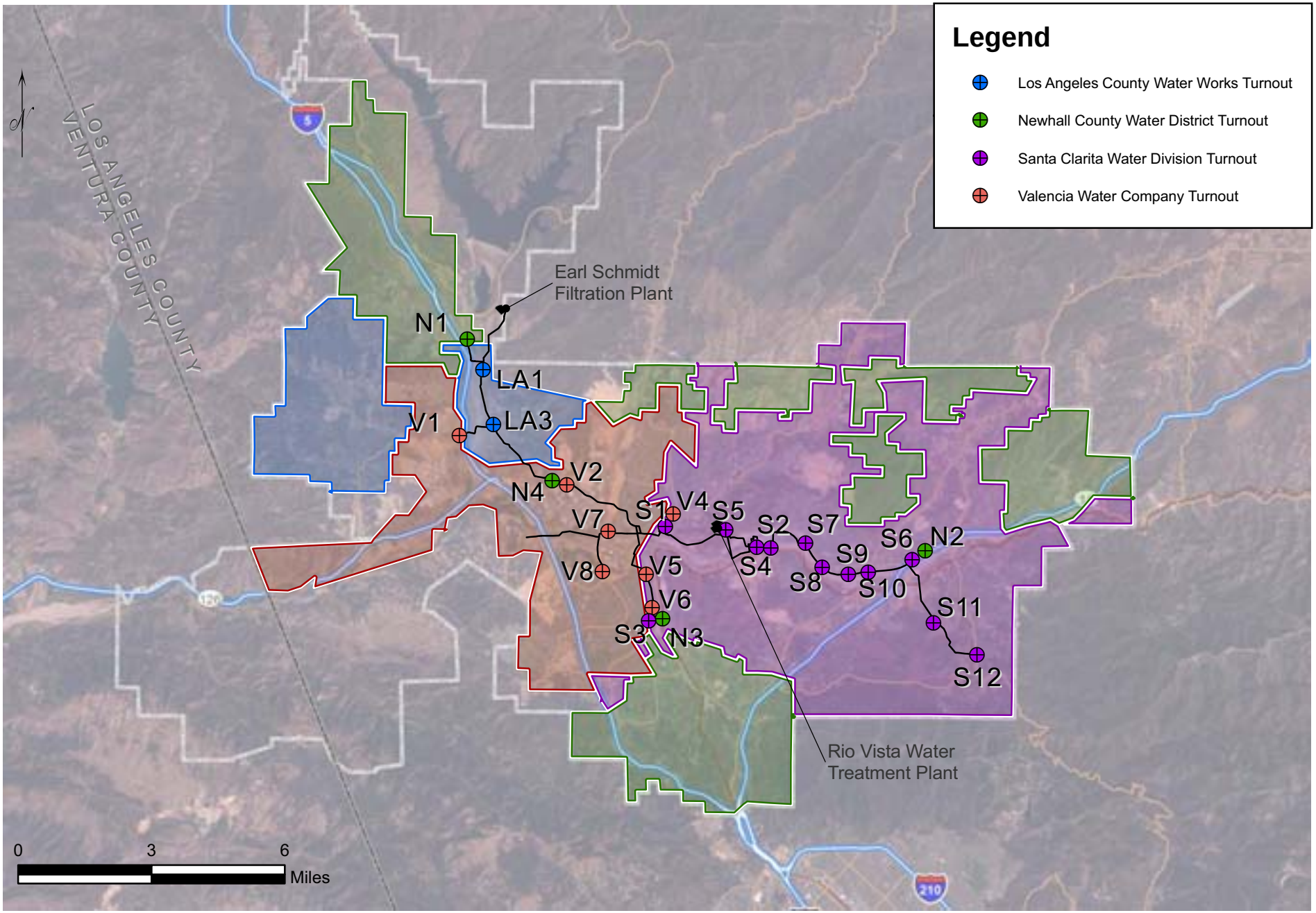


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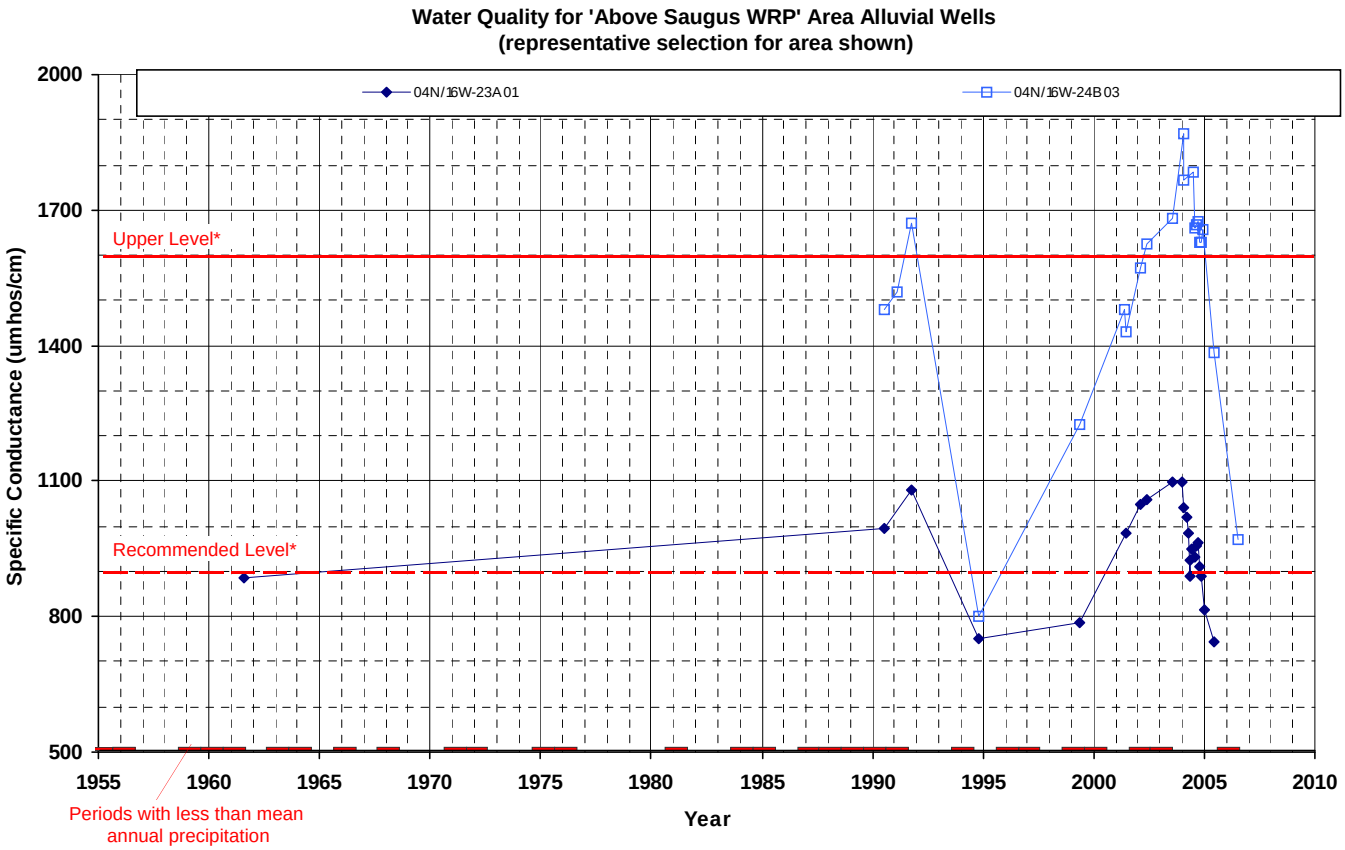
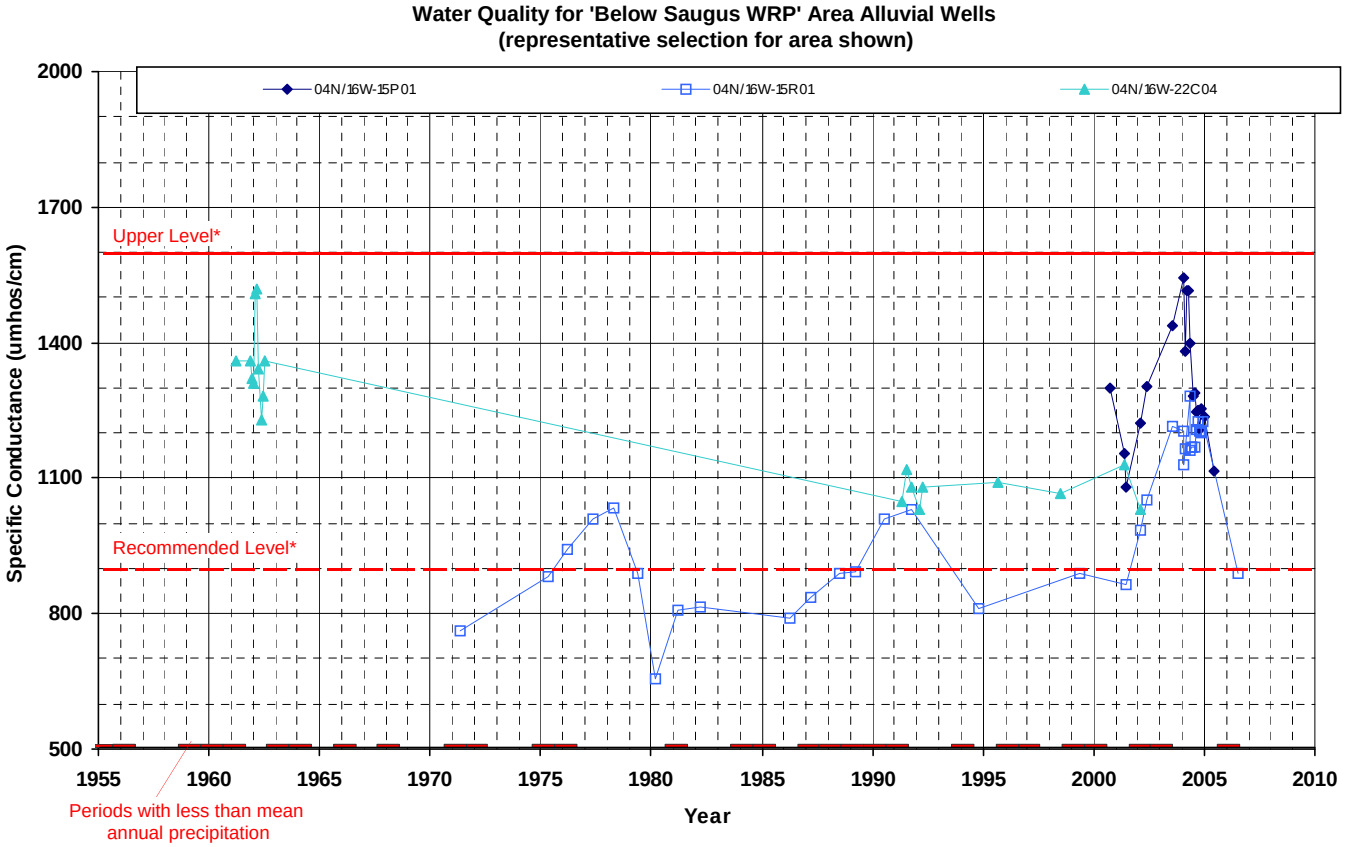
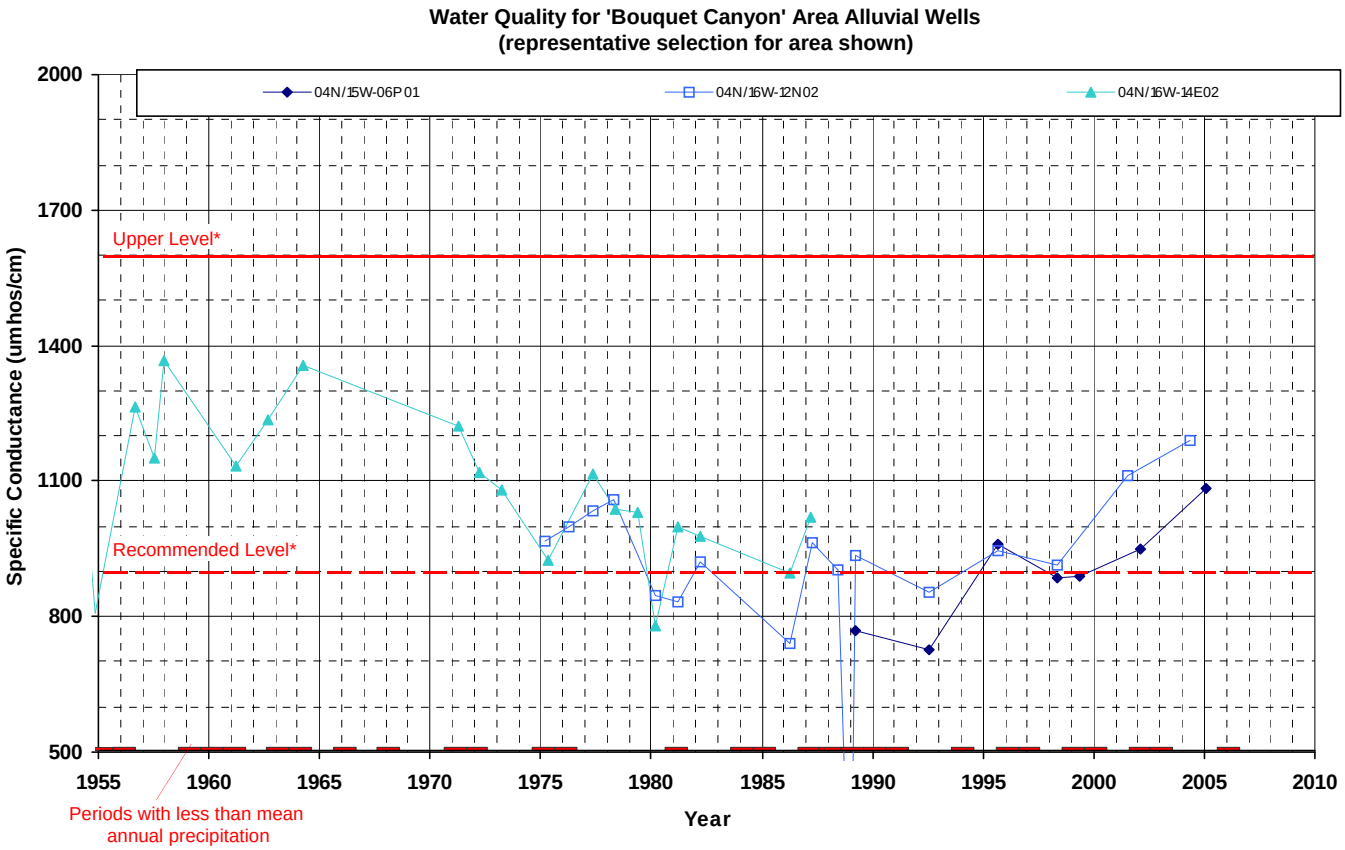
Figure III-10
Treated Water Distribution System
Castaic Lake Water Agency

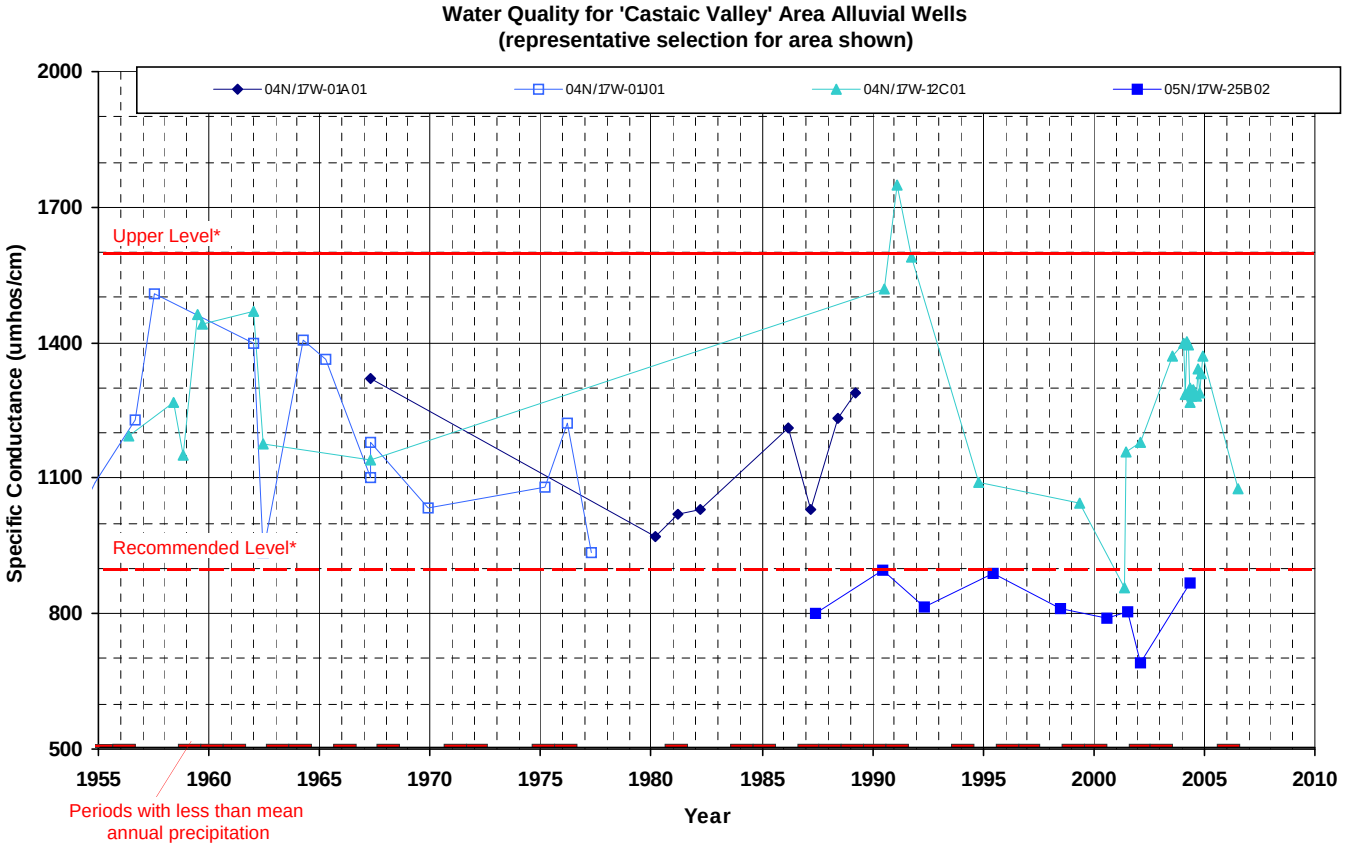




*California Department of Health Services Secondary Maximum Contaminant Level

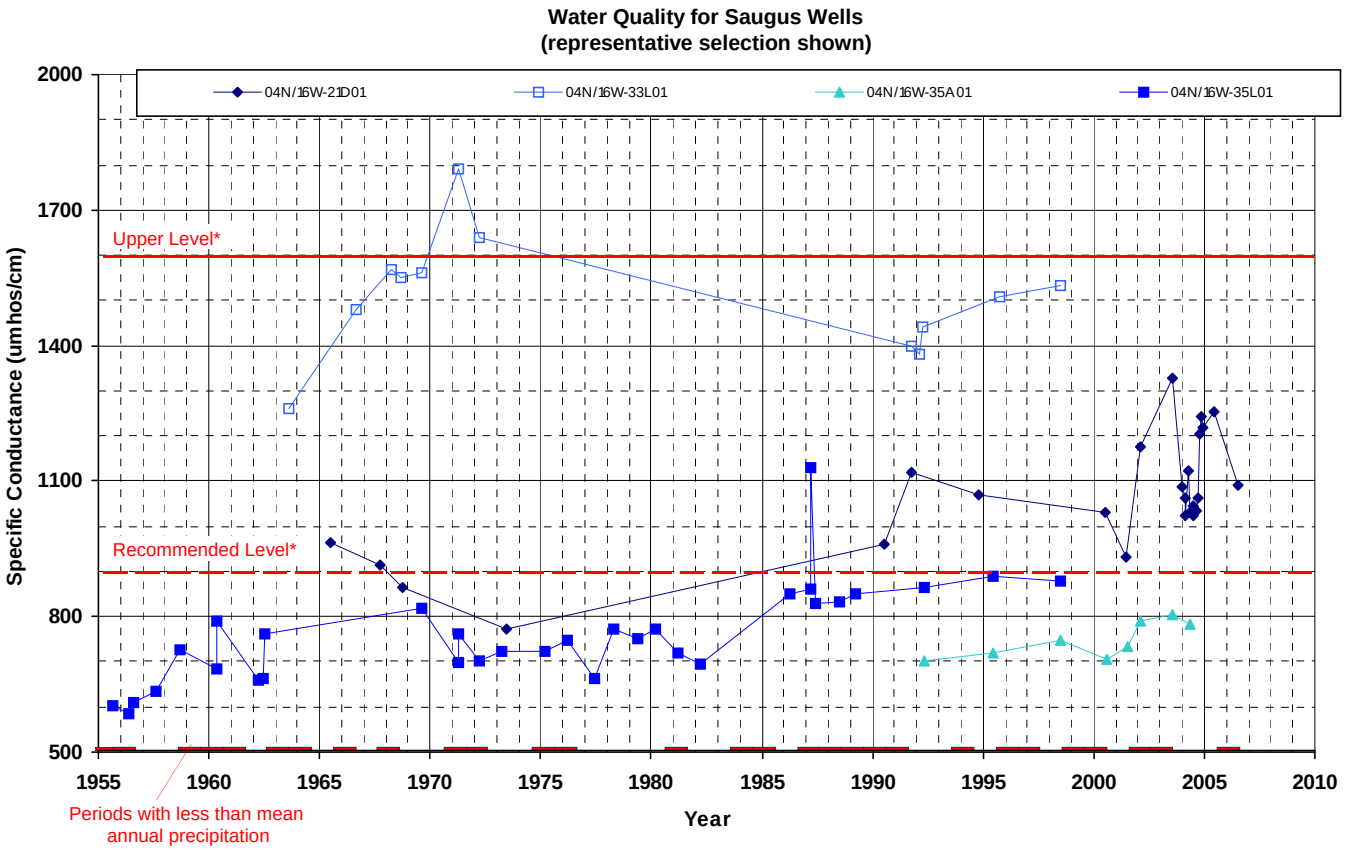
Figure III-11





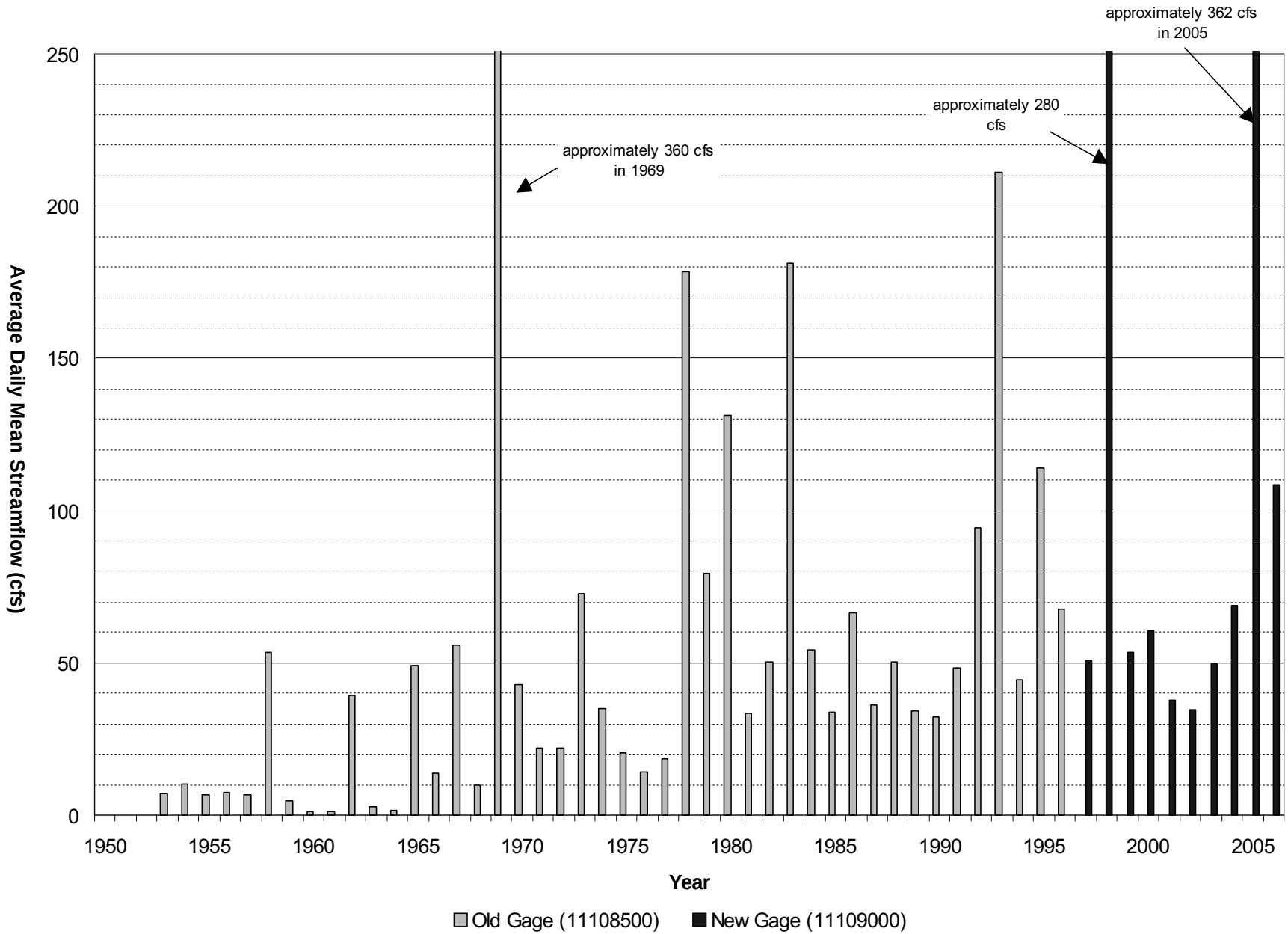
*California Department of Health Services Secondary Maximum Contaminant Level

Figure III-12



*California Department of Health Services Secondary Maximum Contaminant Level

Figure III-13



2006 streamflow average through September 30, 2006.

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Figure III-14
Annual Average of Daily Mean Streamflow
Santa Clara River at Los Angeles - Ventura County Line

IV. Summary of 2006 Water Supply and 2007 Outlook

As discussed above, total water demands in the Santa Clarita Valley were 91,400 af in 2006. This represented an increase of about nine percent from total demand in 2005. Of the total demand in 2006, about 74,100 af was for municipal water supply, and the balance (17,300 af) was for agricultural and other uses, including individual domestic uses. As also discussed herein, the total demand in 2006 was met by a combination of local groundwater and imported SWP water, and by a small amount of recycled water.

The water demand in 2006 was the same as the average projection in the UWMP and the same as the short-term projected demand that was estimated in the 2005 Water Report. For illustration, historical water use from 1980 through 2006 is plotted in Figure IV-1; also shown with that historical record are the projected total water demands in the UWMP through 2030. As discussed in the 2005 UWMP, year-to-year fluctuations in historical water demand have ranged from about ten percent below to about nine percent above the average or "normal" projection that would describe the long-term historical trend in the Valley's total water demand. The primary factor causing the year-to-year fluctuations is weather. In the short term, wetter years have typically resulted in decreased water demand, and drier years have typically resulted in higher water demand. Extended drier periods, however, have resulted in decreases in demand due to conservation and water shortage awareness. The decline in water demand toward the end of the 1987-92 drought is a good example of such reduced demand. A good recent example of wet-year effects on water demand was 2005, where extremely wet conditions resulted in total water requirements about six percent below the average projection in the UWMP.

The average water demand projection in the 2005 UWMP for 2007 is 93,600 acre-feet. For short-term planning, however, recognizing the continuation of growth and below-normal precipitation in early 2007, water demand in 2007 is expected to be greater than the average projection in the 2005 UWMP. Also recognizing that the most recent weather-related impact on water demand was notable (about 6 percent reduction attributable to very wet conditions in 2005) but less than the full range (10 percent) reflected in the 2005 UWMP, it is further expected that water demands in 2007 could be affected by a similar amount (6 percent), up to the upper range in the 2005 UWMP (9 percent), above the average projection. As a result, total water requirements in 2007 are expected to be on the order of 99,000 to 102,000 acre-feet.

It is expected that both municipal and agricultural water demands in 2007 will be met with a generally similar mix of water supplies as in previous years, notably local groundwater and imported SWP water, complemented by recycled water that will continue to supply a small fraction of total water demand.

As of April 20, 2007, the allocation of water from the SWP in 2006 is 60 percent of CLWA's Table A Amount, or 57,120 af. Combined with local groundwater from the two aquifer systems (42,500 af), total Flexible Storage Account water (6,060 af), net carryover SWP water from 2005 (2,569 af), annual acquisition from Buena Vista Water District (11,000 af), and recycled water (500 af), the total available water supplies for 2007 are about 120,000 af. Consequently, CLWA and the Purveyors anticipate having more than adequate supplies to meet all water demands in 2007. Projected 2007 water supplies and demand are summarized in Table IV-1.

In October 2006, Watershed Enforcers, a legal project of the California Sportfishing Protection Alliance, filed a lawsuit in Alameda County Superior Court alleging that the California Department of Water Resources (DWR) was not in compliance with the State Endangered Species Act (CESA) and does not have the required State permit to "take" protected fish species in the Sacramento-San Joaquin Delta (Delta) as part of its pumping operations at the Banks Pumping Plant located near the town of Tracy. In April 2007, the court agreed with the plaintiffs and ordered a shutdown of pumping from the Delta if appropriate permits could not be obtained in 60 days. In May 2007, DWR filed an appeal of the lower court's decision, which automatically stayed that decision pending the outcome of the appeal. At the same time, DWR entered into a Memorandum of Understanding with the California Department of Fish and Game (DFG) to jointly work with the appropriate federal agencies to develop a federal biological opinion that complies with CESA. During the preparation of the new biological opinion, DWR committed itself to actions related to protecting species through the adaptive management provisions of the existing biological opinions. Upon completion of this effort, DWR plans to submit a request to DFG for a consistency determination under CESA that would allow for incidental take based on the new federal biological opinion. In terms of short-term water supply availability, CLWA does not anticipate that any of the preceding actions will cause a net reduction in delivery of imported water that would in turn result in a shortage of overall water supply to meet projected 2007 water demands as summarized in Table IV-1.

In addition to the regular water supplies described above to meet projected demand in 2007, a total of nearly 51,000 af of recoverable water has been stored in the Semitropic Groundwater Storage Bank in Kern County. Another 57,600 af of recoverable water has also been stored in the long-term Rosedale-Rio Bravo Water Banking and Exchange Program, also in Kern County.

Table IV-1
2007 Water Supply and Demand
(acre-feet)

Projected 2007 Demand [1]		**99,000-102,000**
Available 2007 Water Supplies		
Local Groundwater		42,500
Alluvial Aquifer [2]	*35,000*	
Saugus Formation [3]	*7,500*	
Imported Water		76,749
Table A Amount [4]	*57,120*	
Net Carryover from 2005 [5]	*2,569*	
Buena Vista/Rosedale-Rio Bravo[6]	*11,000*	
Flexible Storage Account (CLWA) [7]	*4,684*	
Flexible Storage Account (Ventura County) [7]	*1,376*	
Recycled Water		500
Total Available 2007 Supplies		**119,749**
Additional Dry Year Supplies [8]		
Semitropic Groundwater Storage Bank		50,870
2002 Account[9]	*21,600*	
2003 Account[9]	*29,270*	
Rosedale-Rio Bravo Water Banking and Exchange Program		57,600
2005 Banking of Table A[10]	*17,800*	
2006 Banking of Table A[10]	*17,800*	
2005 and 2006 Buena Vista/Rosedale-Rio Bravo Water Acquisition Agreement[11]	*22,000*	
Total Additional Dry Year Supplies		**108,470**

1. Interpolated from 2005 and 2010 projections in 2005 UWMP, *plus estimated 6-9% dry year increase.*

2. The Alluvium represents 30,000 – 40,000 afy of available supply under wet-normal conditions, and 30,000 – 35,000 afy under dry conditions. Available supply in 2007 is shown to be mid-range for average/wet conditions, or upper end of range for dry conditions.

3. The Saugus Formation represents 7,500 – 15,000 afy of available water supply under non-drought conditions, and up to 35,000 afy under increasingly dry conditions. Available supply in 2007 is shown to be limited to wet conditions; no short-term increase in Saugus Formation pumping is required or shown for 2007 water supply.

4. CLWA's SWP Table A amount is 95,200 af. The 2007 allocation, as of April 24, 2007, is 60 percent (57,120 af).

5. Amount used by CLWA in 2007; total carryover was 38,484 af.

6. 2007 annual supply from Buena Vista / Rosedale-Rio Bravo Water Acquisition Agreement.

7. CLWA can directly utilize up to 4,684 af of storage capacity in Castaic Lake. By agreement in 2005, CLWA can also utilize 1,376 af of Ventura County SWP contractors' flexible storage capacity in Castaic Lake.

*

8. Does not include other reliability measures available to CLWA and the retail water Purveyors. These measures include short-term exchanges, participation in DWR's dry-year water purchase programs, local dry-year supply programs and other future groundwater storage programs.

9. Net recoverable water after banking 24,000 af and 32,522 af in 2002 and 2003, respectively.

10. Net recoverable water after banking 20,000 af in each year.

11. Water stored in Rosedale-Rio Bravo Water Banking and Exchange Program pursuant to the Buena Vista / Rosedale-Rio Bravo Water Acquisition Agreement.

Total recoverable water in Kern County storage banks is now more than 108,000 af. That component of overall water supply is separately reflected in Table IV-1 because it is intended for future dry-year supply and will not be used for 2007 water supply.

A significant number of projects are part of an overall program to provide facilities needed to firm up imported water supplies during times of drought. These involve water conservation, surface and groundwater storage, water transfers and exchanges, water recycling, additional short-term pumping from the Saugus Formation, and increasing CLWA's imported supply. This overall strategy is designed to meet increasing water demands while assuring a reasonable degree of supply reliability.

Part of the overall water supply strategy is to provide a blend of groundwater and imported water to area residents to ensure consistent quality and reliability of service. The actual blend of imported water and groundwater in any given year and location in the Valley is an operational decision and varies over time due to source availability and operational capacity of Purveyor and CLWA facilities. The goal is to conjunctively use the available water resources so that the overall reliability of water supply is maximized.

For long-term planning purposes, water supplies and facilities are added on an incremental basis and ahead of need. It would be economically unsound to immediately, or in the short term, acquire all the facilities and water supplies needed for the next twenty to thirty years. This would unfairly burden existing customers with costs that should be borne by future customers. There are many ongoing efforts to produce an adequate and reliable supply of good quality water for Valley residents. Water consumers expect that their needs will continue to be met with a high degree of reliability and quality of service. To that end, CLWA's and the Purveyors' stated reliability goal is to deliver a reliable and high quality water supply for their customers, even during dry periods. Based on conservative water supply and demand assumptions contained in the 2005 UWMP for the next 25 years, in combination with conservation of non-essential demand during certain dry years, CLWA and the Purveyors believe implementing their water plan will successfully achieve this goal.

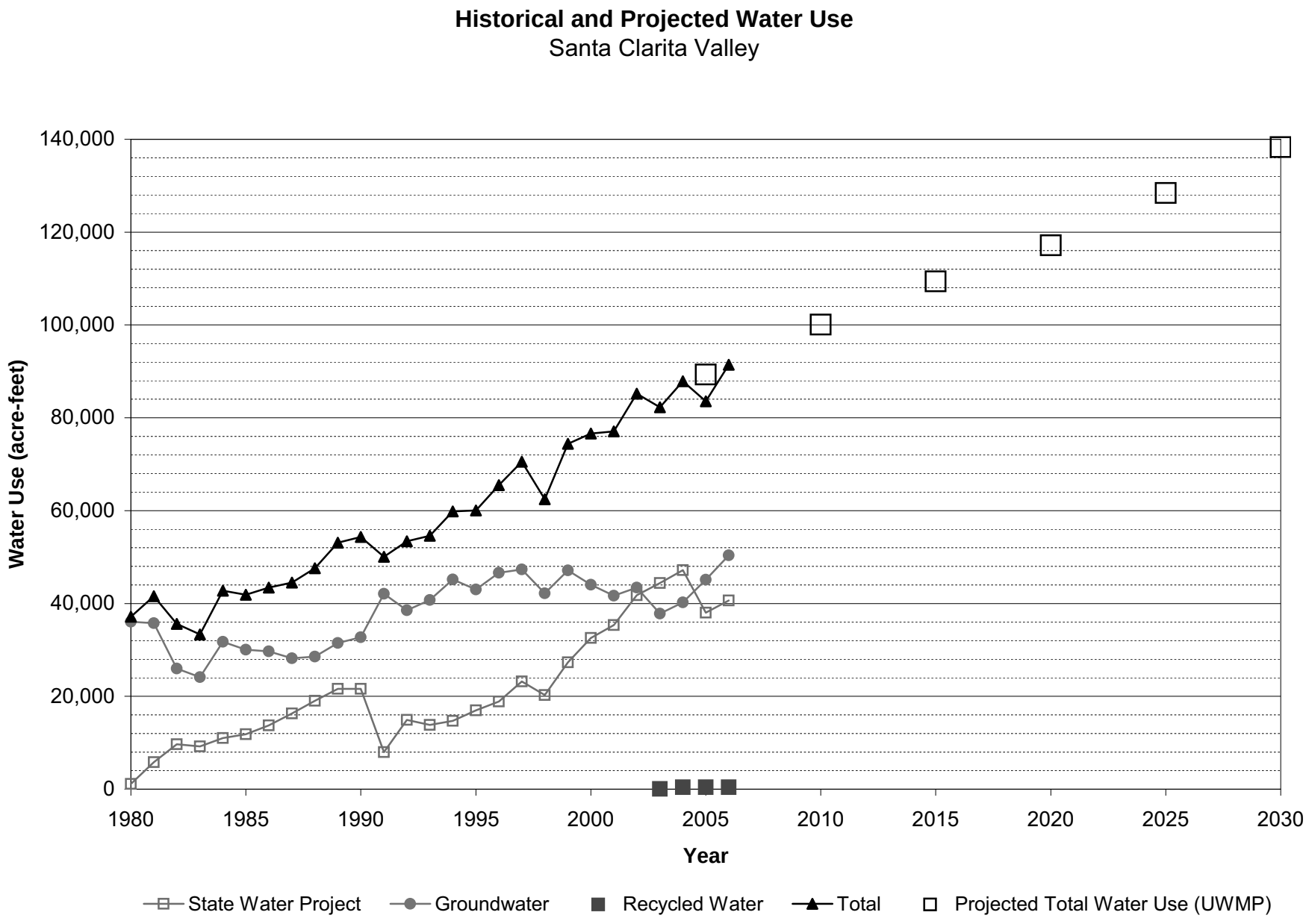
Historical and Projected Water Use
Santa Clarita Valley
Water Use (acre-feet)
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2030
Year
State Water Project
Groundwater
Recycled Water
Total
Projected Total Water Use (UWMP)

Figure IV-1

V. Water Conservation

The California Urban Water Conservation Council (CUWCC) was formed in 1991 through the Memorandum of Understanding (MOU) Regarding Urban Water Conservation in California. The urban water conservation Best Management Practices (BMPs) included in the MOU are intended to reduce California's long-term urban water demands. While the BMPs are currently implemented by the MOU signatories on a voluntary basis, they are specified as part of the Demand Management Measures section of the Urban Water Management Planning Act.

Water conservation can achieve a number of goals, such as:

- Meeting legal mandates
- Reducing average annual potable water demands
- Reducing sewer flows
- Reducing demands during peak seasons
- Meeting drought restrictions

CLWA signed the urban MOU in 2001 on behalf of its wholesale service area, and pledged to implement several BMPs at a wholesale support level (listed below). NCWD signed the MOU in 2002 and VWC signed the MOU in 2006, on behalf of their respective retail service areas. As separate MOU signatories and in their respective roles as retailers, NCWD and VWC are committed to implementing all BMPs that are feasible and applicable in their service areas. Efforts are made to coordinate with CLWA and the other Purveyors wherever possible to maximize efficiency and ensure the cost effectiveness of NCWD's conservation program.

In coordination with the Purveyors, CLWA has been implementing the following BMPs (which pertain to wholesalers) for several years (some prior to signing the MOU in 2001):

BMP 3	System Water Audits, Leak Detection and Repair
BMP 7	Public Information Programs
BMP 8	School Education Programs
BMP 10	Wholesale Agency Programs
BMP 11	Conservation Pricing
BMP 12	Water Conservation Coordinator

CLWA and the Purveyors have been implementing these BMPs valley-wide. Since 2001, CLWA has also instituted implementation of BMP 2 (Residential Plumbing Retrofits) and BMP 14 (Residential ULFT Replacement Programs) on behalf of the Purveyors.

In addition to these efforts, in September 2006, CLWA installed a weather station at its headquarters adjacent to the Rio Vista Water Treatment Plant. This station became part a network of over 120 automated weather stations in the state of California that make up the California Irrigation Management Information System (CIMIS). The Department of Water Resources (DWR) manages the system which has a primary purpose of making available to the public, free of charge, information useful in estimating crop water use for irrigation scheduling.

NCWD has initiated implementation of the remaining BMPs that are specific to retail water suppliers:

BMP 1	Water survey programs for single-family residential and multi-family residential customers
BMP 3	System water audits, leak detection and repair
BMP 4	Metering with commodity rates for all new connections and retrofit of existing connections
BMP 5	Large landscape conservation programs and incentives
BMP 6	High-efficiency clothes washing machine financial incentive programs
BMP 9	Conservation programs for commercial, industrial, and institutional (CII) accounts
BMP 11	Conservation pricing
BMP 12	Conservation coordinator
BMP 13	Water waste prohibition

Reports to the CUWCC on BMP implementation by CLWA and the Purveyors were included in the 2005 UWMP.

Additional savings are occurring Valley-wide due to state interior plumbing code requirements that have been in effect since 1992, as well as due to changes in lot size and reduction in exterior square footage of new housing and commercial developments. These have begun to impact overall demand in the Valley. The Valley's water suppliers continue to monitor water demand trends through time to assess those factors that are accounting for the reduction, and to attempt to quantify them.

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