Appendix 5.19-C
Peer Review of the Wastewater Treatment Report
April 11, 2017

Draft Memorandum

Subject: Peer Review of the Wastewater Treatment Report for the Proposed Centennial Specific Plan Development

K/J 1644236*01

This memorandum documents work performed by Kennedy/Jenks Consultants to provide a peer review of the Wastewater Treatment Report (Psomas, 2017) for the Centennial Specific Plan Development (Project).

1.1 Understanding of the Project/Background

The Project is a plan for the long-term development of a 12,322-acre new town located in the northwest corner of Los Angeles County adjacent to the Kern County border. Land uses include residential, commercial, business park, utility, institutional, commercial recreation, minor greenways, parks, school, and streets. At buildout, the development could include up to 19,333 dwelling units with an estimated population of 57,150. The Project is estimated to require 9,187 acre-feet per year (AFY) of water for residential, commercial, landscaping, and other purposes, of which 5,680 AFY would be treated for potable use, and 3,507 AFY would consist of recycled water treated in on-site wastewater treatment facilities to State standards under Title 22 of the California Code of Regulation (CCR) for unrestricted reuse.

1.2 Scope of Peer Review Comments

This section provides the scope of the analysis performed by Kennedy/Jenks. The following issue areas for the Project were evaluated:

1. Reasonableness and accuracy of the wastewater generation, recycled water production, and recycled water demand flows,
2. Reasonableness and accuracy of the wastewater reclamation facilities, and
3. Reasonableness and accuracy of the recycled water facility locations.

To perform the peer review, the Tejon Ranch Company provided the Centennial Project Wastewater Treatment Report, prepared by Psomas in February 2017.
Peer Review Comments

1.3 Recycled Water System and Demands

- In regards to the recycled water distribution system, it is noted that a pipeline is planned to cross the Aqueduct in order to connect the distribution systems between the two Wastewater Reclamation Facilities (WRFs). Given the likely complex nature of building facilities in and around the Aqueduct, does the Project have alternative or backup plans if provisions to build a recycled water pipeline under/over the Aqueduct is not allowed or delayed? Does each plant have enough reclaimed water demands to use all the reclaimed water? Will this be true for each phase? How large is the marginally difference between each plant's reclaimed water production and reclaimed water demand per phase?

3.1 Wastewater Flow (Treatment Demand) Estimates

- It is noted that the Project will generate 5,165 AFY, or 4.62 million gallons per day (mgd), of wastewater flow at build-out, which is intended to equal indoor potable demand for the Project. Confirm consistency with the Water Resources section of the Project Draft EIR. In addition, it is recommended to add a safety factor of 5 to 10 percent in case actual wastewater flows are higher than predicted.

- The balance between recycled water production and demand seems a bit precarious. What if the projected reclaimed demand is less than estimated? How much potable water is available to back up the recycled water system if supplies are short of demand? On the other hand, what provisions are available to deal with excess recycled water supply that exceeds available storage capacity? Is there an alternative disposal mechanism available?

- It is noted that 10 percent water loss is expected between indoor potable demand and available recycled water supply, due to wastewater treatment, recycled water distribution system losses, and evaporation (presumably from recycled water seasonal storage). It is recommended to provide a reasoned assumption or detailed calculation of water loss for each group of facilities. Generally, it is expected that water loss would be negligible for the wastewater reclamation facilities given the planned dewatering facilities. Distribution losses can be expected to be similar to potable water distribution losses, which are assumed to be 5 percent. A detailed calculation of water loss from evaporation at the recycled water storage ponds is recommended based on the size and shape of the ponds, water volume, and seasonal climatic conditions.

- The Lahontan Regional Water Quality Control Board (Lahontan Regional Board) may require the Project to provide additional recycled water seasonal storage given the lack of available disposal methods at the site for recycled water. It is recommended to engage the local jurisdictional agencies early in the facility design process in order to identify potential permitting requirements that will effect facility sizes and/or design choices.
4.1 Facility Locations

- For the wastewater conveyance systems, confirm if off-site telemetry facilities or emergency storage facilities are required by the Lahontan Regional Board or other jurisdictional agency.

- For the wastewater conveyance system, odor control facilities may be required where force-mains are long or if flows are initially small.

- Typical dry weather peaking factors for smaller plants such as the proposed WRFs can vary between 2 and 3. This is an important design number since many tertiary unit processes are designed/permited on the basis of peak flow. The method described herein to estimate peak flows does not seem to be thorough enough. It is recommended to establish peaking factors for peak dry weather flow and peak design flow (or peak wet weather flow) to establish design criteria for the wastewater facilities.

4.2 WRF Water Quality Objectives

- In the first paragraph of Section 4.2, there is a reference to recycled water use for “indoor cooling and wastewater in the business park”. What is the “wastewater” use?

4.4 Primary Treatment

- There is no mention of grit removal at the headworks facility. This process is typically used.

- For WRF West, 0.34 mgd is a pretty small plant capacity for use of primary clarification. There may be a good reason to include primary clarification that is not readily apparent. However, this can always be optimized at a later stage of the design.

4.5 Secondary Treatment/Tertiary Treatment

- Membrane bioreactor (MBR) design is greatly influenced by peak flows. We either need a handle on peak flow values and durations or primary flow equalization needs to be considered.

- The written description includes primary treatment after headworks and before biological treatment. Primary clarifiers are not shown on Figure 4 – Process Flow Diagram.

- In regards to Figure 4 – Process Flow Diagram, solids generated from the headworks and MBRs will also be conveyed to landfill disposal, in addition to centrifuge sludge.

- The report makes references to nutrient removal along with anoxic/aerobic zones, which would indicate nitrogen removal, however it is not clear if this is a treatment goal of the WRFs. It is recommended to provide a full list of water quality criteria for the WRF effluent, which would need to be in compliance with Title 22 requirements for disinfected tertiary recycled water.
Additionally, if nitrogen removal is the design intent for biological treatment, a carbon source is needed. Primary clarifiers may remove too much carbon resulting in the need to add a carbon source, such as methanol. Normally, knowing how much nitrogen is being removed will let the designer judge the benefits of using primary clarifiers or not. The whole nutrient removal aspect needs to be more fully described since it will affect facility selection and sizing.

4.6 Solids Handling

- In the first sentence of Section 4.6 – Solids Handling, replace the word “thicken” with “treat”.

- In regards to projected sludge volumes, one ton per mgd is a typical rule of thumb that is used without doing detailed calculations.

4.7 Disinfection

- Recommend adding a discussion on Title 22 disinfection requirements. In regards to chlorine contact time. Note that maximum flow would need to be consistent with the peak design flow selected for the WRFs.

- A chlorine residual is useful in recycled water systems to avoid operational problems. A UV system can be used for disinfection, but sometimes a chlorine residual is added afterward to avoid operational issues like the smell of hydrogen sulfide at the downstream reaches of the distribution system. Remote chlorine addition may be even more important if large recycled water storage systems are utilized.

4.8 Recycled Water Storage

- The WRF effluent will still contain some biological oxygen demand (BOD) and nutrients. It is recommended to include measures that will control algae growth.

- There is no mention of storage facilities for off-specification effluent from the WRFs. Accommodations will be required to divert, store, and re-treat effluent that does not meet recycled water quality requirements prior to distribution.

4.9 WRF Layouts

- It is recommended to include space for ancillary facilities, electrical buildings, blower facilities, odor control, and chemical storage/feed.

- The layouts do not account for roadways that are needed for trucks to enter and exit the WRFs to transport solids for landfill disposal. There will also be truck traffic for chemical deliveries.

- The headworks facilities are not shown on the layouts.