BALDWIN HILLS CSD
COMMUNITY ADVISORY PANEL (CAP) MEETING
March 24, 2016
Approved 4/28/2016

A. Call to Order - 7:00 PM
David McNeil Chair.

B. Approval of Agenda - Agenda approved.

C. Presentation on Earthquakes/Seismicity – Dr. Jean Paul Ampuero
Dr. Ampuero is a tenured Professor of Seismology at CalTech and is at the CAP to present an update on induced seismicity. Dr. Ampuero provided follow-up on two questions from his last presentation to the CAP:

1. Can fluid pressure entering into active fault cause an earthquake?
2. What can the Caltech seismograph do for the community surrounding the Inglewood Oil Field (IOF)?

Question 1 Discussion: Two main mechanisms can allow for fluid pressure to trigger an earthquake (induced seismicity), when the fluid pressure is in direct contact with a fault and when the volume of fluid in a reservoir is enough to affect fault motion. The amount of fluid injected is dependent on the type of well operation. Hydraulic fracturing uses relatively small amounts of fluid whereas a water injection well can involve large volumes of fluid. Therefore, the impact of hydraulic fracturing is very close to the well itself whereas water injection operations can impact larger areas. If a geologic area is permeable, a water injection well can cause an impact at a great distance from the well.
Dr. Ampuero presented several graphs depicting volume of waste water versus distance to earthquakes. Hydraulic fracturing has been associated with smaller earthquakes whereas water injection wells have caused larger magnitude events. Another graph showed that earthquakes have been more common since 2001 in the center part of the U.S. which corresponds to an increase in hydraulic fracturing and water injection well activities; in California while well activity increased in a similar fashion, the data does not show an increase in seismic events. Dr. Ampuero explained that the difference can be attributed to the fact that the Midwest has a shallower crust and is more connected than in California.
Dr. Ampuero noted that due to the high seismic activity in California, it can be difficult to identify induced seismicity from normal tectonic events. Out of thousands of injection wells, three examples of induced seismicity have been potentially correlated with water injection in California. One example was discussed where the injected fluid came in contact with a fault and was associated with seismic activity 9 km deep and 8 km from the well; the pressure from the injected fluid traveled along the fault because the fault provided a permeable pathway. In the other two examples the physical connection was less clear and based on the correlation of the injection activity and earthquake timing.
It was noted, discussed, and reiterated by Dr. Ampuero that the earthquake activity in the Baldwin Hills area has not been associated with well drilling or injection activities at the IOF including the earthquakes in April and May of 2015 which occurred much too deep to be associated with man-made activities consistent with Dr. Ampuero's previous presentation to the CAP in 2015. In response to a question on groundwater, Dr. Tormey explained that the

groundwater at the IOF is shallow, discontinuous, and not connected to the ground water aquifers in the LA basin which are used for drinking water.

Question 2 Discussion: Dr. Ampuero discussed the importance of tracking and monitoring seismic activity to continue adding to the data base and understanding of earthquakes. The Community Seismic Network (CSN) was explained and the MEMS 3 accelerometer was introduced as a cost effective sensor that can be placed in homes or schools. The sensor requires power and an internet connection and automatically transmits data to the Google Cloud. The existing accelerometer at the IOF is part of the monitoring network at CalTech.
Dr. Ampuero recommended adding 12 accelerometers to the area surrounding the IOF in area schools to augment the CSN; the cost of the sensor is $200.00. A map of the existing CSN was shown and many of the schools in the LA area have sensors. Dr. Ampuero showed how sensors placed in different locations and levels in a building can show how buildings react to an earthquake. The sensors are also part of the earthquake early warning system.

General Questions In response to questions, Mr. Perez and Dr. Tormey explained how the production and water injection wells work at the IOF. The well activities at the IOF are required to be balanced and are monitored by DOGGR. Production without re-injection can cause subsidence as was the case in the Long Beach area. The water re-injected at the IOF is from the formation it was originally extracted from. Mr. McNeil summarized the ongoing DOGGR effort that is reviewing the ground movement issue at the IOF and is processing the recent data submittal from FM O&G. Mr. Kuechle asked about the cost of the accelerometers for the CSN and Dr. Ampuero noted that he has funding available to add sensors to the IOF area. Mr. Stapleton will follow up with Dr. Ampuero on the CSN.

D. Regional Planning/ECC Update – Timothy Stapleton/Luis Perez

Meeting Location - Next month meeting location will be at the same location, Culver City Library.

Compliance Plan Submittals - 2015 Well Production and Reporting and the 2015 Environmental Quality Assurance Program both posted on the web site and emailed to the CAP. Mr. Perez noted that the EQAP is a component of the forthcoming EQAP audit.

Public Works Health Study and CCST Report - Mr. Perez discussed the memo prepared by MRS regarding the CCST Well Stimulation Study and the comments in the report on the Public Health Study for the IOF. The memo provided the correspondence between the BOS Second District Office, CCST and Public Health. Mr. Perez noted the issue was also discussed on several conference calls between agencies. The CCST determined that while oil and gas production in general has potential environmental and health impacts, hydraulic fracturing, due to the short time frame this operation entails, does not involve a significant increase to that potential for impacts. The CCST report did not take into account specific regulatory oversight of certain oil projects such as the IOF and the CSD, the CCST correspondence acknowledges the fact that the IOF has more regulatory protection than most oil fields. The CCST report also acknowledged that the Fracking Study at the IOF was a good example of the type of monitoring that should be done to determine potential impacts from fracking well stimulation activities.
The Public Health Study was designed to compare the health outcomes of people living near the IOF to the health outcomes of people living in the rest of the LA basin area. The Study

did not find a significant difference; this finding is also supported by the results of the STI Air Study. Both studies did not identify a significant issue with the IOF that could be linked with a significant health effect. Mr. Kuechle pointed out that the comments in the CCST study did in fact point to several key limitations in the Public Health Study which Public Health confirmed and acknowledged in their letter. Mr. Kuechle further summarized the main issue with the Public Health Study as whether or not there is another study that is feasible to provide the information and conclusions not determined by the previous study due to those limitations. The CAP would like an issue area expert to determine the potential and feasibility of another study. Ms. Flynn is corresponding with Dr. Brian Cole at UCLA to check if he is available to come to the CAP to discuss the issue. Ms. Kent noted that the study done for the World Trade Center is the bench mark for these types of health studies. Dr. Tormey noted that the limitations on the Public Health study pointed out by the CCST study were focused on a study regarding causation of effects, a different type of study, rather than the comparison study done by Public Health. The fact that the Public Health study included census tract based health data in addition to the phone survey results was discussed as was the fact the that cancer data was not limited to cancer deaths.

E. Operator Update - Lisa Paillet

Drilling/Rig Update No current plans to drill any new wells in 2016. Rig activity summarized as no reworking rigs and 2 to 3 maintenance rigs are on the field at any given time.

F. Open Discussion/Public Comment

None

G. Approval of Minutes

February 2016 minutes approved.

H. Announcements

Next CAP meeting April 28, 2016 at same location, *Culver City Julian Dixon Library, 4975 Overland Avenue, Culver City, CA 90230.*

Adjourn: 08:45

ATTENDANCE: 03/24/16

*(*absent)*

DESIGNATED SEATS PER 22.44.142.J.1.a

Governmental Entities

1	Department of Regional Planning	Timothy Stapleton
2	City of Culver City	Megan Sahli-Wells
3	West Los Angeles College	Bob Sprague*

Operator (per 22.44.142.C)

5	Freeport McMoran Oil & Gas	Lisa Paillet

NOMINATED SEATS PER 22.44.142.J.1.a

(Accepted first-come/first-served within each sub-group)

Landowners (per 22.44.142.C)

6	Vickers Family Trust	Roger Shockley*
7	Cone Fee Family Trust	Liz Gosnell

Neighborhood Organizations (Recognized Homeowners Association)

8	Ladera Heights Civic Assoc.	Carmen Spiva
9	Windsor Hills HOA	Gary Gless*
10	United HOA (View Park)	Charles McCaw*
11	Culver Crest Neighborhood Assoc.	John Kuechle
12	Blair Hills HOA	Antoinette Lowe
13	Raintree Community HOA	Keith Curtiss*
14	Baldwin Hills Estates HOA	Lory Johansson

Neighborhood Organizations (No Recognized Homeowners Association)

15	Ladera Crest Homeowner	George Mallory*
16	Baldwin Vista Homeowner	Irma Munoz

School Districts

17	Los Angeles Unified	Glenn Striegler*
18	Culver City Unified	Kelly Kent

Neighborhood Organizations (All Others)

19	Windsor Hills Block Club	Toni McDonald-Tabor
20	Community Health Councils	Gwendolyn Flynn
21	Baldwin Hills Conservancy	David McNeill
22	The City Project	Daphne Hsu*