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MEETING MINUTES

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APPENDIX E
MEETING MINUTES NO. 1
WHITE POINT STATUS UPDATE MEETING
APRIL 8, 2013



MEMORANDUM

TO: City of LA BOE

FROM: Travis Deane, Dean Francuch, Jason Buenker – Shannon & Wilson

DATE: April 8, 2013

RE: **WHITE POINT STATUS UPDATE – MEETING MINUTES**

INSTRUMENTATION AND DRILLING OPERATIONS

- We presented the enclosed figures (Figures 1 through 9) to the City of Los Angeles BOE (City).
- Figure 1 demonstrates that the Boring B-7 inclinometer readings show three discrete zones of displacement at elevation 15, 35, and 60 feet. In our opinion, the displacement at El. 15 feet is a result of hydrofracture or plastic deformation of the rock linked to the drilling of Drain D-2 (Drain D-2 drilling passed about seven feet west of Boring B-7). The displacement at El. 35 and 60 feet is likely subsurface movement along existing weak beds. Figure 1 also demonstrates an increase in groundwater pressure recorded by vibrating wire piezometers (VWP) (lower chart). The VWP groundwater head increase corresponds well to drilling activities (i.e. pressure increases as drill bit nears the VWP (middle chart).
- Figure 2 demonstrates that groundwater head readings in the Boring B-7 VWP increased when Drain C-6 was nearest (23 feet) to the VWP.
- Figure 3 and Figure 4 demonstrates slight increases in the groundwater head readings of the Boring B-7 VWP that correspond roughly to when Drain C-4 and C-5 was nearest (57 and 35 feet away, respectively) to the VWP.
- Figure 5 demonstrates little apparent influence between the Drain B-3 or B-6 drilling and the groundwater head in Boring B-10.
- Figure 6 and Figure 7 demonstrate that groundwater head readings in the Borings B-10 and B-11 VWPs increased when Drain B-5 was nearest to the VWPs. The VWP in Boring B-10 at El. -8 feet increased by nearly 40 feet of pressure head. Figure 6 also demonstrates that the Boring B-10 inclinometer readings show two discrete zones of displacement at El. 28 and 48 feet. Figure 7 demonstrates that the Boring B-11 inclinometer readings show one discrete zone of displacement at El. 22 feet.
- Figure 8 and Figure 9 demonstrate that groundwater head readings in the Borings B-10 and B-11 VWPs increased when Drain B-4 was nearest to the VWPs (6 feet). The groundwater head in Boring B-10 at El. -8 feet increased by nearly 20 feet of pressure

head during drilling of Drain B-4. The groundwater head in Boring B-11 at El. 11.2 and - 8.8 feet increased by over 30 feet.

- We reported to the City that at the time of the meeting, Hayward Baker was preparing to break out on Drain B-1. Hayward Baker would likely move to the A-block drains later that day.

GEOLOGIC INTERPRETATION

- We stated that the zones of displacement shown in the inclinometers correspond well to bentonite beds observed in the drilling logs. Specifically, we observed a bentonite bed in Boring B-7 at El. 35 feet and slickensides between El. 60 and 80 feet. We also observed a bentonite bed in Boring B-10 at El. 30 feet and Boring B-11 at El. 25 feet.
- We stated that the VWP response to drilling suggests a permeable formation. The horizontal well drillers state that drilling behavior suggests the formation is more fractured or open to the west and less fractured or tighter to the east. This inference corresponds well to our observed groundwater head behavior. The more fractured material around Boring B-7 leads to lower groundwater head between drilling operations and the VWP as it is easier for water to move laterally out towards the landslide failure surface. As a result, we observe moderate (10-15 foot) spikes in the groundwater pressure in the B-7 VWP when drilling is nearby. The less fractured material around Boring B-10 and B-11 leads to more confinement in the formation. As a result, we observe relatively high (20-35 foot) spikes in the groundwater head recorded by the VWPs when drilling is nearby.
- We stated that, in our opinion, the recent displacements observed in the inclinometers occurred along pre-existing weaker beds. The bentonite beds were likely reduced to residual shear strength by before drilling started due to tectonic folding and chemical weathering.
- We stated that we have observed a cumulative total inclinometer displacement of 0.5 inches of in B-7, 0.2 inches in B-10, and 0.1 inches in B-11. The displacement patterns suggest that subsurface displacements will likely propagate eastward as drilling continues eastward. Given that we observed displacement in the B-11 inclinometer when drilling was still 50 feet east of the inclinometer location, we expect "A"-block drain drilling (the most eastward drains) to most likely to potentially cause subsurface movement near the local residences.

OPTIONS AND RECOMMENDATION

- We presented the City with three approaches: 1) Proceed with drilling and monitor the slope; 2) Proceed with drilling and coordinate with residences regarding displacement of residential structures; 3) Suspend drilling and begin work immediately on the tieback

anchors. We recommended the City proceed with #3 and suspend drilling immediately to avoid additional slope displacements that may impact the nearby Bruno residence. Once tieback anchors stabilize the slope, the contractor could return to complete the remaining drains.

- The City stated they wished to continue drilling. They stated that Mr. Bruno was already suing the City and that additional subsurface displacements may not worsen the situation. We recommended additional instrumentation (including installation of an inclinometer immediately west of the Bruno property) around the Bruno residence in City right-of-way, if drilling was to continue. The City agreed that a Boring B-12 should be installed with inclinometer casing and VWPs. We agreed to complete the boring and install the inclinometer as soon as possible, likely this week.

APPENDIX E
MEETING MINUTES NO. 2
WHITE POINT SLOPE STABILIZATION MEETING
MAY 31, 2013

MEETING MINUTES FOR WHITE POINT SLOPE STABILIZATION

Date: May 31, 2013, 11 AM to Noon

Location: Bureau of Engineering Office, 7th Floor, Los Angeles, CA

Attendees Vince Jones, Gene Edwards, Christopher Johnson, Pedro Garcia (LA BOE); Travis Deane, Dean Francuch, Nicky Nitichaivorrakul, Jason Buenker (Shannon & Wilson, SW)

1. Project Status Summary

1.1 Budget and Proposals

- SW submitted to the BOE a summary of budget utilization along with a list of proposals that are waiting for authorization by Hayward Baker. These proposals are:
 - a. Addendum proposal for dewatering construction (\$65,000)
 - b. Groundwater testing (\$15,000)
 - c. Boring B-12 Exploration (\$65,370)
 - d. Ground Anchor Construction Services (\$194,400)
 - e. Dewatering Drain Review and Development (82,900)
- The budget and proposal authorization spreadsheet is attached.

2. Current instrumentation and monitoring status report

- Last visit to the site to download data inclinometers and VW piezometers was on May 29, 2013.
- Inclinometer B-5 indicated additional movement of less than 0.1 inch toward the ocean at depth approximately 107 feet below street level. B-5 is located near the center of 2011 landslide, approximately 80 feet from the edge of slope. No tension crack is observed on the ground surface.
- Piezometers indicated steady or slowly decreasing groundwater levels.

3. Traffic Safety Design

- BOE expresses a preference that the cul-de-sac not be in the nature preserved area.
- SW suggests that the new perimeter fence should not be closer than 40 feet from the edge of slope of 2011 mass landslide

4. Dewatering Drains

- Drain discharge
 - SW will prepare a proposal for testing of water from natural spring west of Drain D-2 to compare the amount of sulfur and other minerals between discharges from D-2 and nearby natural spring.
 - SW states the current amount of discharge from D-2 is about ½ gpm.
 - Final plan is to discharge water from the drains to ocean after receiving final approval from authority.
 - Option for decommission of Drain D-2 by grouting if sulfur or other mineral content are not acceptable to be released to the ocean. SW noted risk of groundwater going to an adjacent drain.
 - Option for treatment of discharge from D-2 before releasing. BOE states this option will be costly and require long term maintenance.

- Video survey and development of drains
 - SW prepared and submitted the proposal for dewatering drain survey and development. A hard copy of proposal was left with Gene Edwards. SW will email a copy of this proposal to Pedro Garcia.
- Inspection and protection of drains before anchor construction
 - Video survey to get a baseline of drains before anchor construction
 - Observe drains for buildup of sediment and assess need for development
- Video survey of drains during anchor construction
 - Option to flush adjacent drains during anchor grouting.
 - Video survey of drains during grouting with option of flushing if grout is detected.
- Video survey of drains after anchor construction
 - Video survey of post-anchor construction and development.

5. Ground Anchors

- Resolve review comment No. 1 from HBI.
 - BOE and SW agree to delete this note since it is redundant with the clause in General Conditions in the master contract between BOE and HBI.
- HBI's responsibility for final design of ground anchors.
 - A meeting between BOE, SW and HBI is planned next week to discuss and resolve whether HBI will be responsible for final design and allocation of risk. Conference call scheduled for 6/4.
 - BOE expressed a preference in having SW responsible for the final design of anchors.
- Interference with existing dewatering drains
 - BOE and SW will evaluate HBI performance after test anchors are complete. SW will make adjustments on remaining anchor design based on HBI capabilities.
- Westernmost anchors (2)
 - Due to out-of-location installation of D-Block drains, the westernmost anchors will require significant design modifications
 - The anchors may be relocated, skewed, or deleted based on HBI capabilities
 - Potential consequences of deleting these anchors. The east cul-de-sac will be shifted approximately 20 feet to the east. BOE expresses that this may not be an issue since the cul-de-sac is away from the residential area.
- Test Anchors (2)

Proposed actions for protection of dewatering drains during anchor construction

- Gyro survey the anchor drilled hole
- Video survey the anchor drilled hole and/or drains
- Stand-by with water to flush drain, if grout is observed seeping into drain
- Constant flush of water in drain adjacent to grouting
- Don't pressure grout, tremie grout only

- Evaluate HBI performance after test anchors are complete. Make any adjustment on remaining anchor design based on HBI capabilities.
6. Rip-rap or Reno Mattress
 - BOE states Reno mattress is a feasible option by the Coastal Commission.
 - Rip-rap or Reno mattress is shown on ground anchor contract documents for information only. It is not part of this contract.
 7. Landslide Monitoring and Instrumentation
 - SW's 2012-13 monitoring contract will expired on August 31, 2013.
 - BOE will renew a contract for 2013-14 monitoring at a later date.
 8. Next meeting
 - Conference call Tuesday, June 4, 2013 at 1 PM (BOE, HBI and SW).
