

**STATE WATER RESOURCES CONTROL BOARD (STATE WATER BOARD)
DIVISION OF WATER QUALITY RESPONSE TO COMMENTS ON THE
PROPOSED UST CASE CLOSURE OF CHEVRON #9-8392,
20314 NORWALK BOULEVARD, LAKEWOOD (Site)**

We received one comment letter during the public comment period, which ended on November 13, 2015 at noon. The comments and our responses are presented here.

Comment letter received:

Commenter, represents the Golden State Water Company (GSWC)

COMMENT 1: GSWC owns or operates five public water-supply wells within a one-mile radius of the site (not including destroyed or yet-to-be-activated wells owned by GSWC). One of these wells (Hawaiian 1) is located about 2,300 feet southeast of the subject UST site, three wells (Centralia 3, 4, and 6) are located about approximately 3,200 feet south (downgradient), and one well (Massinger 1) is located about 5,100 feet southwest (downgradient), based on Fall 2014 groundwater elevation contours for the principal aquifers in the area, which were obtained from the Water Replenishment District of Southern California (WRD).

RESPONSE: State Water Board agrees that the existing GSWC closest active well is located about 2,300 feet from the Site.

COMMENT 2: The uppermost perforations in these wells occur at 200 feet below ground surface (bgs) for GSWC's Hawaiian 1 well, 110, 110, and 180 feet bgs for GSWC's Centralia 3, 4, and 6 wells, respectively, and 160 feet bgs for GSWC's Massinger 1 well, or approximately 164, 75, 75, 146, and 121 feet below mean sea level, respectively.

RESPONSE: State Water Board recognizes that the GSWC wells are 2,300 feet away and typically produce from below the Bellflower Aquiclude. This information was considered when we reviewed the case.

COMMENT 3: Regular sampling of GSWC's Hawaiian 1 well since 1988 (DOW Source ID = 1910004-010), Centralia 3 well since 1988 (DDW Source ID = 1910004-005), Centralia 4 well since 1985 (DDW Source ID = 1910004-006), Centralia 6 well since it was constructed in 2004 (DOW Source ID = 1910004-031), and Massinger 1 well since 1985 (DDW Source ID = 1910004-014) suggests that fuel-related organic compounds have not been detected in groundwater produced by the wells.

RESPONSE: State Water Board agrees and these wells were considered in its decision.

COMMENT 4: Based on data obtained from WRD, a downward vertical hydraulic gradient between the shallow unconfined aquifer and deeper drinking water aquifers exists in the area, which increases the threat to drinking water aquifers posed by contaminants at the site.

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RESPONSE: We agree that net downward vertical hydraulic gradients may exist in many portions of the Los Angeles area and that this generally increases the risk to drinking water aquifers. Normally, the Bellflower Aquiclude prevents flow from the surface downward in most areas of Los Angeles. Furthermore, concentrations of petroleum constituents in shallow groundwater as of the most recent sampling event in April 2013 only slightly exceeded water quality objectives, with a maximum concentration of benzene of 10 µg/L in well MW-10. No other water quality objectives were exceeded in that monitoring event. Soil sampling at the source area in 2002 detected 10,600 mg/kg total petroleum hydrocarbons as gasoline at 10 feet bgs, but did not detect petroleum constituents above reporting limits at 15 feet bgs, indicating there has been little downward migration of petroleum constituents below the static groundwater level (most recently measured at 7 to 8 feet bgs). Based on these facts, the State Water Board considers it highly unlikely that petroleum constituents would migrate to deeper groundwater zones below the Bellflower Aquiclude such that they could potentially impact public water supply wells located over 2,000 lateral feet from the plume edge.

COMMENT 5: Based on data obtained from Water Replenishment District of Southern California, a few aquitards appear to exist between the shallow unconfined aquifer and deeper drinking water aquifers in the area, which may impede downward migration of contaminants that have been released at the site.

RESPONSE: State Water Board agrees. The Bellflower Aquiclude is over 100-feet thick and is a continuous feature at the Site and in the regional area. The aquiclude provides a barrier to the downward migration of petroleum constituents to deeper, productive aquifers. Given the presence of the Bellflower Aquiclude in the vicinity of the site, the very low concentrations of petroleum constituents detected in groundwater, and the vertical definition of impacted soil at the site, the State Water Board considers it highly unlikely that downward migration of petroleum constituents would be sufficient to impact drinking water supplies.

COMMENT 7: It is not clear whether groundwater samples that could be used to preclude the presence of deeper groundwater contamination have been collected below the 30-foot-deep monitoring wells at the site. Therefore, it is unclear whether the extent of contamination has been completely assessed and General Criterion e of the 4/2/14 Low Threat Closure Policy checklist has been satisfied.

RESPONSE: Shallow groundwater samples (depth to water of approximately five to nine feet below ground surface) are the only groundwater samples that have been obtained at the site. However, as noted in response to comment 4 above, a comparison of petroleum concentrations in soil samples from 10 feet bgs and from 15 feet bgs in the source area indicates that there has been very little downward migration of petroleum constituents from near the shallow groundwater surface.

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COMMENT 8: Groundwater flow directions at the site have varied over time from southwest to southeast. However, it is not clear whether installation and sampling of downgradient monitoring wells to the south-southeast of the former USTs, as described in the 8/15/07 Work Plan Addendum, occurred. Therefore, it is unclear whether the extent of contamination has been completely assessed and General Criterion e of the 4/2/14 Low Threat Closure Policy checklist has been satisfied

RESPONSE: State Water Board agrees that groundwater flow directions have varied between the southwest and the southeast over the monitoring history of the site. However, the most predominant flow direction overall has been to the south by southwest (as noted on the rose diagram included in the first semi-annual 2012 groundwater monitoring report describing flow trends over the period 2005-2012). Based on this information, combined with concentration trends in wells MW-10 (source area) and MW-13 (approximately 60 feet south by southwest of the source area), the State Water Board considers it highly unlikely that groundwater impact significant enough to exceed the groundwater media-specific criteria in the Policy has migrated to the southeast. Site specific information available is sufficient to evaluate the threat to human health, safety, and the environment; therefore a conceptual site model that assesses the nature, extent, and mobility of the release has been developed. Further assessment of potential groundwater impact southeast of the former USTs would not likely change the site conceptual model.

COMMENT 9: Based on the publically available information, it is not clear whether contaminated soil associated with the USTs was excavated and removed from the site. So, it is unclear whether General Criterion f of the 4/2/14 Low Threat Closure Policy checklist has been satisfied.

RESPONSE: State Water Board agrees that there is no defining record on the extent of contaminated soil excavated at the former UST location. However, record of contaminated soil excavation at the UST location is not required for fulfillment of general criterion f of the low threat closure policy. Impacted groundwater in the source area was over-purged to remove residual secondary source in groundwater. Given that all media-specific criteria are met at the site and the highest petroleum constituent concentration detected in soil was at 10 feet bgs in boring B2, with non-detect concentrations detected at 15 feet bgs in the same boring, further excavation of impacted soil would not serve to improve the site conceptual model and would be considered impracticable.

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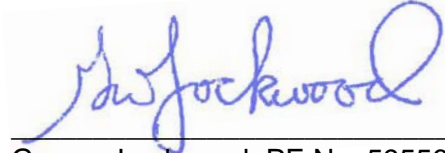
COMMENT 10: Contaminant concentrations in groundwater near monitoring well MW-10 have declined between the first, December 2002, and last, April 2013 sampling events, which is consistent with a decline in groundwater elevations at the site between these sampling events. On the other hand, contaminant concentrations positively correlate with groundwater level fluctuations at the site, in that contaminant concentrations generally increase with increasing groundwater elevation and decrease with decreasing groundwater elevation. These observations suggest that, in the absence of other factors, contaminant concentrations may only be stable in so much as groundwater levels do not fluctuate and/or remain below any possible residual vadose zone soil contamination. Therefore, because concentrations may increase in the future if groundwater elevations increase significantly, it is unclear whether the Groundwater-Specific Criterion of the 4/2/14 Low Threat Closure Policy checklist has been satisfied.

RESPONSE: While contaminant concentrations in well MW-10 have correlated with changing groundwater elevations, there has been a general decreasing trend in concentrations over time. To compare concentrations at a particular groundwater elevation over that time period, note that in January 2003 the concentration of benzene in well MW-10 was 420µg/L at 6.99 feet bgs. In October 2011, the concentration of benzene in well MW-10 was 56 µg/L at a depth of 6.95 feet bgs. This is consistent with the general decreasing trend demonstrated in the well and indicates that an overall decrease has been maintained at a comparable groundwater elevation. Based on the monitoring history of downgradient well MW-13 (located approximately 60 feet downgradient of the source area), which has not exceeded water quality objectives since July 2008, the plume of groundwater exceeding water quality objectives is significantly less than 100 feet in length. Petroleum constituents were not detected above reporting limits in soil samples obtained from 5 feet bgs to 30 feet bgs during installation of well MW-13, indicating that a smear zone that could potentially be remobilized by increasing groundwater elevations is not present away from the source area. Even at the maximum concentrations historically detected in well MW-10 (850 µg/L benzene in December 2002), the case would still meet the groundwater media specific criteria of the Policy by class 1. Based on these factors, the State Water Board considers it highly unlikely that an increase in groundwater elevations would cause the groundwater criteria in the Policy to be exceeded.

COMMENT 11: Because it is unclear whether all of the General and Groundwater-Specific Criteria have been satisfied, as described in the 8/26/15 UST Case Closure Summary, GSWC is unable to comment on potential impacts to drinking water aquifers in the area from contamination at the subject UST site.

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RESPONSE: As described in the closure summary document and in the responses to comments above, it is the State Water Board's opinion that the criteria of the low threat closure policy are met at the subject UST site. GSWC comments are noted.



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Senior Water Resource Control Engineer

Date