

**DIVISION OF WATER QUALITY RESPONSE TO COMMENTS ON THE
PROPOSED UST CASE CLOSURE OF CONOCOPHILLIPS NO. 256228
9093 IMPERIAL HIGHWAY, DOWNEY (SITE)**

We received one comment letter during the public comment period, which ended on November 15, 2013 at noon. The comments and our responses are presented here.

Comment letter received:

1. Kevin D. Brown

COMMENT 1: On Page 2 of the closure summary, it states “Site releases HAVE NOT AFFECTED GROUNDWATER”.

Reportedly, groundwater was encountered in exploratory borings, but samples were not collected for laboratory analysis. Can it truly be stated, with any degree of certainty, that groundwater has not been “affected” by historic chemical releases at the site? Would it be better to say that the true impact to groundwater is unknown?

RESPONSE: Except for low concentrations of benzene and MTBE in soil samples collected between 30 and 35 feet below ground surface (bgs), chemical analyses for over 20 soil samples collected between 30 and 55 feet bgs reported non-detectable concentrations of petroleum constituents. Therefore, the soil does not likely contain sufficient mobile constituents (leachate, vapors, or light non-aqueous-phase liquids) to cause groundwater to exceed the groundwater criteria in the Policy. Site reports provide the degree of certainty needed to determine that this is most likely a soil-only case. The closure summary was updated to reflect this.

COMMENT 2: On Page 7 of the closure summary, the geologic term “interbedded” is used several times to describe the alluvial deposits underlying the site. Interbedded is not a word that is typically used to describe alluvium; it’s frequently used to describe sedimentary bedrock (e.g., the Purisima Formation is generally composed of interbedded sandstone and siltstone).

RESPONSE: The term “interbedded” has been removed from the Summary and Geology/ Hydrogeology sections of the closure summary. The closure summary was updated to reflect the changes.

COMMENT 3: On Page 7 of the closure summary, it states:

Hydrogeology: Groundwater beneath the Site is unconfined to semi-confined and exists in both the fill and alluvium and within low permeable fractures in the underlining bedrock.

1. If groundwater wasn’t sampled, and there are no on-site groundwater monitoring wells, how was it determined that groundwater is “unconfined to semi-confined” beneath the site?
2. Groundwater is present in the “fill” beneath the site? I presume this means man-placed fill capping the site. How deep is the fill? What is the depth to groundwater in fill beneath the site?
3. What is meant by “underlining bedrock?”

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RESPONSES:

1. Site reports indicate that small discontinuous perched water horizons occur above the Gaspur Aquifer located closest to the surface of the site and extending from about 90 to 150 feet bgs. This information was used to determine that groundwater is “unconfined to semi-confined” in the vicinity of the site.
2. The paragraph in the closure summary above should have read: ...“Groundwater beneath the Site is unconfined to semi-confined. The estimated depth to groundwater is approximately 90 feet bgs.” The closure summary text has been updated to include the revised text.
3. The phrase “underlining bedrock” was a typographical error. Thank you for bringing this to our attention. The closure summary text has been updated.

COMMENT 4: Page 8 of the closure summary concludes with the following:
There are no soil samples results in the case record for naphthalene. However, the relative concentrations of naphthalene in soil can be conservatively estimated using the published relative concentrations of naphthalene and benzene in gasoline. Taken from Potter and Simmons (1998), gasoline mixtures contain approximately 2% benzene and 0.25% naphthalene. Therefore, benzene concentrations can be directly substituted for naphthalene concentrations by a factor of eight. Benzene concentrations from the Site are below the naphthalene thresholds in Table 1 of the Policy criteria for direct contact by a factor of eight. It is highly unlikely that naphthalene concentrations in the soil, if any, exceed the threshold.

1. Does the State Water Board's Low-Threat Underground Storage Tank Case Closure Policy require the collection of naphthalene data for both soil and soil gas?
2. Is it acceptable to assume weight percentages of “2% benzene and 0.25% naphthalene” in the fuel/gasoline historically released at this site?
3. What is meant by a “factor of eight?”
4. Is it appropriate to use benzene as a surrogate for naphthalene and, if so, why is the Potter and Simmons reference considered appropriate and conservative?

RESPONSES:

1. The Policy does not necessarily require analysis of chemicals in the various media. Certain criteria in the Policy use individual chemicals known to drive risk as indicators of conditions that pose a threat to human health. These criteria may be applied to pre-existing (pre-Policy) data or to data that are collected after adoption of the Policy. Naphthalene was often not analyzed for in soil samples prior to adoption of the Policy. Values reflecting the relationship of benzene and naphthalene concentrations in gasoline, as established by the referenced authority, have been used to estimate the potential risk posed by naphthalene in these cases of older datasets. Prior to assessing naphthalene concentrations in soil, regulatory agencies should assess the need for

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naphthalene analysis following an initial investigation that indicates petroleum constituents in soil would not meet the Policy.

2. Potter and Simmons (1998) is a widely-used reference for the weight percent of individual constituents in fuels; this reference shows that the average weight percent of benzene and naphthalene in gasoline is 2% and 0.25%, respectively, based on 123 samples. Therefore, the assumption of weight percentages of 2% benzene and 0.25% naphthalene is "acceptable" for gasoline mixtures historically released into the subsurface at a UST release site not involved with refining or storing of coal tar, crude oil, or naphthalene-rich chemical mixtures.
3. The paragraph in the closure summary above should have read: *Therefore, benzene concentrations can be directly substituted for naphthalene concentrations with a safety factor of eight. Benzene concentrations from the Site are below the naphthalene threshold in Table 1 of the Policy criteria for direct contact. Therefore, it is highly unlikely that naphthalene concentrations in the soil, if any, exceed the threshold.*

The closure summary text has been updated to include the revised text.

4. The use of benzene concentrations as a surrogate for naphthalene concentrations for historical soil samples in which naphthalene was not analyzed for has been adopted by the State Water Board in several case Closure Orders since the Policy was adopted. It is the Board's judgment that using benzene concentrations to compare to the naphthalene criteria for direct contact with a safety factor of 8 is protective. The Potter and Simmons (1998) reference is appropriate because it is a widely-used reference for the weight percent of individual constituents in fuels and is based on the analysis of 123 gasoline samples.