



Meeting Agenda for August 18, 2010

**Fuel Leak Case No. RO0000324, Livermore Gas and Mini Mart
160 Holmes Street, Livermore, California**

- ***Current Site Conditions***

Several phases of soil and groundwater investigation, including remedial pilot testing, have been performed at the site. The lateral and vertical extent of petroleum hydrocarbon impacts in soil and groundwater appear to have been adequately characterized. Remaining impacts in soil and groundwater are localized onsite in the vicinity of EW-3. The current well network, consisting of onsite and offsite wells, is monitored semi-annually to evaluate groundwater quality under varying seasonal conditions.

- ***Recent Interim Remedial Activities***

During the Second quarter of 2010, interim dual-phase extraction (DPE) was performed at onsite wells EW-1 and EW-3. The results of recent groundwater sampling performed in July 2010 demonstrates the effectiveness of these interim remedial activities.

- ***SWRCB Resolution Nos. 2009-0042 and 2009-0081***

These resolutions present the SWRCB's current strategies to evaluate UST sites for closure.

- ***Preliminary Low-Risk Case Closure Evaluation***

To identify data gaps and any impediments to site closure, the site was evaluated for potential low-risk case closure based on nine qualifying criteria. Based on this preliminary evaluation, it appears that the site has been adequately characterized, the contaminant plume is stable (and decreasing), no drinking water sources have the potential to be affected by the contaminant plume, and no environmental receptors have been identified at or downgradient of the site.

- ***Impediments To Case Closure***

Potential impediments to site closure, or data gaps, identified at this site include: moderate to high concentrations of petroleum compounds remain in soil and shallow groundwater (localized around EW-3), the potential beneficial use of the affected shallow aquifer beneath the site has not been defined, and potential vapor intrusion concerns for onsite workers have not been evaluated.

- ***Recommendations***

To address the identified data gaps for the site, Allterra recommends the following:

- ⇒ Continue interim groundwater extraction and treatment at EW-3
- ⇒ Define the potential beneficial use of groundwater at the site (RWQCB)
- ⇒ Collection of soil gas samples in source area and near onsite kiosk
- ⇒ Update the current Site Conceptual Model (SCM)
- ⇒ Perform Tier 1 and 2 RBCA evaluations



OVERVIEW

In January 2010, SWRCB issued a recommendation that the RWQCB and LOPs use a “risk-based” approach when reviewing LUFT sites for case closure. The recommendation stated that cases that are considered “low-risk” should be closed.

Allterra used the criteria established under the SFRWQCB’s *Supplemental Instructions to State Water Board December 8, 1995 Interim Guidance on Required Cleanup at Low Risk Fuel Sites* and the precedents set under the 14 Water Quality Orders resulting in case closure from SWRCB closure petitions. These criteria and guidelines are presented below:

PRELIMINARY LOW-RISK CASE CLOSURE EVALUATION

1. Free Product Removal & Remediation

The leak has been stopped and ongoing sources, including free product, have been removed or remediated.

Evaluation

- The release stopped after removal of 4 USTs in April 1999.
- Contaminated soil from beneath the former USTs and dispensers was excavated following UST removals.
- Interim remediation (soil vapor extraction and groundwater extraction) has removed any remaining free product.
- High levels of TPHg and MTBE remain in groundwater near well EW-3.

Impediment to Closure: Further remediation of the source area may be warranted

2. Groundwater Contamination Concentration

In general, petroleum hydrocarbon releases should be considered low-risk if the maximum concentrations in groundwater are less than:

- 10,000 µg/L for TPHg and for TPHd
- 1,000 µg/L for each individual petroleum hydrocarbon constituent (BTEX)
- 500 µg/L for each individual fuel oxygenate

Evaluation

- 3rd Quarter 2010 data shows general decrease in petroleum constituents in all wells.
- EW-3 contained 23,000 ppb TPHg and 150,000 ppb MTBE during the 3rd Quarter 2010.
- There is a contamination “hot spot” around EW-3. The hot spot appears to be limited to a localized area of soil and shallow groundwater in the vicinity of EW-3.
- Of note, well EW-3 was constructed to draw in high levels of contamination for remediation purposes. Well screen from 25 – 30 feet bgs.

Impediment to Closure: High levels of TPHg and MTBE in EW-3

3. Plume Stability and Migration

A groundwater contaminant plume is considered to be stable when the source has been removed to the extent practicable and contaminant concentrations in the most highly impacted areas are stable or decreasing. Plume stability may be judged by visual interpretation of the concentration trend with respect to time, a Kendall Trend test, or a linear regression.

Evaluation

- The contaminant plume appears to be stable and migration has stopped.
- High levels of contamination are restricted to the area around EW-3.
- The groundwater flow direction is toward the north-northwest toward the MW-7A/B/C well cluster and monitoring results show that the high levels of contamination dissipate quickly with distance and depth.

Impediment to Closure: None

4. Adequate Characterization

A groundwater plume is considered adequately delineated when reasonable professional judgment can be used to estimate the extent of the overall plume with respect to distance to nearby receptors.

Evaluation

- The groundwater plume has been adequately characterized (and delineated) in the vertical and lateral directions.
- Plume delineation shows that contamination has not “escaped” from the site to impact potential human or environmental receptors.
- Vertical delineation (i.e. limited to shallow groundwater)

Impediment to Closure: None

5. Potential Impacts to Existing Drinking Water Wells

Contaminants that have a reasonable potential to impact drinking water wells due to plume migration cannot be considered low-risk. The distance considered to be adequately protective of drinking water wells vary with the mobility and persistence of the constituents of concern, and should be measured in the predominant groundwater flow direction.

Evaluation

- Alameda County’s 2005 letter indicated that there is a public well within 1,500-feet of the site in the down-gradient direction.
- The well network has provided an “ND” line at down-gradient wells MW-5A/B, MW-6, and MW-9A/B, which are located between 200 and 300 feet from the site. This suggests that contamination from the site has not reached wells located 300 feet down-gradient, which is less than 1,500 feet.

Impediment to Closure: None

6. Achievement of Water Quality Objectives Before Resource Used

Unless the water within the contaminant plume itself has an actual or probable beneficial use, it is inappropriate to require that Water Quality Objectives be met at the time of case closure. Closure should be granted if Water Quality Objectives would be reached in a “reasonable timeframe”, based on actual or probable beneficial use.

Evaluation

- The site is located in an urban area where residents and businesses are already serviced by municipal drinking water sources.
- It is highly unlikely that anyone would install a drinking water well within the contaminant plume.
- Natural attenuation will reduce groundwater contamination to levels that satisfy the SWRCB’s Water Quality Objectives within a “reasonable timeframe” based on actual or probable beneficial use.

Impediment to Closure: Need to determine if shallow groundwater beneath this gas station will be used as a potential resource in the near or distant future.

7. Non-Residential Land Use in Probable Extent of Plume

If contaminant migration is beneath solely commercial or industrial land uses, exposure and risk to human health is significantly diminished.

Evaluation

- Contamination migration from the site travels north-northwest underneath Holmes Street toward Hansen Park. Beyond Hansen Park are First Street and a shopping mall parking lot.
- The areas down-gradient of the site are non-residential, which minimize risk to human receptors.

Impediment to Closure: None

8. Potential Impacts to Human Health

Cases that pose an insignificant risk to human health should be considered for low-risk closure. The primary means of impacting human health are considered to be ingestion of impacted drinking water and inhalation of soil vapor.

Evaluation

- Soil and groundwater contamination beneath the site is located approximately 20-30 feet bgs. This means that it is unlikely that humans will come into direct contact with contaminated soil and/or groundwater (dermal contact/ingestion).
- Soil vapor inhalation is unlikely because the “hot spot” is in a vehicle traffic area. However, there are site workers in the mini mart located approximately 30 feet up-gradient of the “hot spot.”

- The existing monitoring well network demonstrates that the plume is stable and defined and not a threat to the public well located 1,500 feet from the site.

Impediment to Closure: Soil gas survey needed to evaluate vapor intrusion as a potential contaminant transport pathway.

9. Potential Impacts to Environmental Receptors

Cases that pose an insignificant risk to environmental receptors should be considered for low-risk closure. Unacceptable risk to environmental receptors should be evaluated within the receiving water and with respect to acute and chronic effects.

Evaluation

- There are no environmental receptors down-gradient of the site (water bodies, aquatic species, sensitive plants, etc.), therefore, there is no potential for impacts to environmental receptors.

Impediment to Closure: None

CONCLUSIONS

Not an Impediment to Case Closure:

- 3. Plume Stability and Migration
- 4. Adequate Characterization
- 5. Potential Impacts to Existing Drinking Water Wells
- 7. Non-Residential Land Use in Probable Extent of Plume
- 9. Potential Impacts to Environmental Receptors

Impediments to Case Closure:

- 1. Free Product Removal & Remediation
- 2. Groundwater Contamination Concentration
- 6. Achievement of Water Quality Objectives Before Resource Used
- 8. Potential Impacts to Human Health

RECOMMENDATIONS

Steps to address Impediments to Case Closure:

1. Further interim remediation of the “hot spot” around EW-3. We propose one quarter of groundwater extraction from EW-3 be conducted during Fourth Quarter 2010.
2. Soil gas survey on-site to evaluate vapor inhalation risk.
3. Update the Site Conceptual Model (SCM) to reflect recent site data, the results of proposed soil gas survey work, and to include all potential receptors.
4. Complete a Tier 1 and 2 Risk-Based Corrective Action (RBCA) evaluation for the site.