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January 28, 2010

Mr. George Lockwood
State Water Resources Board
Division of Water Quality
1001 I Street
Sacramento, CA 95814

Subject: Fuel Leak Case No. RO0000151 and Geotracker Global ID T0600100196, City Blue Print, 1700 Jefferson Street, Oakland, CA 94612

Dear Mr. Lockwood:

Alameda County Environmental Health (ACEH) has prepared this letter in response to the petition entitled "Request for Review," dated October 20, 2009, and prepared by Environmental Risk Specialties Corporation (ERS). ERS, the environmental consultant for Mr. David Blain, requests case closure for the above referenced facility. Based on their review of the site background and conditions, ERS believes that this site meets the Regional Water Quality Control Board - San Francisco Bay Region's (RWQCBs) definition of a "low-risk fuel site" as defined in their memorandum "*Interim Guidance on Required Cleanup at Low-Risk Fuel Sites*", dated January 5, 1996. ERS has attached their "Request for Regulatory Closure Report," dated June 3, 2009 as supporting documentation for their closure petition.

ACEH has reviewed the data for the subject site and ERS' closure request and finds ERS' arguments lacking technical basis and therefore reject their claims. Our responses to each of ERS' arguments regarding their site's compliance with the various criteria for a low-risk groundwater case as defined in the RWQCB's memorandum are discussed below.

Criteria 1. The leak has stopped and ongoing sources, including free product, have been removed or remediated.

In general, ACEH agrees that any primary leaks from the former underground storage tanks (USTs) were stopped upon removal of the USTs from the site in 1987 and no new USTs have been reinstalled at the site. A maximum concentration of 8,800 milligrams per kilogram (mg/kg) total volatile hydrocarbons (TVH) was detected in soil from the UST excavation at a depth of 6.5 feet below ground surface (bgs). Soil was excavated to 9-feet, reportedly

aerated and placed back in the excavation without confirmation sampling of either the UST excavation or aerated soil, leaving the effectiveness of source remediation unverified.

Thirty-four inches of separate phase hydrocarbons (SPH) was measured in source area well MW-1 in 1987 and 0.5-inches of SPH was detected in off-site well MW-5 which is located 160 feet north-northeast (downgradient) of MW-1. An apartment building with a basement and sunken courtyard is located immediately north of MW-1. Given the proximity of the apartment building to the release and the direction of SPH migration (northeast toward MW-5), SPH has likely migrated beneath the apartment building. However, no soil or groundwater samples were collected beneath the apartment building to define the extent or thickness of free product that may remain in place.

Free product removal in on-site wells began in 1988 and an on-site groundwater extraction system was operated from 1992 to 1999, until SPH was removed from on-site wells. However, no SPH removal or remediation was performed off-site. After bailing and groundwater extraction, dissolved phase concentrations both on-site and off-site remained elevated (and remain elevated today). ORC socks were then installed directly in some of the monitoring wells and were removed in 2002. During the period of ORC installation, petroleum hydrocarbon concentrations showed a decrease in concentrations in well MW-5. Since the removal of ORC socks, petroleum hydrocarbon concentrations in MW-5 have rebounded to pre-1999 levels indicating that ORC socks were only effective in reducing concentrations in the well and not treating the mass of contaminants in the surrounding formation.

Elevated dissolved phase concentrations continue to be detected in monitoring wells associated with this site suggesting that residual contaminant mass remains in place. Additionally, SPH and a significant residual source may remain in place beneath the adjacent apartment structures. Consequently compliance with Criteria #1 has not been met.

Criteria 2. The site has been adequately characterized.

ACEH does not concur with ERS' belief "that the site has been adequately characterized with confidence to evaluate the migration potential and concentration of residual petroleum hydrocarbons in subsurface soil and groundwater." Several data gaps remain at the site that need to be addressed before any evaluation of the adequateness of characterization can be justified. Data gaps include but are not limited to the items discussed below:

Monitoring wells with historic SPH about the immediately adjacent apartment building with basement and sunken courtyard. Currently, the wells exhibit elevated contaminant

concentrations. No soil or groundwater samples have been collected on the apartment property to evaluate whether SPH is present and the nature and extent of contamination beneath the apartment property.

The extent of the petroleum hydrocarbon plume to the northwest has not been defined.

Adequate soil vapor sampling has not been conducted to assess the potential for vapor intrusion to indoor air.

The extent of soil contamination originating from the source area is not adequately defined. Soil from the tank pit was removed, aerated on-site and replaced in the tank pit without confirmation sampling leaving the effectiveness of source remediation unverified.

Up to 3,300 mg/kg TVH (BTEX analysis not performed) was detected in soil from source area boring B5 at 24 feet bgs. Sufficient deeper soil samples were not collected in the source area to define the vertical extent of contamination. Therefore, the vertical extent of contamination is undefined in the source area.

Several data gaps including the extent of on-site and off-site contamination, potential migration of contamination to the adjacent apartment building with basement and sunken courtyard have not been evaluated. Additional data gaps pertaining to site characterization are also discussed in Criteria #3 (regarding plume definition) and Criteria #4 (regarding the vapor pathway) below. As such, the site has not been adequately characterized and does not meet Criteria #2.

Criteria 3. The dissolved hydrocarbon plume is not migrating.

Data and analysis presented to date do not sufficiently support interpretations that the existing monitoring network is adequately monitoring the dissolved phase plumes originating from this site. ERS states that the regional topography suggests a north to west groundwater flow direction. The groundwater flow direction at this site appears to fluctuate from slightly north-northeast to west-southwest, which appears generally consistent with regional topography.

Free product was detected in on-site wells and off-site well MW-5, located 160-feet north-northeast of the site. At the start of site investigation activities groundwater gradient calculations indicated a north to northeast groundwater flow direction. A 1989 Phase 1 report reported that no potential off-site sources for contamination in MW-5 were identified and

concluded that based on a review of the site and vicinity and data collected the subject site was the likely source of SPH in MW-5.

ERS states that they "...believe that issues related to MW-5 have been erroneously reported for many years" rejecting the consultant's hypothesis that contamination in MW-5 originated from the subject site. ERS confirms that initial calculations of groundwater flow direction used corrected groundwater elevation data for the well with SPH calculating a north-northwest gradient and that topography contours suggest a north to west gradient. However, ERS states that "No information was reviewed to confirm the groundwater flow direction from approximately July 1987 to June 1996," and provides a re-evaluation of groundwater gradient data from 1996 to present. Groundwater gradients and flow directions prior to June 1996 are dismissed by ERS as "suspect due to the presence of free product, area dewatering and/or on-site groundwater extraction." ERS' apparent criteria for disregarding historic data appears flawed for the following reasons: SPH is present at numerous subsurface contamination sites, it is appropriate practice to apply a correction for SPH when calculating groundwater gradient, and the presence of SPH at a site does not automatically preclude gradient calculations; gradients calculated excluding the SPH wells can be made for comparison; groundwater extraction systems are typically shutdown for some period of equilibration prior to groundwater monitoring; and the groundwater extraction system was operating during the 1996 to present time period ERS re-evaluated, however ERS did not also apply this as a criteria for disregarding gradient calculations. Lastly, the technical basis for ERS' adjustments to calculated flow direction was not provided.

ERS states that ACEH has an "ongoing belief that petroleum hydrocarbon impacts reported in off-site well MW-5 originated from the Site." ACEH does not 'believe' this rather the data presented to date do not support the hypothesis that the SPH in MW-5 is from an "unknown off-site source". From an evaluation of the limited data available, there is no solid evidence that SPH in MW-5 did not originate from the subject site. Initially SPH was detected in MW-1, MW-1A, MW-4 and MW-5 when these wells were installed but SPH was not originally detected in MW-3. By looking solely at the contamination plume in these limited data points, it appears that the SPH from MW-5 originates from the subject site. There is currently no soil or groundwater data that refutes this point since no confirmatory borings have been advanced between the site and MW-5. However, data indicates that there is not an off-site source to the northwest, north, northeast and east of MW-5 since CPT borings that were advanced in 1998 along Jefferson Street and San Pablo Avenue were either very low or below the detection limits for hydrocarbons. Boring CPT-6, located in an apparent downgradient direction of MW-5, contained concentrations of 420 µg/L TPHg and 1.2 µg/L benzene and boring CPT-3 located further downgradient contained 180 µg/L TPHg suggesting the distal end of the dissolved plume originating from the site. The other soil and

groundwater samples collected from the east and northeast of MW-5 were below the detection limits. Therefore, an off-site source was not detected to the northwest, north, northeast or east of MW-5. To date, no soil borings have been completed between the site and MW-5 to confirm or refute the hypothesis that the source originates from the site.

No borings are located northwest of the site and MW-6 is positioned west-southwest to the site. ERS' TPHg and benzene contours extend across Jefferson Street and beneath the adjacent buildings to the northwest at concentrations up to 20,000 µg/L and 6,000 µg/L, TPHg and benzene respectively, leaving the northwestern extent of the plume apparently undefined. If the hypothesis for the site includes some component of gradient flowing west and northwest, MW-6 would appear to be positioned on the lateral edge of the dissolved contaminant plume leaving the area along Jefferson Street between MW-6 and MW-5 (within the area of historic downgradient directions) unevaluated. Additionally, a well log for MW-6 is reportedly 'unavailable.' Therefore, it is unknown if this well is screened appropriately, surveyed to the same datum as the other wells, etc., and the consultant's calculations for groundwater gradient do not appear to note and/or consider this.

ACEH finds ERS' statement that declining hydrocarbon concentrations in groundwater from MW-3 demonstrate natural attenuation is occurring to not be supported by any data. Concentrations in on-site well MW-1 have not shown any appreciable decline since groundwater remediation ceased. Neither have hydrocarbon concentrations in MW-5 decreased. ERS has not collected data such as dissolved oxygen, oxygen-reduction potential, consumption of electron acceptors, etc., necessary to perform an evaluation to determine if natural attenuation is occurring. Therefore, ACEH finds ERS' statement that natural attenuation is occurring unpersuasive.

With significant data gaps remaining, ACEH requested that the responsible party prepare a Site Conceptual Model (SCM) for the release at this site. The SCM is where a hypothesis for the release scenario is formulated, data gaps that exist to support or refute the hypothesis are identified, and work is proposed to fill those data gaps. In addition, ACEH requested clarification on all groundwater gradient data, preparation of a rose diagram, and a preferential pathway evaluation.

Instead of submitting an SCM, ERS submitted the "Request for Regulatory Closure" which poses a number of questions that should have been answered or addressed with a proposal to fill the data gaps, by the consultant in an appropriately prepared SCM. Irrespective of this, some possible explanations are contemplated below. It is the consultant's role to develop the SCM.

"1. Why have BTEX concentrations remained almost unchanged, or decreased very little, over the last 16 years in well MW-5 while BTEX concentrations have decreased significantly in wells MW-1 and MW-3 during this timeframe?"

BTEX concentrations decreased in wells MW-1 and MW-3 because there was active remediation on-site to remove SPH. There was no remediation performed in the area of MW-5.

"2. Why are BTEX concentrations reported in well MW-5 (located approximately 160 feet north) higher than corresponding BTEX concentrations in well MW-1 (located adjacent to the former USTs) if former USTs are the source?"

It appears that BTEX concentrations were higher in the downgradient well because samples were generally not analyzed from the on-site wells containing SPH. Currently, BTEX concentrations are now higher in off-site well MW-5 because no remediation was ever performed off-site. Also, the residual mass associated with the site, that ERS notes remains in place and continues to impact groundwater, may be contributing to the contaminant concentrations detected. This should be addressed by the consultant in an SCM.

"3. Why were BTEX concentrations so low in grab groundwater samples collected north of well MW-5 (CPT-3 through CPT-6) if the petroleum hydrocarbons reported in well MW-5 supposedly originate from the Site? How could petroleum hydrocarbons migrate 160 feet then apparently "stop"? How could free product migrate 160 feet north and then apparently stop?"

On-site monitoring wells had a maximum measured product thickness of 34 inches and SPH in off-site well MW-5 located 160-feet downgradient maximum measured product thickness of 0.5 inches. One hypothesis for the release scenario at this site suggests that the downgradient extent of SPH is in the vicinity of MW-5 with the dissolved phase contaminant plume continuing to migrate, being detected in CPT-6 at a 420 µg/L TPHg and 1.2 µg/L benzene and in CPT-3 at 180 µg/L TPHg indicating that this is potentially the leading edge of the dissolved contaminant plume. Once again, these are questions that should be addressed by the consultant in an SCM, identifying the data gaps and proposing a scope of work to address the data gaps.

"4. Why are TPHg and BTEX almost non-detect in well MW-6 located only 70 to 75 feet west of the former USTs during 10 of the last 14 sampling events?"

As discussed in Criteria 3 above ERS has not presented a validated SCM that would explain the distribution of contaminants at this site. Groundwater gradient at this site appears to fluctuate throughout its monitoring history and ACEH has requested the RP perform an evaluation of all groundwater gradient data, preparation of a rose diagram, preparation of a preferential pathway evaluation, etc. If the SCM hypothesizes that a component of gradient flows west to northwest, then MW-6 would appear to be positioned on the lateral edge of the dissolved contaminant plume leaving the area along Jefferson Street between MW-6 and MW-5 (within the area of historic downgradient directions) unevaluated. Again, these are questions that should be addressed by the consultant in an SCM, identifying the data gaps and proposing a scope of work to address the data gaps.

"5. Regardless of the groundwater flow direction, how can any significant petroleum hydrocarbon migration occur in groundwater when the gradient approximates 0.001 to 0.005, groundwater infiltration is minimal due to extensive pavement and building foundations in the general area, and HLA's aquifer test data conducted in Site wells estimate a sustained well yield of 0.25 gallons per minute?"

Boring logs indicate that the saturated zone beneath the site is primarily a silty sand to sand. Based on the typical hydraulic conductivities for these types of soils, hydraulic gradient of 0.001 to 0.005 and estimated age of the release, migration of petroleum hydrocarbons to distances of 160 feet or more is expected. Also, a low sustained well yield of 0.25 gallons per minute may be related to well construction.

In conclusion, data and analysis presented to date by ERS do not sufficiently support interpretations of dissolved contaminant plume definition or stability, significant data gaps remain, and no adequately validated SCM has been presented for the release scenario at the subject site. Therefore, the site does not meet Criteria #3.

Criteria 4. No water wells, deeper drinking water aquifers, surface water, or other sensitive receptors are likely to be impacted.

No well survey or receptor survey has been performed for the site. Therefore, it is unknown whether water wells or sensitive receptors exist within the vicinity of the site. Based on the elevated concentrations of petroleum hydrocarbons detected in groundwater off-site, proximity of the release to nearby properties, and historic observations of SPH off-site, there is a potential for nearby properties to be impacted. Conducting a well survey and sensitive receptor survey is required to meet the minimum standard of care under these

circumstances. Currently, sufficient information is not available to conclude that the site meets Criteria #4.

Criterion 5 and 6. *The site presents no significant risk to human health or the environment.*

ERS concludes no significant shallow soil contaminant concentrations are present, impacted soil is deep and SPH was successfully removed. However, ERS has not evaluated whether residual pollution poses a risk to human health or the environment. A preferential pathway and sensitive receptor evaluation have not been conducted. Soil from the tank pit was removed, aerated on-site and replaced in the tank pit without confirmation sampling, leaving potentially contaminated shallow soil in the source area unevaluated. Analytical results from the source area borings detected up to 3,300 mg/kg TVH (BTEX analysis not performed) at 24 ft bgs and monitoring wells with historic SPH that about the apartment structures continue to exhibit elevated dissolved contaminant concentrations. Moreover, the apartment building has a basement and sunken courtyard and no investigation has occurred on the apartment property to evaluate whether a portion of the source area extends and/or is present in place beneath the apartment structure. The soil vapor pathway has not been investigated for either the off-site apartment building with a basement and a sunken courtyard or the commercial building on-site. Also, off-site monitoring well MW-5 currently exhibits high dissolved contaminant concentrations and the potential risk posed in this area is unevaluated. Therefore, the site is not in compliance with Criterion #5 and #6.

Conclusion

ERS has failed to demonstrate that this site meets any criteria for case closure including the RWQCB criteria for low risk fuel leak site for the reasons discussed in this letter. An SCM for the release scenario at the site has not been completed; contaminant sources have not been adequately identified or evaluated and the extent of contamination has not been determined. Moreover, the vapor pathway has not been investigated for either the off-site apartment building with a basement and a sunken courtyard or the commercial building on-site and no evaluation of the potential risk to human health and the environment has been performed. This case cannot be closed at this time without addressing the issues discussed above. ACEH requests that this petition be denied.

Thank you for the opportunity to respond to the petition. If you have any questions regarding this response, please call Barbara Jakub at (510) 639-1287.

Sincerely,



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