October 20, 2009

Mr. George Lockwood
State Water Resources Control Board
Division of Water Quality
P.O. Box 2231
Sacramento, California 95812

Re: Response to ACEH Comment Letter Dated September 10, 2009
1700 Jefferson Street, Oakland, California
ACEH Case RO# 151, RWQCB Case 01-0210

Dear Mr. Lockwood:

On behalf of Mr. David Blain and BPS Reprographic Services, responsible party for the Underground Storage Tank (UST) Case at 1700 Jefferson Street, Oakland, California (Site), Environmental Risk Specialties Corporation (ERS) has prepared this response to Alameda County Environmental Health's (ACEH) September 10, 2009 comment letter denying regulatory closure. Please consider this response as an addendum to ERS's petition for review by the State Water Resources Control Board (SWRCB).

Comment 1 – "The request for regulatory case closure appears to be based on ERS' hypothesis that the hydrocarbon contamination is localized around the original source area and that the high concentration of TPHg and benzene in MW-5 is due to an unknown offsite source."

According to HLA's November 3, 1987 *Groundwater Investigation Report*, monitoring wells MW-1 through MW-3 were initially monitored and sampled on June 24, 1987. HLA reported 30 inches of free product in well MW-1 and a corrected groundwater elevation of 5.69 feet. Using groundwater elevations of 5.90 feet in well MW-2 and 6.27 feet in well MW-3, the calculated groundwater flow direction and gradient was reported as north-northeast at 0.011 foot per foot. In its November 28, 1988 *Off-Site Hydrogeologic Investigation*, HLA reported that "A reliable estimate of the ground-water flow direction and magnitude of gradient could not be calculated using the data collected on September 9, 1988 because free product was present in four of the five monitoring wells" and "On the basis of ground-water elevation data collected in the past, the flow direction is believed to be towards the north to northwest." Unless there are missing records, it appears that the initial finding that groundwater flow direction was to the north to northwest was based on one groundwater monitoring event in which one of the three monitoring wells contained 30 inches of free product. HLA admitted that reliable groundwater flow directions are difficult or impossible to

calculate when free product is present and the gradient is relatively flat. ERS concurs with this opinion.
Free product was observed in the onsite wells from 1987 to 1994 and groundwater extraction was performed from June 1992 to July 1999; therefore, ERS contends that the groundwater flow directions calculated during this time (ranging from south to west to east) should be considered suspect. During the last six to nine months of groundwater extraction when extraction rates were significantly lower and free product was no longer being observed in any of the wells, calculated groundwater flow direction was generally northwest. From December 1998 to September 2009, groundwater flow direction was north to northeast one (**1)** time and west to northwest twenty-six (**26)** times.

In ERS's September 17, 2009 Groundwater monitoring report, BTEX ratios as a percentage of the total reported TPHg were compared for the March and September 2009 well monitoring and sampling events. Ratios are summarized in the table below.

BTEX RATIOS AS A PERCENTAGE OF TPHg

Well Number	Date Sampled	All BTEX	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MW-1	03/03/09	42.8%	16.2%	16.2%	1.8%	8.4%
	09/03/09	40.8%	15.5%	14.4%	1.7%	9.1%
MW-3	03/03/09	2.1%	1.2%	0.3%	0.1%	0.4%
	09/03/09	13.9%	10.9%	0.2%	2.4%	0.3%
MW-5	03/03/09	43.2%	26.9%	8.2%	3.0%	5.0%
	09/03/09	39.5%	24.5%	3.4%	4.8%	6.7%

Please note that monitoring well MW-1 is located adjacent to the former USTs, well MW-5 is located approximately 160 feet north of the former USTs, and well WM-3 is approximately 21 feet crossgradient of the former USTs. Generally, BTEX ratios were consistent between the two respective sampling events in wells MW-1 and MW-5, but varied considerably in well MW-3. Ethylbenzene and xylenes ratios during the two events in wells MW-1, MW-3, and MW-5 demonstrated no distinct correlation. The ratio of combined total BTEX to the reported TPHg in wells MW-1 and MW-5 did show good correlation, and appear to indicate proximity to a source of impact. Since BTEX tends to preferentially attenuate with distance, total BTEX is expectedly much lower in well MW-3 than in either well MW-1 or well MW-5. If the BTEX being reported in well MW-5 originated from our former USTs, why is the total BTEX in well MW-5 so much higher than the total BTEX in well MW-3?

Since the predominant groundwater flow direction has been west-southwest to west-northwest for the last 12 years, two questions exist. Why are we seeing similar BTEX ratios in a monitoring well located less than 15 feet from our UST "source" and a second monitoring well over 160 feet north-

northeast from our UST "source?" Why are BTEX concentrations in monitoring well MW-5 so high and why are they this high after so many years?

Several lines of evidence suggest that petroleum hydrocarbon impacts reported in groundwater in well MW-5 originate from an unknown offsite source. Evidence for this offsite source of petroleum hydrocarbon impact includes: 1) despite elevated petroleum hydrocarbons being reported in groundwater in well MW-1 over time, almost no detectable petroleum hydrocarbons have been reported in groundwater in well MW-6, located approximately 100 feet in the confirmed downgradient direction during the same timeframe; 2) decreased concentrations of TPHg and BTEX in onsite well MW-1 and MW-3 are consistent with remedial activities performed at the Site while reported concentrations of TPHg and BTEX in offsite well MW-5 (located approximately 160 feet north of the former USTs) are more indicative of a "source" near the well; 3) from June 1996 to March 2009, the predominant groundwater flow direction is west to west-northwest and fluctuates almost exclusively from northwest to southwest; 4) groundwater plume definition work performed north of well MW-5 in March 1998 reported almost no petroleum hydrocarbon impacts in groundwater north of well MW-5, which is consistent with the westerly calculated groundwater flow direction; and 5) a characteristic concrete repair exists in the sidewalk adjacent to well MW-5 that looks like a UST was removed.

Comment 2 – "A review of the site history indicates that the hypothesis that MW-5 is impacted by an off-site source is not substantiated."

In addition to the reasons cited above, additional data exists that demonstrates the low potential that petroleum hydrocarbons reported in well MW-5 originated from the Site: 1) the calculated gradient is typically relatively flat at 0.001 to 0.005 foot per foot; 2) free product appears to have "pooled" around the former USTs and did not spread horizontally to any great degree, as free product thickness measured in well MW-3 never exceeded 4.1 inches; 3) free product removal was initiated in 1987 and groundwater extraction was performed from June 1992 to July 1999 out of onsite groundwater extraction wells; and 4) HLA's aquifer test data conducted in Site wells estimated a sustained well yield of only 0.25 gallons per minute.

In ERS's March 19, 2009 *Groundwater Monitoring Report*, ERS recommended conducting a subsurface investigation to "attempt to identify a potential offsite source that is impacting groundwater in the vicinity of well MW-5." ACEH did not comment on this recommendation.

Comment 3 – Does "consideration of the vapor pathway" represent a data gap?

The potential exists for petroleum hydrocarbon migration in soil gas but the potential for an unacceptable human health risk is low. Residual petroleum hydrocarbons in soil exist primarily in the parking lot of the facility, the basement of the adjacent building is approximately 35 feet crossgradient, and groundwater is primarily encountered at 22 to 28 feet bgs.

As is necessary to fully justify full regulatory closure, soil gas samples can be collected in meaningful, representative locations to assess residual BTEX concentrations in soil gas and further assess the subsurface migration potential.

Comment 4 – Does "evaluation of potential risk to adjacent apartments and buildings identified as having basement and a sunken courtyard" represent a data gap?

Of interesting note is that this concern for potential vapor intrusion into buildings was never expressed in correspondence until the request for closure was made. In its February 13, 2004 comment letter, ACEH was still commenting on issues such as "undefined plume" and "migration control required" (well MW-5) despite six years of a northwest to southwest groundwater flow direction. HLA performed a subsurface investigation in February 1998 that demonstrated little or no TPH impacts in groundwater north of well MW-5 (CPT-3 through CPT-6) and south of the USTs in 17th Street (CPT-1 and CPT-2).

Comment 5 – Is additional "Delineation of Contamination in Source Area" warranted?

Previous subsurface investigation has demonstrated that residual petroleum hydrocarbon impacts in subsurface soil and groundwater are significantly weathered. BTEX has decreased almost below laboratory reporting limits in all three groundwater monitoring wells. Based on the likely age of the release (pre-1990), fine grain soils present at the Site to an approximate depth of 15 feet bgs, significantly weathered residual petroleum hydrocarbons in previously obtained soil and groundwater samples, an almost total lack of BTEX in groundwater, and limited migration potential in groundwater, the estimated human health risk is minimal.

Of interesting note is that the request for additional soil characterization at the former USTs is made only after a request for closure is made.

Comment 6 – Is additional "Dissolved Plume Definition" warranted?

ERS contends that periodic monitoring well data at the plume boundary is not always necessary to conclusively demonstrate plume stability. In this instance, there are no monitoring wells at the plume boundary to document decreasing TPH concentrations. There are groundwater monitoring wells located adjacent to the primary sources of impact that document significantly decreasing TPHg and BTEX concentrations over time and that natural attenuation processes are active at the Site. Generally, groundwater characterization obtained to date demonstrates that the plume of petroleum hydrocarbon impacted groundwater is relatively small and can be expected to attenuate with distance in the same manner that petroleum hydrocarbon impacts in groundwater are attenuating adjacent to the original source(s).

Comment 7 – Is a "Well Survey" warranted?

HLA previously submitted a well survey that showed the closest downgradient wells are located at the intersection of Martin Luther King Jr. Way and 14th Street, approximately 1,000 feet southwest of the Site. A second well survey can be performed if necessary.

Comment 8 – Is a "Site Conceptual Model" warranted?

Based on ACEH's previous regulatory oversight, an updated comprehensive Site Conceptual Model (SCM) may aid in understanding site conditions. However, based on the comments to ERS's June 3, 2009 Request for Regulatory Closure, ERS believes an updated SCM would only result in ACEH requesting yet more site characterization and more data displays and/or manipulation.

Comment 9 – Are additional "Data Tables" and "rose diagrams" warranted?

In November 2003, MACTEC prepared rose diagrams that illustrated the summary tables of historical groundwater flow directions and gradients. The vast majority of calculated groundwater flow directions (including some erroneous values) ranged from southwest to northwest (230 to 330 degrees) and the predominant flow direction was west-northwest (290 degrees).

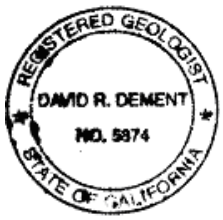
General Comments

Based on historical directives and recently passed resolutions, the SWRCB has indicated that regulatory oversight should be based on site-specific data and conditions. Generally, ACEH's comments seem more of a "cook book" approach than site-specific regulatory oversight. Performing unnecessary and/or redundant investigation is costly and simply confirming unlikely "negatives" is rarely worth the expense. ERS contends that ACEH is requesting excessive site characterization and unnecessary data manipulation.

The geology, and the investigation work performed to date at 1700 Jefferson Street have demonstrated a very typical release scenario for this general area. We should be able to rely on our experiences with other similar sites, and make some decisions accordingly. Most of the additional site characterization ACEH requested in its September 10, 2009 letter is not necessary to evaluate this Site for commercial closure. ERS believes we have presented some compelling evidence for an offsite source and some debate is in order.

If you have any questions, please contact me at (925) 938-1600 extension 109 or via email at ddement@erscorp.us.

Sincerely,



David DeMent, PG
Senior Geologist

cc: Mr. David Blain, BPS Reprographic Services
Ms. Barbara Jakub, ACEH