CITY OF PIEDMONT

CALIFORNIA

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By Alameda County Environmental Health at 9:38 am, Apr 07, 2015

April 7, 2015

Mr. Mark Detterman
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

SUBJECT: RO0003047- City of Piedmont UST Remediation at 120 Vista Avenue
Piedmont, California

Dear Mr. Detterman:

Attached please find a copy of the proposed Workplan for the disposal of water in the cutoff trench and discussion of maximum extent of Hydrocarbons for the above referenced site. I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge.

Sincerely,

John Wanger
City Engineer

CC Chester Nakahara – Public Works Director

Aqua Science Engineers, Inc. 55 Oak Court, Suite 220, Danville, CA 94526
(925) 820-9391 - Fax (925) 837-4853 - www.aquascienceengineers.com

March 25, 2015

Mr. Mark Detterman
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

SUBJECT: **WORKPLAN FOR DISPOSAL OF WATER IN CUTOFF TRENCH AND DISCUSSION OF MAXIMUM EXTENT OF HYDROCARBONS**
City of Piedmont City Hall
120 Vista Avenue
Piedmont, California

Dear Mr. Detterman:

Thank you for meeting with us on February 26, 2015 at the City of Piedmont City Hall to discuss closure of the above-referenced site as a Low-Threat Underground Storage Tank Closure Policy. Per our discussion at the meeting and the following email request, this letter (a) presents a brief workplan to eliminate hydrocarbon-impacted water within the water collection system from entering the curb area, which may ultimately enter the storm water system, and (b) discusses the potential downgradient extent of hydrocarbons.

WATER DIVERSION SYSTEM

A trench is currently located at the site that is used to eliminate the buildup of subsurface water around the foundation at the City of Piedmont City Hall by diverting captured water into a large sump, which is periodically then pumped to the curb/street. The water at that point flows down the hill along the curb and has the potential to enter the storm sewer. Water in this sump has been sampled, and analysis has shown that it contains petroleum hydrocarbons. This deep sump, existing to a depth of the underlying bedrock, should also act as a cutoff barrier to prevent any hydrocarbon-impacted groundwater from flowing downgradient of that point.

Based on the hydrocarbon concentrations within the sampled water, this water could be disposed of through the sanitary sewer without treatment. ASE proposes the following:

1) Contact East Bay Municipal Utilities District (EBMUD) to obtain permission to dispose of this water through the sanitary sewer system and obtain any necessary permits.

2) Re-route the effluent from the existing sump into the sanitary sewer system at an appropriate location.

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DISCUSSION OF THE MAXIMUM EXTENT OF HYDROCARBONS

To date, no soil borings, monitoring wells or other sampling points exist to confirm the furthest extent of hydrocarbons in groundwater. With the exception of one groundwater sample that contained 5.5 parts per billion (ppb) MTBE, which was barely over the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) Environmental Screening Level (ESL) and collected from the upgradient most boring, only total petroleum hydrocarbons as diesel (TPH-D) was detected in groundwater samples above ESLs.

A RWQCB document titled "Technical Justification for Groundwater Plume Lengths, Indicator Constituents, Concentrations, and Buffer Distances (Separation Distances) to Receptors" (the document may be found at http://www.waterboards.ca.gov/ust/policy/techjust071211.pdf) discusses maximum hydrocarbon plume lengths. This document was used as justification in developing the Low-Threat Underground Storage Tank Closure Policy. Table 1 in this document gives the 90th percentile plume length for total petroleum hydrocarbons as gasoline (TPH-G) as 413-feet. There was no plume length provided for TPH-D. However, the document discusses TPH-D plume lengths as follows:

"It is well documented that, due to effective solubility, the hydrocarbons that will dissolve at measurable amounts into groundwater from a petroleum fuel release (including gasoline, kerosene, jet fuel, diesel or heavier fuels) are limited to primarily the very small aliphatics (less than C7) and the C14 or smaller aromatics (e.g., Shiu et al. 1990; Coleman et al. 1984). The C15 and larger hydrocarbons have very low effective solubilities and are not found in the dissolved phase of a petroleum fuel release. The carbon range of the potential dissolved hydrocarbons (less than or equal to C14) is largely covered by the TPHg carbon range (approximately C5 to C12). Therefore, TPHg should be sufficient to represent the dissolved hydrocarbons that may be present in addition to benzene and MTBE from virtually any type of product release. TPHd was not included as an indicator constituent for groundwater plume length because the vast majority of the TPHd carbon range (approximately C12 to C22) is higher than the carbon range for the possible dissolved hydrocarbons (less than or equal to C14). "

Based on this, ASE prepared a map (Figure 1) showing the 90th percentile plume length for TPH-G of 413-feet, which as described in the previous paragraph should represent the soluble portion of TPH-D and may be used as an indicator constituent. It should also be noted that the highest TPH-G concentration detected at the site was only 99 ppb, which is below the ESL. Since no monitoring wells have been installed at the site, the groundwater flow direction and gradient haven't been calculated. However, the site lies on a hill and the obvious topographic gradient would indicate flow to the south or to the west. Flow to the west should be limited by the deep sump that will act as a cutoff trench. This barrier to groundwater flow to the west is indicated on the Figure.

ASE reviewed an inventory of area wells compiled by Cambia that was included as part of their "Site Conceptual Model and Workplan" dated October 21, 2003 for the nearby Chevron Station 9-0329 located at 340 Highland Avenue, Piedmont, California. ASE also reviewed a "Water Well and Surface Water Survey" prepared by Pacific Environmental Group dated May 29, 1998

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for that same Chevron site. The data presented in both of these documents covers the entire hypothetical plume area shown on Figure 1. No water wells or surface water bodies are located in the hypothetical plume area. The closest surface water body is a swimming pool, just beyond the hypothetical plume boundary to the southwest.

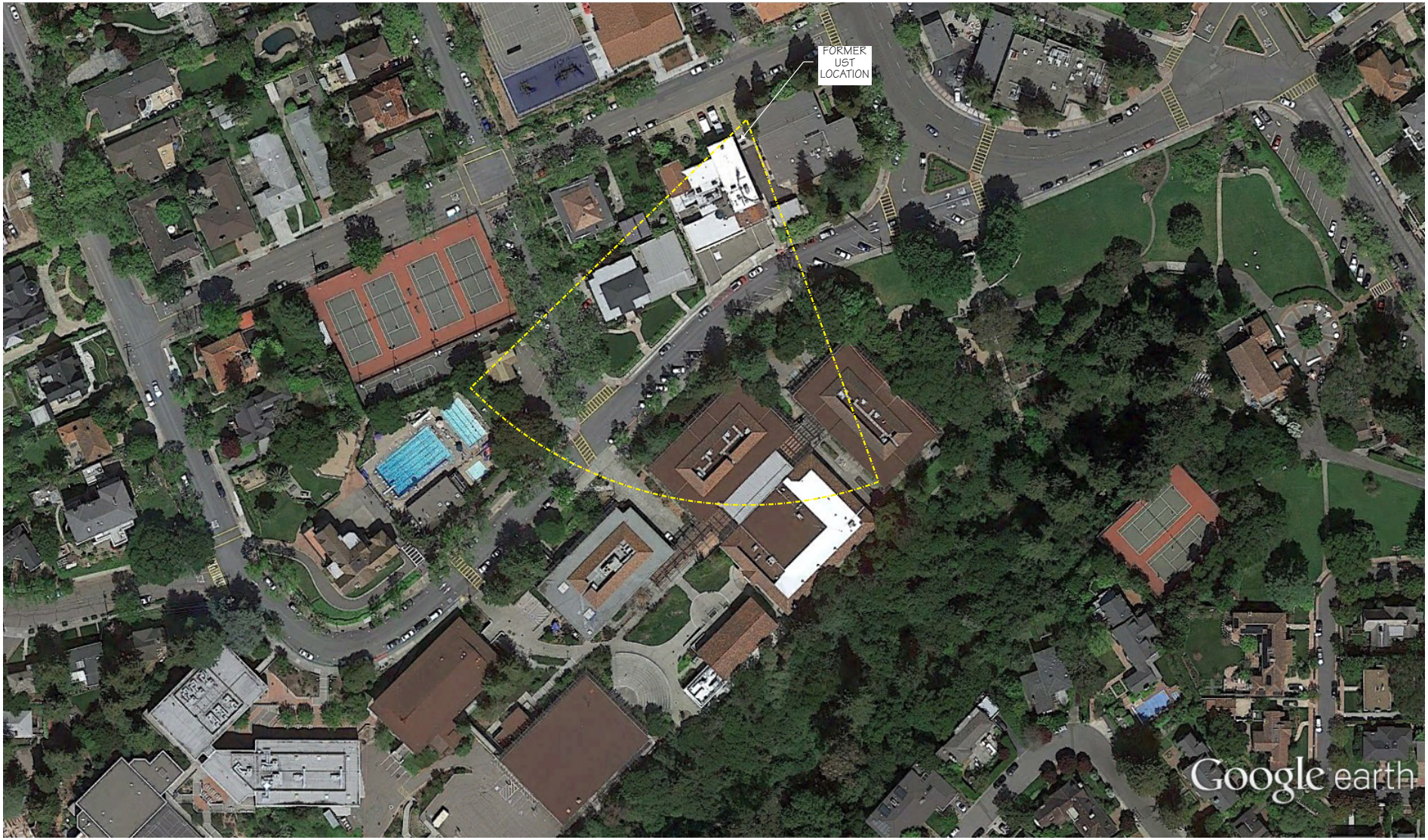
ASE obtained information from the City of Piedmont regarding the buildings within the hypothetical plume area. The two closest buildings are Piedmont City Hall (120 Vista Avenue) and the adjacent 801 Magnolia, which is a civic building. Neither of these buildings have a basement. At the south end of the hypothetical TPH plume, across Magnolia Street from the site, is Piedmont High School. None of the buildings at the high school have a basement. The high school is over 250 feet away from the source area. Since no elevated volatile compound concentrations were detected in any groundwater sample, none of these buildings should have potential vapor intrusion to indoor air risks associated from the hypothetical hydrocarbon plume.

Should you have any questions, please feel free to call us at (925) 820-9391.

Respectfully submitted,

AQUA SCIENCE ENGINEERS, INC.

Robert E. Kitay, P.G.
Senior Geologist



NORTH

0 100' 200'

SCALE IN FEET, APPROXIMATE

ESTIMATED MAXIMUM TPH-D PLUME LENGTH

Piedmont City Hall
120 Vista Avenue
Piedmont, California

Aqua Science Engineers	Figure 1