Report of Additional Site Assessment
UST 1, 2, 3 Site
Santa Rita Correction Facility
Dublin, California

Prepared for:
Alameda County Health Care Services Agency
Division of Hazardous Materials
Department of Environmental Health
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ESE Project No. 6595108

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This report of additional investigation has been prepared by Environmental Science and Engineering, Inc. (ESE) for the exclusive use of the Alameda County General Services Agency as it pertains to their site located at the UST 1,2,3 Site, Santa Rita Correctional Facility, Dublin, California. This report was prepared with that degree of care and skill ordinarily exercised by other geologists and engineers practicing in this field. No other warranty, either expressed or implied, is made as to professional advice in this report.

REPORT PREPARED BY:

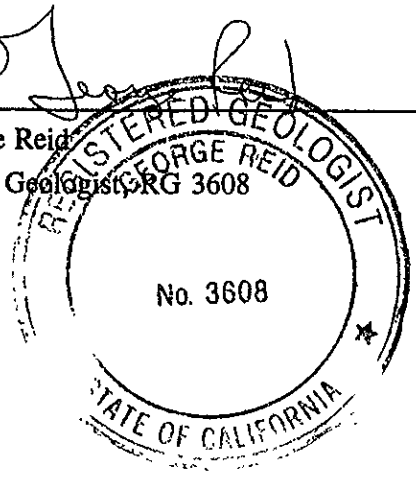
Eric W. Garcia
Project Geologist

2.20.96
Date

UNDER THE PROFESSIONAL SUPERVISION OF:

George Reid
Senior Geologist, RG 3608

2-20-96
Date



1.0 Introduction

This report presents the results of site assessment activities performed by Environmental Science & Engineering, Inc. (ESE) for the Alameda County General Services Agency (GSA) at the UST 1,2,3 Area (site) during the month of January 1996 (Figure 1 - Location Map). ESE submitted a workplan dated November 16, 1995 to the GSA and the Alameda County Health Care Services Agency (HCSA) describing the tasks to be performed during this site assessment (ESE, 1994c).

ESE's primary objective was to assess petroleum hydrocarbons in the area of the three former underground storage tanks (USTs) at the site (Figure 2 -Site Map) and to properly abandon four existing ground water monitoring wells. These objectives were accomplished with the following work scope:

- Using Geoprobe technology, probe discrete intervals and sample soils for analytical and lithologic purposes;

- Using Geoprobe technology, probe to the occurrence of ground water and obtain a grab water sample; and

- Using a hollow-stem auger drilling rig, destroy four monitoring wells by over-drilling and grouting the holes to grade.

Presented in the following sections are a site history, a summary of the regional geology and hydrology, field methodologies for soil sampling and ground water sampling, and the reported analytical results for soil and ground water samples collected during this site assessment. This report also discusses the findings obtained from this investigation, presents conclusions, and provides recommendations for future site activities.

2.0 Site History

In March, 1988, Environmental Technology (ET) directed the removal of three USTs at the subject site under permit from the HCSA and the Dougherty Regional Fire Authority. ET removed one 3,000-gallon capacity UST (UST 1) used for the storage of diesel fuel and two 5,000-gallon capacity USTs (UST 2 and UST 3) used for the storage of Bunker C fuel oil. The fuels were used to operate a series of boilers formerly located at the site. Each UST was of single-wall carbon steel construction.

During the removal of the USTs, a representative from the HCSA witnessed the collection of eight soil samples from the base of the excavation. All samples were analyzed for total petroleum hydrocarbons as diesel fuel (TPH-D) and gasoline (TPH-G) using EPA Method 8015 (modified per CA LUFT) and total oil and grease (TOG) using Standard Method for the Examination of Water and Waste Water (SMWW) Method 503E. Four samples were reported to contain detectable concentrations of TPH-D ranging from 25 to 15,500 parts per million (ppm) and two samples were reported to contain TPH-G concentrations of 50 ppm and 195 ppm, respectively. All eight soil samples were reported to contain detectable concentrations of TOG ranging from 6 to 1,097 ppm.

A preliminary site assessment was performed by Gregg & Associates during March 1988 to determine the areal extent of soil impacted with petroleum hydrocarbons. One soil sample was collected at a depth of 15 feet from each of the four borings (1C, 3D, 3E, and 3F) drilled during the preliminary site assessment and analyzed for TPH-D. No detectable concentrations of TPH-D were reported to occur in the four samples. Detectable concentrations of TOG were reported for each sample and ranged from 22 to 42 ppm. Based on these findings, Gregg & Associates supervised the overexcavation of soil impacted with petroleum hydrocarbons. All findings were documented in an Underground Tank Removal and Site Remediation Report prepared by Gregg & Associates and submitted to the HCSA during May, 1988.

On November 3, 1993, ESE measured and mapped the stockpiled soil at the subject site. ESE estimated the total volume of the stockpiled soil at the site to be approximately 400 cubic yards. On November 24, 1993, ESE submitted a workplan to the HCSA for sampling the stockpiled soil. Subsequently, ESE collected soil samples from the stockpile on November 30, 1993 at a frequency of one sample for every 50 cubic yards and analyzed each for TPH-D and benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method 8015 (modified per CA LUFT) and EPA Method 8020, respectively. Of the eight soil samples analyzed, one sample (SP-3-2.5') was reported to contain TPH-D at a concentration of 130 ppm. Results of the stockpile sampling were presented to the HCSA in a letter report dated December 7, 1993.

On May 11, 1994, ESE supervised the loading, hauling, and disposal of the 50 cubic yards of stockpiled soil reported to contain detectable concentrations of TPH-D. The impacted soil was hauled to the BFI-Vasco Road landfill for disposal. The remaining 350 cubic yards of stockpiled soil were spread at the site on the ground surface.

On June 24, 1994, ESE submitted a workplan to the GSA and HCSA describing the tasks to be performed to determine if petroleum hydrocarbons occur in the soil adjacent to the former USTs 1, 2, and 3. Subsurface investigation field activities were performed at the site on September 6, 1994. A Site Assessment Report was prepared by ESE and submitted to the GSA and HCSA on December 21, 1994. A comprehensive description including site history, regional geology, and regional hydrology was presented in this report. The Site Assessment Report also included analytical results for ground water samples collected from the four ground water wells installed. The results for the samples collected indicated no detectable concentrations of TPH-D, TOG, and BTEX. The report recommended that three additional quarters of ground water monitoring be performed at the site prior to requesting site closure from the HCSA.

Subsequently, three ground water monitoring events were performed at the site during December 1994, February 1995, and May 1995. No detectable concentrations of TPH-D or BTEX were reported to occur in any of the ground water samples collected during the monitoring events.

The location of the monitoring wells is approximately 300 feet east of the former USTs. GSA, HCSA, and ESE met at the site on November 8, 1995 to discuss the need for supplemental information on subsurface conditions closer to the former UST location. Both GSA and HCSA agreed that some additional subsurface investigation was appropriate.

3.0 Regional Geology and Regional Hydrology

3.1 Regional Geology

The site is located within the Coast Ranges geomorphic province (Norris and Webb, 1976) at the northern boundary of the Livermore Valley depression, located midway between the southern part of San Francisco Bay and the San Joaquin Valley. The Livermore Valley is approximately 13 miles long in an east-west direction and approximately four miles wide and is completely surrounded by hills of the Diablo Range.

The Livermore Valley fill materials are comprised of alluvial sediments of Quaternary age (DWR, 1974). Alluvium of Pleistocene to Holocene age has been deposited in the gently sloping central area of the Livermore Valley and adjacent to active streams in the ravines and canyons tributary to Livermore Valley. The alluvium consists of unconsolidated deposits of interbedded clay, silt, fine sand, and lenses of clayey gravel. These sediments are up to 200 feet in thickness and overlie sedimentary rocks of the Livermore Formation and the Tassajara Formation. Fine-grained alluvial fan deposits occur along the northern side of the Livermore Valley. These deposits consist of stratified beds of clay, silt, and sand, and were formed by deposition from streams draining upland areas composed of sandstone and shale of the Tassajara Formation.

The Livermore Valley is bisected by six major faults or fault groups and at least five other faults of a more local nature (DWR, 1974). The major faults are the Carnegie, Tesla, Mocho, Livermore, Pleasanton, and Calaveras faults. The minor faults include the Parks, Verona, and several unnamed faults. The site is located on a down-dropped block of land bounded by the Mocho Fault to the north, the Parks Fault to the south, and the Pleasanton Fault to the east.

3.2 Regional Hydrology

The water-bearing sediment series in the Livermore Valley consist of multi-layered systems having an unconfined upper aquifer over a sequence of leaky or semi-confined aquifers (State of California Department of Water Resources, 1974). The Livermore Valley Ground Water Basin has been divided into approximately 12 hydrologic sub-basins on the basis of fault traces and hydrologic discontinuities. The northern boundary of the Amador sub-basin is a permeability barrier formed by the interfingering of alluvial deposits and the southern boundary of the sub-basin is formed partly by the contact of the water-bearing Livermore Formation with nonwater-bearing rocks and partly by the drainage divide between Livermore Valley and Sunol Valley.

Regional ground water flow maps indicate that water in the uppermost aquifer beneath the site flow toward the southwest (Alameda County Flood Control and Water Conservation District,

1990; 1991). Ground water in the sub-basin has been analyzed by the State of California Department of Water Resources (1974) and is classified as sodium carbonate water of irrigation Class II quality.

The northern portion of the site is crossed by the east-southeast flowing Arroyo Las Positas and the southern portion of the site is crossed by the east-southeast flowing Arroyo Mocho. Both streams are considered to be major drainages for the Livermore Valley and are located in modified earth channels which converge just west of the site.

4.0 Field Investigation

Prior to beginning fieldwork, ESE obtained all necessary permits for drilling soil borings and installing ground water monitoring wells at the site. In addition, ESE reviewed the site-specific Health and Safety Plan (HASP) prepared for this investigation with the onsite personnel, subcontractors, and qualified visitors. ESE performed the fieldwork in accordance with Tri-Regional Water Quality Control Board guidelines (RWQCB, 1990) and other applicable State regulations and standards.

4.1 Soil and Ground Water Collection

ESE supervised the probing and sampling of three locations (HP-1, HP-2, and HP-3) using a truck-mounted Direct Penetration Technology (DPT) Geoprobe unit. Soil probes HP-1, HP-2, and HP-3 were completed on January 9, 1996 to a depth of approximately 35 feet below ground surface (bgs). Ground water was encountered at approximately 35 feet bgs in all probings. The locations of the probes in the area of the former USTs are presented in Figure 2 -Site Map. Soil samples were collected at approximately 35 feet below ground surface (bgs) in each of the probe bores. Probing activities were performed by EnProbe of Oroville, California.

On January 23, 1996, ESE supervised EnProbe in the re-probe of the site to collect soil samples not collected in the initial soil probing operations. Soil samples were collected at 10 and 20 feet bgs in the same area as the original soil probes HP-1, HP-2, and HP-3.

4.1.1 Soil Probing and Soil Sample Collection

On January 9, 1996 ESE collected one soil sample from each probing at the vadose zone-ground water interface (sample nos. HP-1-35, HP-2-35, and HP-3-35). On January 23, 1996, ESE collected two soil samples from each soil probing at 10 and 20 feet bgs. The DPT unit utilized a 2.25-inch outside diameter, stainless steel tube that was pushed into the subsurface. A four-foot continuous soil sampling device was used to collect relatively undisturbed soil samples. The stainless steel sample tube was then extracted and the polyacetate liner containing the soil was removed. When collection of an analytical sample was necessary another 2.25-inch outside diameter, stainless steel tube was used. The sampler release spring was disengaged and the stainless steel tube was pushed an additional two feet, collecting a relatively undisturbed soil sample. The stainless steel sample tube was then extracted and the brass liner containing the soil was removed. The ends of the brass liner were capped with teflon-lined plastic caps. The soil samples collected for chemical analysis were placed in a cooler with ice, and transported under

chain-of-custody to McCampbell Analytical (McCampbell), a State-certified analytical laboratory of Pacheco, California.

A portion of each soil sample was sealed in a clean individual Ziploc™ bag and set in direct sunlight to enhance the volatilization of volatile organic compounds (VOCs) present in the soil. After approximately ten minutes, each sample was screened for VOCs using a photoionization detector (PID).

Each soil boring was logged by an ESE field geologist in accordance with the Unified Soils Classification System (USCS). Additionally, the ESE field geologist noted soil color, relative density, moisture content, biologic content, and odor, if present. Geologic boring logs are presented as Appendix A.

4.1.2 Ground Water Sample Collection

On January 9, 1996, ground water samples were collected from HP-1 through HP-3 using a two-inch diameter stainless steel slotted tube pushed into the saturated subsurface by the DPT unit. After approximately ten minutes ground water infiltrated the tube and a sample was retrieved using a 3/8-inch stainless steel bailer. The samples were collected in appropriate laboratory-supplied glassware, labeled, and placed on ice under proper chain-of-custody documentation for transport to McCampbell, a State-certified analytical laboratory.

4.2 Analytical Methodologies

4.2.1 Soil Sample Analysis

All soil samples were analyzed for TPH-D using EPA Method 8015 (modified per CA LUFT) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method 8020. TPH-D was detected then one sample with the highest concentration would be analyzed for polynuclear aromatics (PNAs) using EPA Method 8270.

4.2.2 Ground Water Sample Analysis

All ground water samples were analyzed for TPH-D using EPA Method 8015 (modified per CA LUFT) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method 8020. TPH-D was detected then one sample with the highest concentration would be analyzed for polynuclear aromatics (PNAs) using EPA Method 8270.

4.3 Monitoring Well Destruction

On January 15, 1996, ESE supervised the destruction of four monitoring wells by Exploration Geoservices, Inc. (EGI) of San Jose, California. EGI used a mobile B-61 drilling rig with 10-inch hollow stem augers to overdrill the four-inch polyvinyl chloride (PVC) monitoring well casings. Upon drilling out the concrete and bentonite seals, the PVC casings were removed from their respective boreholes. Then a ten-sack cement slurry was emplaced by tremie from the base of the borehole to the ground surface. The PVC casing was disposed offsite by EGI.

5.0 Results

5.1 Soil and Ground Water Samples

5.1.1 Soil

Sediments of the unsaturated zone in the three soil probings are comprised of an interbedded sequence of silty clay, sandy clay, and sand (Appendix A). Brown stiff silty clays and sandy clays are predominant in the soil probes to a depth of approximately eight feet bgs. Fine, light brown sandy silts occur between approximately eight and 16 feet bgs. Light brown clays are present from approximately 16 feet to the base of the probe at 35 feet bgs. Below a depth of approximately 31 feet bgs the silty clay and clay sediments become wet.

The results of field screening drill cuttings with a PID indicated no detectable concentrations of volatile organic vapors. Soil samples collected at 10 feet bgs, 20 feet bgs, and at 35 feet bgs (the vadose zone-ground water interface) in all soil probings (HP-1, HP-2, and HP-3) were reported not to contain any detectable concentrations of petroleum hydrocarbon constituents. Soil sample analytical results are summarized in Table 1, and the analytical reports with the chain-of-custody documentation are presented in Appendix B.

5.1.2 Ground Water

TPH-D was detected in all three of the ground water samples submitted (HP-1, HP-2, and HP-3), at concentrations of 220 μg/L, 220 μg/L, and 61 μg/L, respectively. Benzene and ethylbenzene were not detected at or above the method detection limits in any of the ground water samples submitted. Toluene was detected in all three of the ground water samples submitted (HP-1, HP-2, and HP-3), at concentrations of 3.3 μg/L, 1.2 μg/L, and 1.6 μg/L, respectively. Total xylenes were detected in all three of the ground water samples submitted (HP-1, HP-2, and HP-3), at concentrations of 1.4 μg/L, 0.58 μg/L, and 1.1 μg/L, respectively. Ground water sample HP-1 was analyzed for PNAs and was not found at a concentration at or above the method detection limit. The analytical results are summarized in Table 2 and the analytical report with the chain-of-custody documentation is presented in Appendix B.

6.0 Conclusions and Recommendations

6.1 Conclusions

Field screening results using a PID indicated no detectable concentrations of volatile organic compounds in any of the probe soil samples from HP-1, HP-2, and HP-3. In addition, the analytical results for the four soil samples collected at the vadose zone-saturated zone interface indicated no detectable concentrations of TPH-D or BTEX. Analytical results for ground water samples collected from the probes indicated no detectable concentrations of benzene, ethylbenzene, and PNAs, and only low concentrations of TPH-D, toluene, and total xylenes. The concentrations of toluene and total xylenes detected were well below the federal maximum contaminant levels (MCLs) of 150 μg/L and 1,750 μg/L, respectively. ESE concludes that based on the data collected, the shallow nature of the water-bearing zone and no known municipal production wells in the area of the site, the UST 1,2,3 site should be considered to be low risk.

6.2 Recommendations

Based on the results and conclusions of this site investigation at the UST 1,2,3 site, ESE recommends that the GSA should submit this report to the HCSA and request case closure.

7.0 References

Alameda County Flood Control and Water Conservation District (Zone 7), 1990 - 1991. Regional Ground Water Flow Maps of the Livermore Valley.

Environmental Science & Engineering, Inc. (ESE), 1993a. Workplan for Soil Stockpile Sampling, Alameda County General Services Agency (GSA), UST 1, 2, 3 Site; November 24, 1993.

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Environmental Science & Engineering, Inc. (ESE), 1994a. Workplan for Site Investigation, Alameda County General Services Agency (GSA), UST 1, 2, 3 Site; June 24, 1994.

Environmental Science & Engineering, Inc. (ESE), 1994b. Report of Stockpiled Soil Spreading and Disposal, Alameda County General Services Agency (GSA), UST 1, 2, 3 Site; June 20, 1994.

Gregg & Associates, Inc., 1988. Underground Tank Removal and Site Remediation Report; May, 1988.

Norris, R.M., and Webb, R.W., 1976. Geology of California; John Wiley & Sons, Inc., New York. 365pp.

State of California Department of Water Resources (DWR), 1974. Evaluation of Ground Water Resources: Livermore and Sunol Valleys; Bull. 118-2, pp.153.

State of California Regional Water Quality Control Board (RWQCB), 1990. Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites; August 10, 1990.

TABLES

TABLE 1

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS

Alameda County General Services Agency
UST 1,2,3 Site, Santa Rita Correctional Facility
Dublin, California

Sample	Sample	Depth	TPH-D	Benzene	Toluene	Ethylbenzene	Total Xylenes
HP-1-10	1/23/96	10	ND (10)	ND (0.005)	ND (0.005)	ND (0.005)	ND(0.005)
HP-1-20	1/23/96	20	ND (10)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
HP-1-35'	1/9/96	35	ND (10)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
HP-2-10	1/23/96	10	ND (10)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
HP-2-20	1/23/96	20	ND (10)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
HP-2-35'	1/9/96	35	ND (10)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
HP-3-10	1/23/96	10	ND (10)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
HP-3-20	1/23/96	20	ND (10)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
HP-3-35'	1/9/96	35	ND (10)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)

Notes:

mg/Kg = milligrams per Kilogram;
TPH-D = Total Petroleum Hydrocarbons as Diesel, analyzed using EPA Method 8015 (modified per CA LUFT);
BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes analyzed using EPA Method 8020;
ND (x.xx) = indicates not detected at method detection limit given as x;
• *Analytical Reports are presented in Appendix B of this report.*

TABLE 2

SUMMARY OF GROUND WATER SAMPLE ANALYTICAL RESULTS

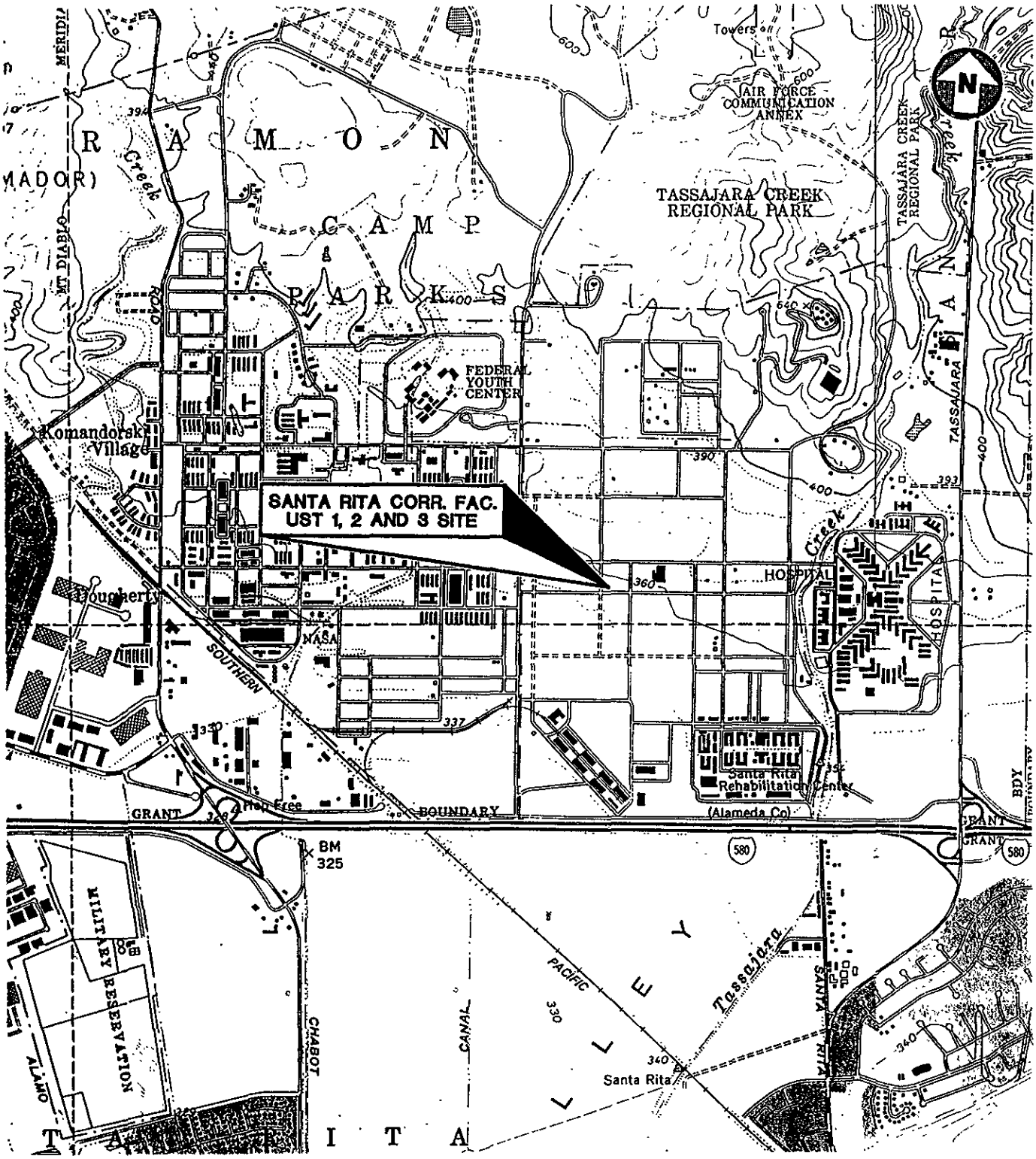
Alameda County General Services Agency
UST 1,2,3 Site, Santa Rita Correctional Facility
Dublin, California

Sample No.	Sample Date	TPH-D (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	PNA's (µg/L)
HP-1	1/9/96	220	ND (0.5)	3.3	ND (0.5)	1.4	ND
HP-2	1/9/96	220	ND (0.5)	1.2	ND (0.5)	0.58	—
HP-3	1/9/96	61	ND (0.5)	1.6	ND (0.5)	1.1	—
Trip	1/9/96	—	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	—

Notes:

mg/L = milligrams per Liter;
TPH-D = Total Petroleum Hydrocarbons as Diesel, analyzed using EPA Method 8015 (modified per CA LUFT);
BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes analyzed using EPA Method 8020;
ND (x.xx) = indicates not detected at method detection limit given as x;
• Analytical Reports are presented in Appendix B of this report.

FIGURES



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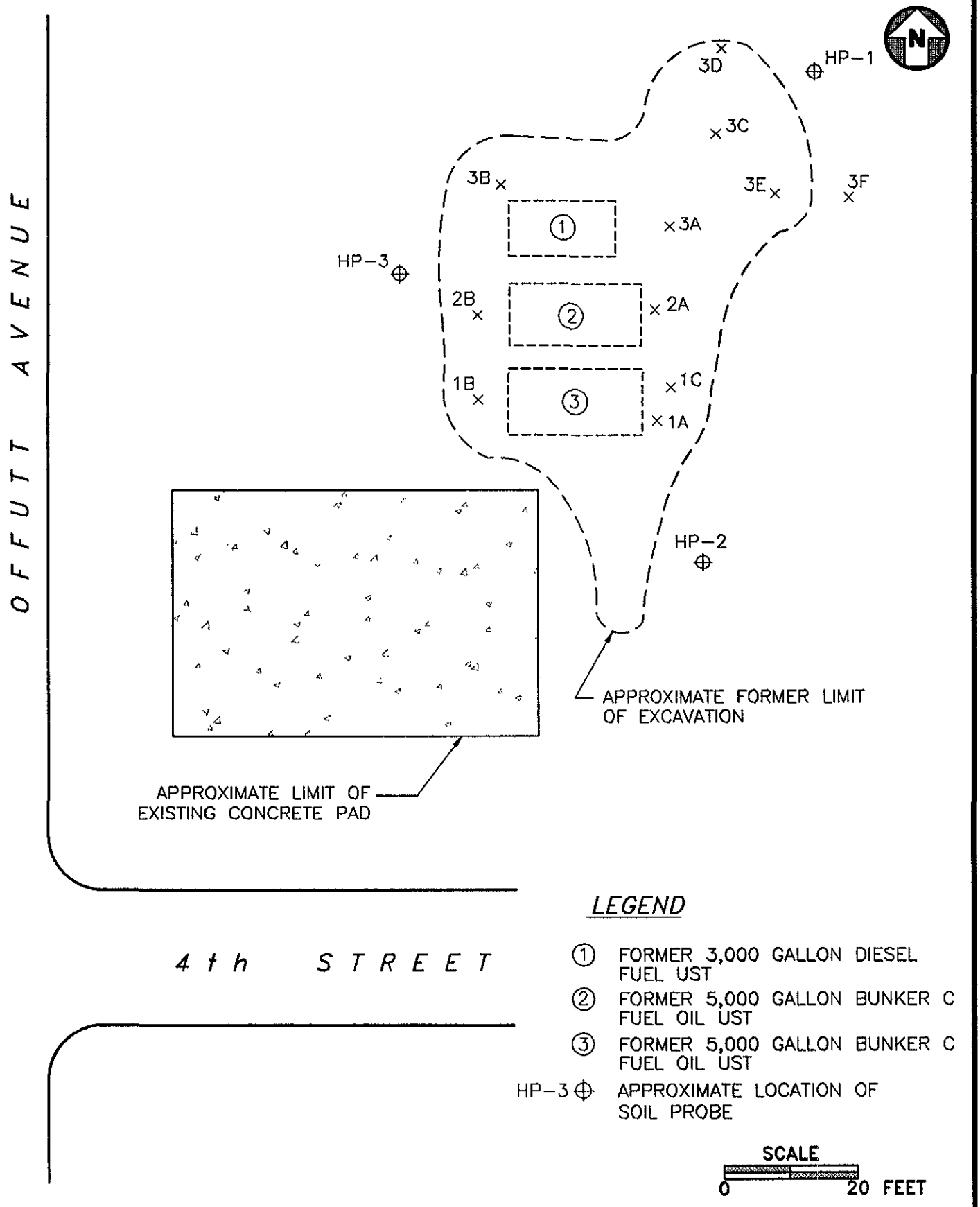
1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

ADAPTED FROM U.S.G.S. DUBLIN AND LIVERMORE, CALIFORNIA, 7.5 MINUTE TOPOGRAPHIC QUADRANGLE MAPS, 1980.

Environmental Science & Engineering, Inc. A Dames & Moore Company	DATE 11/22/95 REVISED	LOCATION MAP	FIGURE NO. 1
4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	CAD FILE 52400005	ALAMEDA COUNTY GSA – UST 1,2,3 SITE SANTA RITA CORRECTIONAL FACILITY DUBLIN, CALIFORNIA	PROJ. NO. 65-95-108



Environmental Science & Engineering, Inc. 4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	DATE 2/14/96 REVISED CAD FILE 65510812	SITE MAP ALAMEDA COUNTY GSA SANTA RITA CORRECTIONAL FACILITY DUBLIN, CALIFORNIA	FIGURE NO. 2 PROJ. NO. 65-95-108

APPENDIX A
SOIL BORING LOGS

Environmental Science & Engineering, Inc.

A CILCORP Company

BORING LOG AND WELL COMPLETION SUMMARY

HP - 1

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WELL COMPLETION

Completion Depth: No Well Installed

	Size/Type	From	To
Casing:			
Screen:			
Filter:			
Seal:	*Cement Slurry Grout*	0 0 Feet	37.0 Feet

Well Cap or Box:

Project Name: Alameda County GSA Project No: 65-95-108

Location: UST 1, 2 & 3
Santa Rita Correctional Facility
Dublin, California

Driller: Enprob Environmental Probing
Method: Geoprobe
Hole Diameter: 2 5 Inches *Total Depth:* 37 0 Feet
Ref. Elevations:
Logged By: Eric Garcia

Dates:
Start: 1-9-96
Finish: 1-9-96

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
0	FILL MATERIAL		CONTINUOUS CORE				
5	SILTY CLAY, dark brown, stiff, damp, 10-20% silts, no odor.	CL				2.1	
10	SANDY CLAY, light brown, stiff, damp, 10-20% fine grained sand, no odor.	CL				2.8	
15						4 2	
20	SAND, light brown, dense, damp, fine to medium grained, no odor.	SW				2.6	
25						2.4	
30	SILTY CLAY, light brown, stiff, damp, 10-20% silts, no odor	CL				2 8	
35							

Environmental Science & Engineering, Inc.
A CILCORP Company

BORING LOG AND WELL COMPLETION SUMMARY

HP-2

Page 1 of 1

WELL COMPLETION

Completion Depth: No Well Installed

	Size/Type	From	To
Casing:			
Screen:			
Filter:			
Seal:	Cement Slurry Grout	0.0 Feet	35.0 Feet

Well Cap or Box:

Project Name: Alameda County GSA Project No: 65-95-108

Location: UST 1, 2 & 3
Santa Rita Correctional Facility
Dublin, California

Driller: Enprob Environmental Probing
Method: Geoprobe
Hole Diameter: 2.5 Inches Total Depth: 35.0 Feet
Ref. Elevations:
Logged By: Eric Garcia

Dates:
Start: 1-9-96
Finish: 1-9-96

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
0	FILL MATERIAL		CONTINUOUS CORE				
5	SANDY CLAY, brown, stiff, dry, 20-30% fine grained sand, no odor.	CL				1.0	
10	SANDY CLAY, brown, stiff, damp, 10-20% fine grained sand, no odor	CL				2.2	
15	CLAYEY SAND, light brown, dense, damp, 20-30% clay, fine grained, no odor.	SM				2.3	
20	CLAY, light brown, very stiff, damp, no odor.	CL				2.9	
25	SANDY CLAY, light brown, stiff, damp, 10-20% very fine sand, no odor.	CL				2.5	
30	SILTY CLAY, light brown, stiff, damp, 10-20% silts, no odor	CL				3.5	
35							

Environmental Science & Engineering, Inc.
A CILCORP Company

BORING LOG AND WELL COMPLETION SUMMARY

HP-3

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WELL COMPLETION

Completion Depth: No Well Installed

	Size/Type	From	To
Casing:			
Screen:			
Filter:			
Seal:	Cement Slurry Grout	0.0 Feet	35.0 Feet

Well Cap or Box:

Project Name: Alameda County GSA Project No: 65-95-108

Location: UST 1, 2 & 3
Santa Rita Correctional Facility
Dublin, California

Driller: Enprob Environmental Probing
Method: Geoprobe
Hole Diameter: 2.5 Inches Total Depth: 35.0 Feet
Ref. Elevations:
Logged By: Eric Garcia

Dates:
Start: 1-9-96
Finish: 1-9-96

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
0	FILL MATERIAL		CONTINUOUS CORE				
5	SILTY CLAY, dark brown, stiff, damp, 10-20% silts, no odor.	CL				1.2	
	SANDY CLAY, brown, stiff, dry, 20-30% fine grained sand, no odor.	CL					
10						2.8	
15	SANDY SILT, light brown, stiff, dry, 20-30% very fine sand, no odor.	SM				1.8	
20						2.6	
25	SANDY CLAY, light brown, very stiff, damp, 20-30% medium sand, no odor.	CL				2.9	
30						3.1	
	CLAY, light brown, stiff, damp, no odor.	CL					
35							

APPENDIX B
ANALYTICAL REPORTS WITH CHAIN-OF -CUSTODY DOCUMENTS

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

01/19/96

Dear Eric:

Enclosed are:

1). the results of 7 samples from your **Alameda Co. GSA-UST 1,2,3 Site** project,

2). a QC report for the above samples

3). a copy of the chain of custody, and

4). a bill for analytical services.

If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton

McCAMPBELL ANALYTICAL INC. | 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Environmental Science & Eng. 4090 Nelson Ave., Suite J Concord, CA 94520	Client Project ID: Alameda Co. GSA-UST 1,2,3 Site	Date Sampled: 01/09/96
		Date Received: 01/10/96
	Client Contact: Eric Garcia	Date Extracted: 01/10/96
	Client P.O: # SMSA-C-021	Date Analyzed: 01/10/96

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	Benzene	Toluene	Ethylbenzene	Xylenes	% Rec. Surrogate
60360	HP1-35'	S	---	ND	ND	ND	ND	108
60361	HP2-35'	S	---	ND	ND	ND	ND	105
60362	HP3-35'	S	---	ND	ND	ND	ND	106
60363	HP1	W	---	ND	3.3	ND	1.4	103
60364	HP2	W	---	ND	1.2	ND	0.58	108
60365	HP3	W	---	ND	1.6	ND	1.1	99
60366	Trip Blank	W	---	ND	ND	ND	ND	100
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment; j) no recognizable pattern.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC. | 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Environmental Science & Eng. 4090 Nelson Ave., Suite J Concord, CA 94520	Client Project ID: Alameda Co. GSA-UST 1,2,3 Site	Date Sampled: 01/09/96
		Date Received: 01/10/96
	Client Contact: Eric Garcia	Date Extracted: 01/12/96
	Client P.O: # SMSA-C-021	Date Analyzed: 01/12/96

Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel *

EPA methods modified 8015, and 3550 or 3510; California RWQCB (SF Bay Region) method GCFID(3550) or GCFID(3510)

Lab ID	Client ID	Matrix	TPH(d)+	% Recovery Surrogate
60360	HP1-35'	S	ND	101
60361	HP2-35'	S	ND	100
60362	HP3-35'	S	ND	104
60363	HP1	W	220,b,i	106
60364	HP2	W	220,b,i	106
60365	HP3	W	61,b,i	105
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	
		S	10 mg/kg	

* water samples are reported in ug/L, soil samples in mg/kg, and all TCLP and STLC extracts in mg/L

cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) aged diesel? is significant); d) gasoline range compounds are significant; e) medium boiling point pattern that does not match diesel (?); f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 01/10/96 Matrix: Soil

Analyte	Concentration (mg/kg) Sample (#56725)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.000	1.778	1.872	2.03	88	92	5.2
Benzene	0.000	0.200	0.208	0.2	100	104	3.9
Toluene	0.000	0.202	0.208	0.2	101	104	2.9
Ethylbenzene	0.000	0.202	0.208	0.2	101	104	2.9
Xylenes	0.000	0.602	0.618	0.6	100	103	2.6
TPH (diesel)	0	319	316	300	106	105	0.9
TRPH (oil & grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 01/10/96 Matrix: Water

Analyte	Concentration (ug/L) Sample (#60334)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.0	95.0	94.6	100	95	95	0.4
Benzene	0	10.10	10.10	10	101.0	101.0	0.0
Toluene	0	10.60	10.70	10	106.0	107.0	0.9
Ethyl Benzene	0	10.70	10.70	10	107.0	107.0	0.0
Xylenes	0	33.20	33.20	30	110.7	110.7	0.0
TPH (diesel)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TRPH (oil & grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 01/11/96-01/12/96 Matrix: Soil

Analyte	Concentration (mg/kg) Sample (#56725)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.000	1.906	1.770	2.03	94	87	7.4
Benzene	0.000	0.186	0.186	0.2	93	93	0.0
Toluene	0.000	0.192	0.190	0.2	96	95	1.0
Ethylbenzene	0.000	0.192	0.190	0.2	96	95	1.0
Xylenes	0.000	0.562	0.562	0.6	94	94	0.0
TPH (diesel)	0	307	310	300	102	103	1.1
TRPH (oil & grease)	0.0	19.9	22.3	20.8	96	107	11.4

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 01/12/96 Matrix: Water

Analyte	Concentration (ug/L) Sample (#60334)	MS	MSD	Amount Spiked	% Recovery MS	% Recovery MSD	RPD
TPH (gas)	0.0	90.3	89.8	100	90	90	0.6
Benzene	0	10.10	10.30	10	101.0	103.0	2.0
Toluene	0	10.40	10.60	10	104.0	106.0	1.9
Ethyl Benzene	0	10.60	10.80	10	106.0	108.0	1.9
Xylenes	0	32.50	33.10	30	108.3	110.3	1.8
TPH (diesel)	0	147	147	150	98	98	0.0
TRPH (oil & grease)	0	24900	25100	23700	105	106	0.8

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

CHROMALAB, INC.

Environmental Services (SDB)

January 19, 1996 *Submission #:* 9601132

MCCAMPBELL ANALYTICAL, INC.

Atten: Ed Hamilton

Project: E/A.C. *Project#:* 5608
Received: January 16, 1996

re: One sample for Polynuclear Aromatic Hydrocarbons (PAH's) analysis.
Method: EPA 3510/625

SampleID: **HP-1**
Sample #: 116386 *Matrix:* WATER *Extracted:* January 16, 1996
Sampled: January 9, 1996 *Run:* 10135-M *Analyzed:* January 18, 1996

Analyte	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE RESULT (%)
2-METHYLNAPHTHALENE	N.D.	2.0	N.D.	--
NAPHTHALENE	N.D.	2.0	N.D.	--
2-CHLORONAPHTHALENE	N.D.	2.0	N.D.	--
ACENAPHTHYLENE	N.D.	2.0	N.D.	--
ACENAPHTHENE	N.D.	2.0	N.D.	49
FLUORENE	N.D.	5.0	N.D.	--
PHENANTHRENE	N.D.	2.0	N.D.	--
ANTHRACENE	N.D.	2.0	N.D.	--
FLUORANTHENE	N.D.	2.0	N.D.	--
PYRENE	N.D.	2.0	N.D.	51
BENZO(A)ANTHRACENE	N.D.	2.0	N.D.	--
CHRYSENE	N.D.	2.0	N.D.	--
BENZO(B)FLUORANTHENE	N.D.	2.0	N.D.	--
BENZO(K)FLUORANTHENE	N.D.	2.0	N.D.	--
BENZO(A)PYRENE	N.D.	2.0	N.D.	--
INDENO(1,2,3-CD)PYRENE	N.D.	2.0	N.D.	--
DIBENZO(A,H)ANTHRACENE	N.D.	2.0	N.D.	--
BENZO(GHI)PERYLENE	N.D.	2.0	N.D.	--

Michael Verona
Chemist

Alex Tam
Semivolatiles Supervisor

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

[redacted]/[redacted]38[redacted] 11[redacted]388 [redacted] [redacted]986

McCAMPBELL ANALYTICAL

110 2nd AVENUE, # D7
PACHECO, CA 94553
(510) 798-1620 FAX (510) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME: ☐ RUSH ☐ 24 HOUR ☐ 48 HOUR ☒ 5 DAY

REPORT TO: Ed Hamilton BILL TO: MAI

COMPANY: McCampbell Analytical

TELE: Above FAX #:

PROJECT NUMBER: 5608 PROJECT NAME: E/A.C.

PROJECT LOCATION: Pleasanton SAMPLER SIGNATURE:

SUBM #: 9601132 REP: GC
CLIENT: MCCAM
DUE: 01/23/96
REF #:25986

ANALYSIS REQUEST: BTEX & TPH as Gasoline (602/8020 & 8015); THP as Diesel (8015); Total Petroleum Oil & Grease (5520 E&F/5520 B&F); Total Petroleum Hydrocarbons (418.1); EPA 601/8010; EPA 602/8020; EPA 608/8080; EPA 608/8080 - PCBs Only; EPA 624/8240/8260; EPA 625/8270; CAM - 17 Metals; EPA - Priority Pollutant Metals; LEAD (7240/7421/239.2/6010); ORGANIC LEAD; RCI

OTHER: PNA's

SAMPLE ID	LOCATION	SAMPLING DATE	SAMPLING TIME	# CONTAINERS	TYPE CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	METHOD PRESERVED: HCL	HNO$_3$	OTHER (ICE)	PNA's	COMMENTS
HP-1		1-9-95		1	Ltr	X							X	X	60363
HP-2		↓		1	Ltr	X							X	X	60364
HP-3				1	Ltr	X							X	X	60365

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
Neide Nucca	1/16/96	4:35	B. Carr HC030
RELINQUISHED BY: B. Carr HC030	1-16-96		RECEIVED BY:
RELINQUISHED BY:	1/16/96	1722	RECEIVED BY LABORATORY: Mimi Pak

REMARKS: Last Day of Hold Time

5608AESEX270

DATE 12/06/95 PAGE 1 OF 1

CHAIN OF CUSTODY RECORD

Environmental Science & Engineering, Inc.
A CILCORP Company
4090 Nelson Avenue
Suite J
Concord, CA 94520
Phone (510) 685-4053
Fax (510) 685-5323

PROJECT NAME ALAMEDA Co. GSA

ADDRESS UST 1,2,3 SITE
SANTA RITA CORRECTIONAL FACILITY
DUBLIN CALIFORNIA

PROJECT NO. 65-95-108

SAMPLED BY EWG

LAB NAME McCampbell Analytical

ANALYSES TO BE PERFORMED

SAMPLE #	DATE	TIME	LOCATION	TOG (SMW 5520)	TPH-D (8015m)	BTEX (8020)	PNA's 1-4-96							MATRIX	NUMBER OF CONTAINERS	REMARKS (CONTAINER, SIZE, ETC.)	
HP1-35'	1.9.96	1220	SR	✓	✓	✓								SOIL	1	~~3 2@ 1l amber~~,	60360
HP2-35'	↓	1200	↓	✓	✓	✓								"	1		60361
HP3-35'	↓	1545	↓	✓	✓	✓								"	1		
HP1	↓	1330	↓	✓	✓	✓	✓							WATER	5	2@ 1l amber, 3@ 40ml VOA	
HP2	↓	1220	↓	✓	✓	✓	✓-cancelled							"	5	"	60362
HP3	↓	1600	↓	✓	✓	✓	✓-cancelled							"	5	"	60363
TRIP BLANK	↓	—	↓			✓								"	1	"	
																	60364
																	60365
																	60366

RELINQUISHED BY: (signature)	RECEIVED BY: (signature)	date	time
1. [signature]	Angela Rydelius	1-10-96	3pm
2.			
3.			
4.			
5.			

19 TOTAL NUMBER OF CONTAINERS

ICE/T° ✓
GOOD CONDITION ✓
HEAD SPACE ABSENT ✓
PRESERVATIVE ✓ VOAS | O&G | METALS | OTHER
APPROPRIATE CONTAINERS ✓

REPORT RESULTS TO: ~~Bart Miller~~ ESE Eric Garcia

SPECIAL SHIPMENT REQUIREMENTS

SAMPLE RECEIPT

CHAIN OF CUSTODY SEALS	
REC'D GOOD CONDTN/COLD	[initials]
CONFORMS TO RECORD	[initials]

INSTRUCTIONS TO LABORATORY (handling, analyses, storage, etc.):
INVOICE TO ALAMEDA CO. GSA - ROD FREITAG.
NORMAL T.A.T.

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

02/02/96

Dear Eric:

Enclosed are:

1). the results of 6 samples from your # **6595108; Alameda Co. GSA, UST 1,2,3** project,

2). a QC report for the above samples

3). a copy of the chain of custody, and

4). a bill for analytical services.

If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Environmental Science & Eng. 4090 Nelson Ave., Suite J Concord, CA 94520	Client Project ID: # 6595108; Alameda Co. GSA, UST 1,2,3	Date Sampled: 01/23/96
		Date Received: 01/23/96
	Client Contact: Eric Garcia	Date Extracted: 01/23/96
	Client P.O: # SMSA-C-021	Date Analyzed: 01/23/96

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	Benzene	Toluene	Ethylbenzene	Xylenes	% Rec. Surrogate
60663	HP-1-10	S	---	ND	ND	ND	ND	104
60664	HP-1-20	S	---	ND	ND	ND	ND	105
60665	HP-2-10	S	---	ND	ND	ND	ND	104
60666	HP-2-20	S	---	ND	ND	ND	ND	110
60667	HP-3-10	S	---	ND	ND	ND	ND	104
60668	HP-3-20	S	---	ND	ND	ND	ND	104
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment; j) no recognizable pattern.

DHS Certification No. 1644

Edward Hamilton, Lab Director

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Tele: 510-798-1620 Fax: 510-798-1622

Environmental Science & Eng. 4090 Nelson Ave., Suite J Concord, CA 94520	Client Project ID: # 6595108; Alameda Co. GSA, UST 1,2,3	Date Sampled: 01/23/96
		Date Received: 01/23/96
	Client Contact: Eric Garcia	Date Extracted: 01/23/96
	Client P.O: # SMSA-C-021	Date Analyzed: 01/23/96

Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel *

EPA methods modified 8015, and 3550 or 3510; California RWQCB (SF Bay Region) method GCFID(3550) or GCFID(3510)

Lab ID	Client ID	Matrix	TPH(d)+	% Recovery Surrogate
60663	HP-1-10	S	ND	105
60664	HP-1-20	S	ND	104
60665	HP-2-10	S	ND	104
60666	HP-2-20	S	ND	105
60667	HP-3-10	S	ND	102
60668	HP-3-20	S	ND	102
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	
		S	10 mg/kg	

* water samples are reported in ug/L, soil samples in mg/kg, and all TCLP and STLC extracts in mg/L

cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) aged diesel? is significant); d) gasoline range compounds are significant; e) medium boiling point pattern that does not match diesel (?); f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 01/23/96 Matrix: Soil

Analyte	Concentration (mg/kg) Sample (#56725)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.000	2.213	2.156	2.03	109	106	2.6
Benzene	0.000	0.212	0.234	0.2	106	117	9.9
Toluene	0.000	0.220	0.240	0.2	110	120	8.7
Ethylbenzene	0.000	0.222	0.236	0.2	111	118	6.1
Xylenes	0.000	0.676	0.718	0.6	113	120	6.0
TPH (diesel)	0	327	316	300	109	105	3.4
TRPH (oil & grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100