ENVIRONMENTAL
PROTECTION

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98 AUG -7 PM 2:00

August 3, 1998 **Project No. 3758**

Mr. Nissan Saidian
5733 Medallion Court
Castro Valley, California 94552

Subject: Work Plan - Preliminary Soil and Groundwater Quality Investigation
Oakland Truck Stop
8255 San Leandro Street
Oakland, California

Dear Mr. Saidian:

W.A. Craig, Inc. (WAC) has prepared this Work Plan to perform a preliminary soil and groundwater quality investigation in the area of the former underground storage tank (UST) systems at the Oakland Truck Stop Site at 8255 San Leandro Street in Oakland, California (**Figure 1**). Soil and groundwater sampling is proposed to assess the extent of impacted soil and groundwater with respect to reported releases from the former waste oil and gasoline USTs. Monitoring wells are proposed and a minimum of one year of quarterly groundwater monitoring is recommended and anticipated to be required by the local oversight regulatory agency.

This Work Plan was prepared in response to the Alameda County Health Care Services Agency's (County) letters dated March 4, 1998 and June 3, 1998. These letters requested that an investigation be performed to assess the soil and groundwater quality at the site.

BACKGROUND

WAC closed one 500-gallon waste oil UST and two 4000-gallon gasoline USTs at the site on March 8, 1998. Three diesel tanks remain in operation at the site (1-10,000 gal., 1-6000 gal., and 1-8,000 gal.). There were no holes observed in the USTs removed by WAC. Five confirmation soil samples were collected from the gasoline UST excavation at depths of approximately 9.5 to 11.5 feet below grade (fbg). Samples from the gasoline UST were analyzed for total petroleum hydrocarbons as gasoline (gasoline), benzene, toluene, ethylbenzene, xylenes (BTEX), methyl tert-butyl ether (MTBE), and total petroleum hydrocarbons as diesel (diesel). Gasoline was identified in the soil samples at concentrations ranging from 10 to 460 milligrams per kilogram (mg/kg). BTEX constituents including benzene (0.045 to 5.8 mg/kg), toluene (0.030 to 1.7 mg/kg), ethylbenzene (0.024 to 8.2 mg/kg), and xylenes 0.053 to 3.3 mg/kg) were reported in the soil samples. MTBE was detected in the soil samples at concentrations ranging from below detection limits to 0.64 mg/kg. Diesel was detected in the confirmation soil samples

at concentrations ranging from 3.6 to 930 mg/kg. Groundwater was not observed during excavation of the gasoline UST area.

Three confirmation soil samples were collected from the waste oil UST excavation at depths ranging from 4.5 to 6 fbg. These soil samples were analyzed for gasoline, BTEX, MTBE, diesel, and the metals, cadmium, chromium, lead, nickel, and zinc. Gasoline was identified in the soil samples at concentrations ranging from 950 to 3600 mg/kg. BTEX constituents including benzene (not detected to 2.1 mg/kg), toluene (0.68 to 8.0 mg/kg), ethylbenzene (1.6 to 18 mg/kg), and xylenes 3.5 to 15 mg/kg) were reported in the soil samples. MTBE was detected in the soil samples at concentrations ranging from below detection limits to 8.1 mg/kg. Diesel was detected in the confirmation soil samples at concentrations ranging from 6,500 to 21,000 mg/kg. Groundwater was not observed during excavation of the gasoline UST area. The metals, cadmium (not detected), chromium (1.1 to 8 mg/kg), lead (10 to 16 mg/kg), nickel (not detected to 7.3 mg/kg) and zinc (110 to 130 mg/kg) were also detected in the confirmation soil samples.

Groundwater was encountered at an approximate depth of 5.5 fbg in the waste oil tank excavation. Groundwater samples from the excavation area were reported to contain gasoline at a concentration of 5500 micrograms per liter (ug/l). MTBE was detected at a concentration of 1900 ug/l. Benzene (580 ug/l), toluene (12 ug/l), ethylbenzene (180 ug/l) and xylenes (39 ug/l) were also detected in the groundwater samples from the waste oil tank excavation. Diesel was detected at a concentration of 880,000 ug/l. The metals, cadmium (0.016 ug/l), chromium (0.36 ug/l), lead (2.6 ug/l), nickel (0.13 ug/l) and zinc (3.0 ug/l) were also detected in the groundwater samples from the excavation.

The UST closure activities are summarized in greater detail in WAC's "Final Closure Report for Underground Storage Tank Removal" dated June 16, 1998.

Visual, olfactory, and photoionization detector readings during the UST removals indicated that the UST backfill and native soil materials were impacted with petroleum hydrocarbon compounds. The UST backfill materials were completely removed from each UST location, profiled, and hauled to a Class II landfill for disposal. The excavations have been backfilled with clean, imported, material and compacted.

SITE DESCRIPTION

The former UST system included the waste oil and gasoline USTs as described in the previous section. The waste oil UST was remotely filled from the shop area, at a location inside the southwest corner of the adjacent building. Gasoline from the former UST was also dispensed at a location inside the shop area. The former UST systems are indicated on **Figure 2**.

SCOPE OF WORK

The scope of work proposed herein will be performed to obtain additional information on the soil and groundwater quality in the former UST systems and surrounding areas within the site boundaries. Upon completion of the proposed scope of services, WAC will recommend further investigative or remedial actions, if any, to proceed toward closure of the site. The proposed scope of work will include advancing soil borings, installing groundwater monitoring wells, and collecting and analyzing soil and groundwater samples as follows:

- Preparation of this Work Plan for submittal to the County for approval;
- Obtaining appropriate permits and obtaining authorization, clearance, and safety controls to access the proposed soil and groundwater sampling sites;
- Obtain the subcontracted services of a California-licensed well drilling contractor to perform the drilling of a minimum of 12 exploratory soil-probe boreholes to an estimated depth of 15 feet bgs;
- Converting three of the soil probe locations to 2-inch diameter groundwater monitoring wells using hollow-stem auger drilling methods;
- Collecting one to two soil samples in the unsaturated zone and one soil sample below the first encountered groundwater from each soil boring to assess soil quality at selected depths and locations;
- Collecting grab-groundwater samples from the soil borings not converted to groundwater monitoring wells (nine samples);
- Analysis of all soil and groundwater for diesel using EPA Method 3550, gasoline using EPA Method 8015 (modified), BTEX and MTBE using EPA Method 8020;
- Analysis of soil and groundwater samples from the waste oil tank area will be analyzed additionally for total petroleum hydrocarbons as oil and grease (TPH-o&g) using EPA Method 413.1, and VOCs using EPA Method 8240. The soil samples from each borehole with the highest detected TPH-o&g concentration will be analyzed additionally for semivolatile organic compounds using EPA Method 8270 and PCB's using EPA Method 8080; and
- Preparation of a report presenting field methods and procedures, summarized results of the investigation findings, and conclusions and recommendations regarding the site environmental conditions.

SOIL AND GROUNDWATER SAMPLING

Borehole Locations and Selection of Analyses

All of the proposed borehole samples will be analyzed for the presence of diesel, gasoline, BTEX, and MTBE. Borehole locations MW-2, P3, P4, and P5 are located in areas near the former waste oil tank area. These locations are will be analyzed additionally for VOCs and oil and grease. Should oil and grease be identified in the soil samples from these borehole locations, the sample from each borehole with the highest oil and grease concentration will additionally be analyzed for semivolatile organic compounds using EPA Method 8270 and for PCB's using EPA method 8080. The proposed borehole locations are indicated on **Figure 2.**

Borehole Drilling Procedures

All soil borings will be advanced using a truck-mounted probe device. Soil samples will be collected from an approximately 2-inch diameter probe lined with clear acrylic liners for visual identification of soil types. The borings will be continuously logged by a California Registered Geologist or a WAC Staff Geologist under the direct supervision of a California Registered Geologist. The soils encountered during drilling will be described in accordance with the Unified Soil Classification System.

The probe operator and the WAC geologist will discuss significant changes in material penetrated, changes in drilling conditions, hydraulic or pneumatic pressure, and drilling action. The WAC geologist will be present during the advancement of the exploratory borings and will observe and record changes by depth, will evaluate the relative moisture content of the samples, and will note water producing zones. This record will be used to prepare a detailed soil borehole log. Borehole log descriptions will include soil and rock type, color, grain size, texture, hardness, degree of induration, carbonate content, presence of fossils and other materials (gypsum, hydrocarbons), and other pertinent information. These observations will be recorded in the field on soil boring logs.

Samples will be collected from selected intervals by cutting 4 to 6-inch sections from the liner material containing soil samples. The soil sampling procedures and sample collection methods are described in greater detail in following sections.

The following procedures will be used to prevent potential cross-contamination of underlying water bearing zones: Probe advancement will cease if five feet of impermeable material, such as clay, is encountered. It will be assumed that any significant, saturated impermeable layer, such as a clay layer, is an aquitard separating water bearing zones and should not be penetrated. Drilling will be terminated no greater than 10 to 15 feet below an perched or unconfined water table.

Soil Sample Collection

The soil sample probe will be driven in intervals of 2 to 4 feet. Soil samples will be collected for laboratory analysis from the unsaturated zone from an approximate depth of 7 to 10 fbg and from 10 to 13 fbg (estimated depth of capillary fringe). A third soil sample will be collected from approximately one foot below the saturated zone, at an approximate depth of 14 fbg.

The depth of groundwater is not known at this time but is anticipated to be less than 15 fbg. Additional samples may be collected if significant changes in soil type or if obvious soil contamination is observed.

Soils will be continuously collected by hydraulically or pneumatically advancing a Geoprobe™ or similar device. A steel sampling probe lined with polycarbonate-type tubing will be used to collect the individual soil samples. Samples will be collected from the tubing in 4 to 6 inch sections which will be cut from the polycarbonate tubing and then sealed with Teflon™ lined plastic caps. The samples will be labeled and placed into refrigerated storage for transport to the analytical laboratory. All soil samples will be analyzed for diesel, gasoline, BTEX, and MTBE. Selected soil samples will be analyzed for TPH-o&g and VOCs.

Grab-Groundwater Sample Collection

Grab groundwater samples will be collected using a disposable, single-use, polyethylene bailers. Where possible, 3 to 5 borehole volumes of groundwater will be purged from the borehole prior to sampling. Groundwater samples will be decanted from the bailer into laboratory prepared containers. The samples will be immediately placed in refrigerated storage for delivery to the laboratory. The samples will be labeled in such a manner as to maintain client confidentiality. Samples will be delivered under chain of custody control to an analytical laboratory that is certified by the Sate of California to perform the requested analyses.

All groundwater samples will be analyzed for diesel, gasoline, BTEX, and MTBE. Groundwater samples from the waste oil tank area (MW-1, P3, P4, and P5) will be analyzed for TPH-o&g and VOCs. Should oil and grease be identified in the groundwater samples from these locations, the samples will additionally be analyzed for semivolatile organic compounds using EPA Method 8270 and for PCB's using EPA method 8080.

Borehole Abandonment

The probe holes will be appropriately sealed with a portland cement and bentonite sealant to reduce potential vertical migration of petroleum hydrocarbon constituents. In boreholes where groundwater is encountered the boreholes will be backfilled from the bottom to the top using a tremie pipe. The displaced water from the tremie operations and the purge water from the sampling of the boreholes will be stored in labeled, 55-gallon, drums.

MONITORING WELL INSTALLATION PROCEDURES

Monitoring Well Construction

The groundwater monitoring wells will be constructed using two-inch, flush threaded, Schedule 40, PVC, well casing. The wells will be constructed through the hollow-stem augers, with materials placed from the bottom of the borehole to the ground surface. The screened interval of the well will be factory slotted and installed to approximately 10 to 15-feet below and five feet above, the first encountered groundwater. The screened section annulus will be packed with clean graded sand to a level approximately one foot above the screened interval. Approximately one foot of hydrated bentonite pellets will be placed above the sand as a sealing material. The well will be sealed from the bentonite seal to the ground surface using a portland cement/bentonite grout mixture. No glues or other solvents will be used in the construction of the wells. The wells have not been designed to provide optimum flow but should provide hydraulic connection between the water-bearing zone and the well.

The wellhead will be protected from vandalism using a locking expansion-plug cap and will be housed within a traffic-rated box to protect the well from traffic and surface water runoff. The grout will be allowed to set for a period of 72 hours. During that period no development or other work will be performed on the well.

Well Development

The wells will be developed by intermittent surging, bailing and/or pumping. Field parameters, including color, odor, free phase liquid, turbidity, specific conductance (EC), temperature, and pH will be intermittently monitored during the development of the wells. Development will continue until field parameters stabilize and the water is relatively clear and free of silt and sand.

Field Equipment Decontamination Procedures

The borehole probe and sampling devices and the hollow stem auger drilling equipment will be decontaminated before each use by steam cleaning or washing in a laboratory grade detergent solution, followed by tap water, or deionized water rinses. Only clean water from a municipal supply will be used for decontamination of drilling equipment.

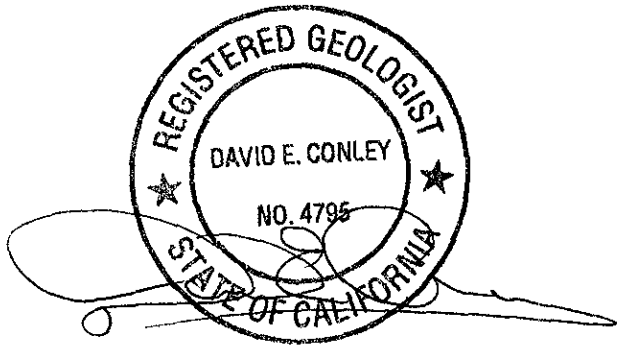
All rinsate water used in the decontamination process and all purged water from the groundwater grab-water sampling activities will be stored on-site in steel DOT approved drums. Drums will be labeled as to contents, date container filled, company name, and sealed. The drums will be left on-site for subsequent disposal pending analytical results.

REPORTING

Technical reports will be prepared and submitted to meet Solano County and California Regional Water Quality Control Board requirements for preliminary soil and groundwater quality investigations. Reports will include site history, figures identifying sample locations, drilling logs, summary of the methods and procedures, analytical results, and WAC's conclusions and recommendations regarding the site environmental quality.

We appreciate this opportunity to be of service to you on this project. If you have any questions or comments regarding the scope of services proposed in this work plan, please call us at (707)252-3353.

Sincerely,
W.A. Craig, Inc.

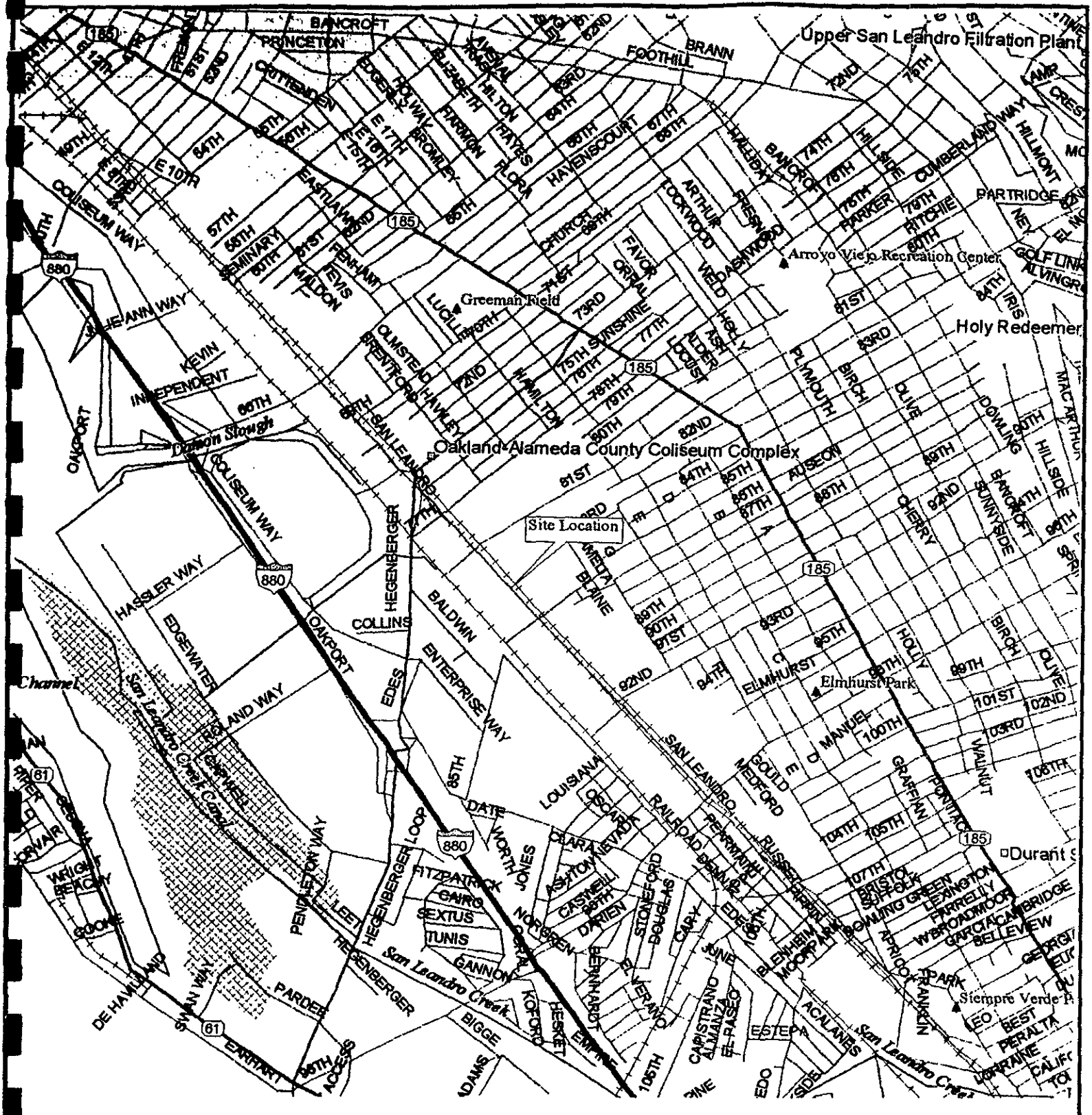


W. A. Craig, Inc.

David E. Conley, R.G.
Geologist

Attachments: Figure 1 - Site Location Map
Figure 2 - Site Exploration Plan

cc: Mr. Barney Chan, Alameda County Health Care Services Agency



Project No: 3785

August 1998

Checked by:

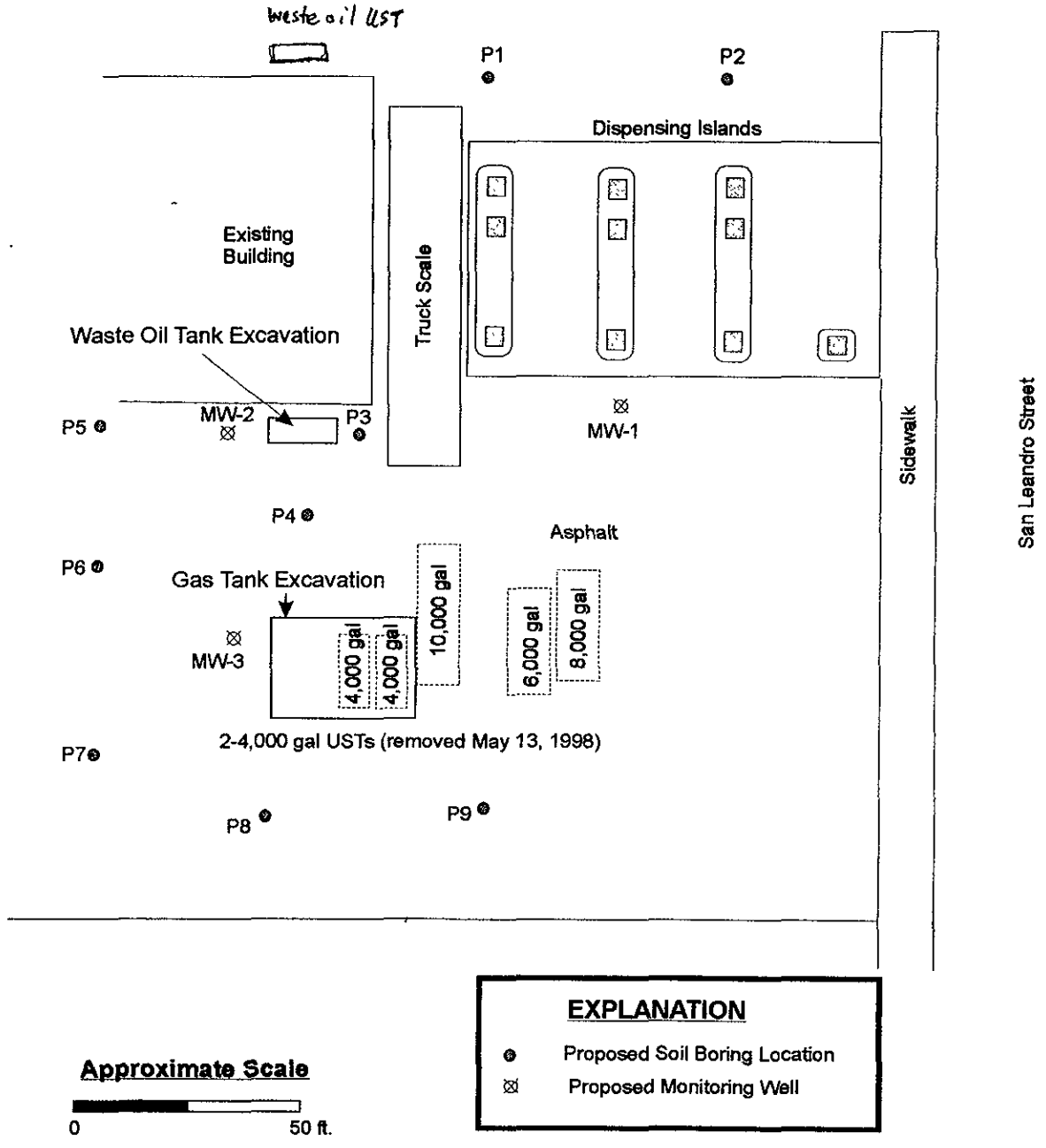
Site Location Map
Oakland Truck Stop
8255 San Leandro Street
Oakland, California

Figure 1

W. A. CRAIG, INC.
Environmental Contracting and Consulting

6940 Tremont Road
Dixon, California 95620
Cal License #455752

(707) 693-2929
FAX (707) 693-2922



Project No 3758

August 1998

SITE INVESTIGATION PLAN
Oakland Truck Stop
8255 San Leandro Street
Oakland, California

Figure 2

Checked by:

W. A. CRAIG, INC.
Environmental Contracting and Consulting
6940 Tremont Road
Dixon, California 95620
Cal License #455752
(707) 252-3353
FAX (707) 252-3385

December 16, 1998

Penn Environmental

Mr. Nissan Saidian
5733 Medallion Court
Castro Valley, CA. 94522

Subject: Work Plan
Preliminary Soil and Groundwater Quality Investigation
Oakland Truck Stop
8255 San Leandro Street
Oakland, California

Dear Mr. Saidian:

Penn Environmental has prepared this Work Plan to perform preliminary soil and groundwater quality investigation in the area of the former underground storage tanks (USTs) at the Oakland Truck Stop site, located at 8255 San Leandro Street, in Oakland, California (**Figure 1**). The purpose of this investigation is to assess the extent of impacted soil and groundwater with respect to reported releases from the former waste oil and gasoline USTs. Monitoring wells will be constructed, and a minimum one year of quarterly groundwater monitoring is anticipated to be required by the local oversight regulatory agency.

This Work Plan was prepared in response to the Alameda County Health and Care Services Agency's (County) letters dated March 4, 1998 and June 3, 1998. These letters requested that an investigation be performed to assess the soil and groundwater quality at the site.

BACKGROUND

WA-Craig

~~Penn Environmental~~ removed one 500-gallon waste oil UST and two 4000-gallon gasoline USTs at the site on March 8, 1998. Three diesel tanks remain in operation at the site (1-10,000 gal., 1-6,000 gal., and 1-8,000 gal.). There were no holes observed in the USTs removed by ~~Penn Environmental~~ WA-Craig. Five confirmation soil samples were collected from the gasoline UST excavation, at depths of approximately 9.5 to 11.5 feet below grade (fbg). Samples from the gasoline UST were analyzed for total petroleum hydrocarbons as gasoline (gasoline), benzene, toluene, ethylbenzene, xylenes (BTEX), methyl tert-butyl ether (MTBE), and total petroleum hydrocarbons as diesel (diesel). Gasoline was detected in the soil samples at concentrations ranging from 10 to 460 milligrams per kilogram (mg/kg). BTEX constituents detected in the soil samples included benzene (0.045 to 5.8 mg/kg), toluene (0.030 to 1.7 mg/kg), ethylbenzene (0.024 to 8.2 mg/kg) and xylenes (0.053 to 3.3 mg/kg). MTBE was detected in the soil samples at concentrations ranging from below detection limits to 0.64 mg/kg. Diesel was detected in the confirmation soil samples at concentrations ranging from 3.6 to 930 mg/kg. Groundwater was not observed in the excavation of the gasoline USTs. wrong

yes there were

1261 Travis Blvd, Suite 380 • Fairfield, California 94533 • Phone: (707) 421-1595 • Fax: (707) 425-0257

Three confirmation soil samples were collected from the waste oil UST excavation, at depths ranging from 4.5 to 6 fbg. These soil samples were analyzed for gasoline, BTEX, MTBE, diesel, and the 5 metals - cadmium, chromium, lead, nickel and zinc. Gasoline was detected in the soil samples at concentrations ranging from 950 to 3600 mg/kg. BTEX constituents detected in the soil samples included benzene (below detection limits to 2.1 mg/kg), toluene (0.068 to 8.0 mg/kg), ethylbenzene (1.6 to 18 mg/kg), and xylenes (3.5 to 15 mg/kg). MTBE was detected in the soil samples at concentrations ranging from below detection limits to 8.1 mg/kg. Diesel was detected in the confirmation soil samples at concentrations ranging from 6,500 to 21, 000 mg/kg. The metals, cadmium (not detected), chromium (1.1 to 8 mg/kg), lead (10 to 16 mg/kg), nickel (not detected to 7.3 mg/kg) and zinc (110 to 130 mg/kg) were also detected in the confirmation soil samples.

Groundwater was encountered at an approximate depth of 5.5 fbg in the waste oil tank excavation. Gasoline was detected in the groundwater sample at a concentration of 5500 micrograms per liter (ug/l). MTBE was detected at a concentration of 1900 ug/l. Benzene (580ug/l), toluene (12 ug/l), ethylbenzene (180 ug/l) and xylenes (39 ug/l) were also detected in the groundwater sample. Diesel was detected at a concentration of 880,000 ug/l. The metals, cadmium (0.016 ug/l), chromium (0.36 ug/l), lead (2.6 ug/l), nickel (0.13 ug/l) and zinc (3.0 ug/l) were also detected in the groundwater sample.

The UST closure activities are summarized in greater detail in Penn Environmental's "Final Closure Report for underground Storage Tank Removal" dated June 16, 1998.

Visual, olfactory, and photoionization detector readings during the UST removals indicated the UST backfill and native soil materials were completely removed from each UST location, profiled, and hauled to a Class II landfill for disposal. The excavations have been backfilled with clean, imported material and compacted.

SITE DESCRIPTION

The former USTs included the waste oil and gasoline USTs as described in the previous section. The waste oil UST was remotely filled from the shop area, at a location inside the Southwest corner of the adjacent building. The former USTs are indicated on **Figure 2**.

SCOPE OF WORK

The scope of work proposed herein will be performed to obtain additional information on the soil and groundwater quality in the vicinity of the former USTs. Upon completion of the proposed scope of services, Penn Environmental will recommend further investigative or remedial actions, if necessary, to proceed toward closure of the site. The proposed scope of work will include advancing soil borings or probes, installing groundwater monitoring wells, and collecting and analyzing soil and groundwater samples as follows:

- Prepare the Work Plan for submittal to the County for approval;
- Obtain appropriate permits and obtain authorization, clearance, and safety controls to access the site;
- Obtain the subcontracted services of a California-licensed well drilling contractor to perform the drilling of a minimum of 12 exploratory borings/probes to an estimated depth of 15 fbg;
- Convert three of the borings into groundwater monitoring wells;
- Collect one to two soil samples in the unsaturated zone and one soil sample below the first encountered groundwater from each boring/probe;
- Collect grab-groundwater samples from the boring/probe not converted to groundwater monitoring wells (nine samples);
- Analyze all the soil and groundwater samples for diesel using EPA Method 3550 or 3510, gasoline using EPA Method 8015 (modified), and BTEX and MTBE using EPA Method 8020;
- Additionally, analyze the soil and groundwater samples from the vicinity of the former waste oil tank for total petroleum hydrocarbons as oil and grease (TPH-o&g) using EPA Method 5520, VOCs using EPS Method 8240, and 5 metals - cadmium, chromium, lead, nickel and zinc using EPA Method 200s. The soil samples from each borehole with the highest detected THP-o&g concentration will be analyzed additionally for semivolatile organic compounds using EPA Method 8270 and PCBs using EPA method 8080;
- Prepare a report presenting field methods and procedures, summarized results of the investigation findings, and conclusions and recommendations regarding the site environmental conditions.

SOIL AND GROUNDWATER SAMPLING

Borehole Locations and Selection of Analysis

All of the proposed samples will be analyzed for the presence of diesel, gasoline, BTEX, and MTBE. Borehole locations MW-2, P3, P4, and P5 are located in the vicinity of the former waste oil tank; samples from these locations will be additionally analyzed for VOCs, oil and grease, and the 5 metals. Should oil and grease be identified in the soil samples from these borehole locations, the samples from each borehole with the highest oil and grease concentration will additionally be analyzed for semivolatile organic compounds and for PCBs. The proposed borehole locations are indicated on **Figure 2.**

Borehole Drilling Procedures

All borings/probes will be advanced using a truck-mounted probe device or hollow-stem flight auger. Soil samples will be collected from an approximately 2- inch diameter probe lined with clear acrylic liners for visual identification of soil types. The borings will be continuously logged by a Penn Environmental engineer under the direct supervision of a California Registered Geotechnical Engineer. The soils encountered during the drilling will be described in accordance with the Unified Soil Classification System.

The probe operator and the Penn Environmental engineer will discuss significant changes in material penetrated, changes in drilling conditions, hydraulic or pneumatic pressure, and drilling action. The Penn Environmental engineer will be present during the advancement of the exploratory boring and will observe and record changes by depth, will evaluate the relative moisture content of the samples, and will note groundwater levels. This record will be used to prepare a detailed boring log. Log descriptions will include soil type, color, grain size, texture, hardness or relative density, moisture condition, presence of hydrocarbons, and other pertinent information. These observations will be recorded in the boring logs.

Samples will be collected from selected intervals by cutting 4 to 6- inch sections from the liner material containing soil samples. The soil sampling procedures and sample collection methods are described in greater detail in the following sections.

The following procedures will be used to prevent cross-contamination of underlying water bearing zones: Probe or drilling advancement will cease if five feet of impermeable material, such as clay is encountered. It will be assumed that any significant, saturated impermeable layer, such as a clay layer, is an aquitard separating water bearing zones and should not be penetrated. Drilling will be terminated no greater than 5 to 10 feet below a perched or unconfined water table.

Soil Sample Collection

The soil sample probe will be driven in intervals of 2 to 4 feet. Soil samples will be collected for laboratory analysis from the unsaturated zone from an approximate depth of 5 to 10 fbg and from 10 to 13 fbg (estimated depth of capillary fringe). A third soil sample will be collected from approximately one foot below the saturated zone, at an approximate depth of 14 fbg.

The depth to groundwater is not known at this time but is anticipated to be less than 15 fbg. Additional samples may be collected if significant changes in soil type or if obvious soil contamination is observed.

Soils will be continuously collected by hydraulically or pneumatically advancing a Geoprobe™ or similar device. A steel sampling probe lined with polycarbonate-type tubing will be used to collect the individual soil samples. Samples will be collected from the tubing and then sealed with Teflon™ lined plastic caps. The samples will be labeled, indicating the date, time, probe or boring number, and sample number. Samples will be delivered under chain of custody to an analytical laboratory certified by the State of California.

Grab-Groundwater Sample Collection

Grab groundwater samples will be collected using a disposable, single-use, polyethylene bailers. Where possible 3 to 5 borehole volumes of groundwater will be purged from the borehole prior to sampling. Groundwater samples will be decanted from the bailer into laboratory prepared containers. The samples will be labeled, indicating the date, time, probe or boring number, and sample number. Samples will be delivered under chain of custody to an analytical laboratory certified by the State of California.

Borehole Abandonment

The probe holes or boreholes will be appropriately sealed with a portland cement/bentonite grout. In boreholes where groundwater is encountered, the boreholes will be backfilled from the bottom to the top using a tremie pipe. The displaced water from the tremie operations and the purge water from the sampling of the boreholes will be stored in labeled, 55-gallon drums. Soil cuttings will also be stored in labeled, 55-gallon drums.

MONITORING WELL INSTALLATION PROCEDURES

Monitoring Well Construction

The groundwater monitoring wells will be constructed using two-inch, flush threaded Schedule 40, PVC, well casing. The wells will be constructed through the hollow-stem auger, with materials placed from the bottom of the borehole to the ground surface. The screened interval of the well will be factory slotted (0.002-inch) and installed to approximately 5 to 10 feet below and 2 to 3 feet above the first encountered groundwater. The screened section annulus will be packed with clean graded (#3) sand to a level approximately one foot above the screened interval. Approximately one foot of hydrated bentonite pellets will be placed above the sand as a seal. The well will be capped, from the bentonite seal to the ground surface, using a portland cement/bentonite grout mixture. No glues or other solvents will be used in the construction of the wells. The wells have not been designed to provide optimum flow but should provide hydraulic connection between the water -bearing zone and the well.

The wellhead will be protected from vandalism using a locking expansion-plug cap and will be housed within a traffic-rated box to protect the well from traffic and surface water runoff. The grout will be allowed to set for a period of 72 hours. During that period no development or other work will be performed on the well.

Well Development

The wells will be developed by intermittent purging, bailing and/or pumping. Field parameters, including groundwater level, color, odor, sheen, free phase liquid, turbidity, specific conductance (EC), temperature, and pH will be intermittently monitored during the development of the wells. Development will continue until field parameters are relatively stabilized, and the water is relatively clear and free of siltation.

Field Equipment Decontamination Procedures

The borehole probe, soil sampler, and sampling devices and the hollow stem auger drilling equipment will be decontaminated before each use by steam cleaning or washing in a laboratory grade detergent solution, followed by tap water, or deionized water rinses. Only clean water from a municipal supply will be used for decontamination of drilling equipment.

All rinsate water used in the decontamination process and all purged water from the groundwater grab-water sampling activities will be stored on-site in steel DOT approved 55-gallon drums. Drums will be labeled as to contents, date container filled, company name, and sealed. The drums will be left on-site for subsequent disposal pending analytical results.

REPORTING

Technical reports will be prepared and submitted to meet Alameda County and California Regional Water Quality Control Board requirements for preliminary soil and groundwater quality investigations. Reports will include site history, figures identifying boring/probe locations, boring logs, summary of the drilling and sampling methods and procedures, analytical results, chain of custody records, other pertinent information obtained during the field exploration, and Penn Environmental's conclusions and recommendations regarding the site environmental quality.

We appreciate this opportunity to be of service to you on this project. If you have any questions or comments regarding the scope of services proposed in this Work Plan, please call us at (707)421-1595.

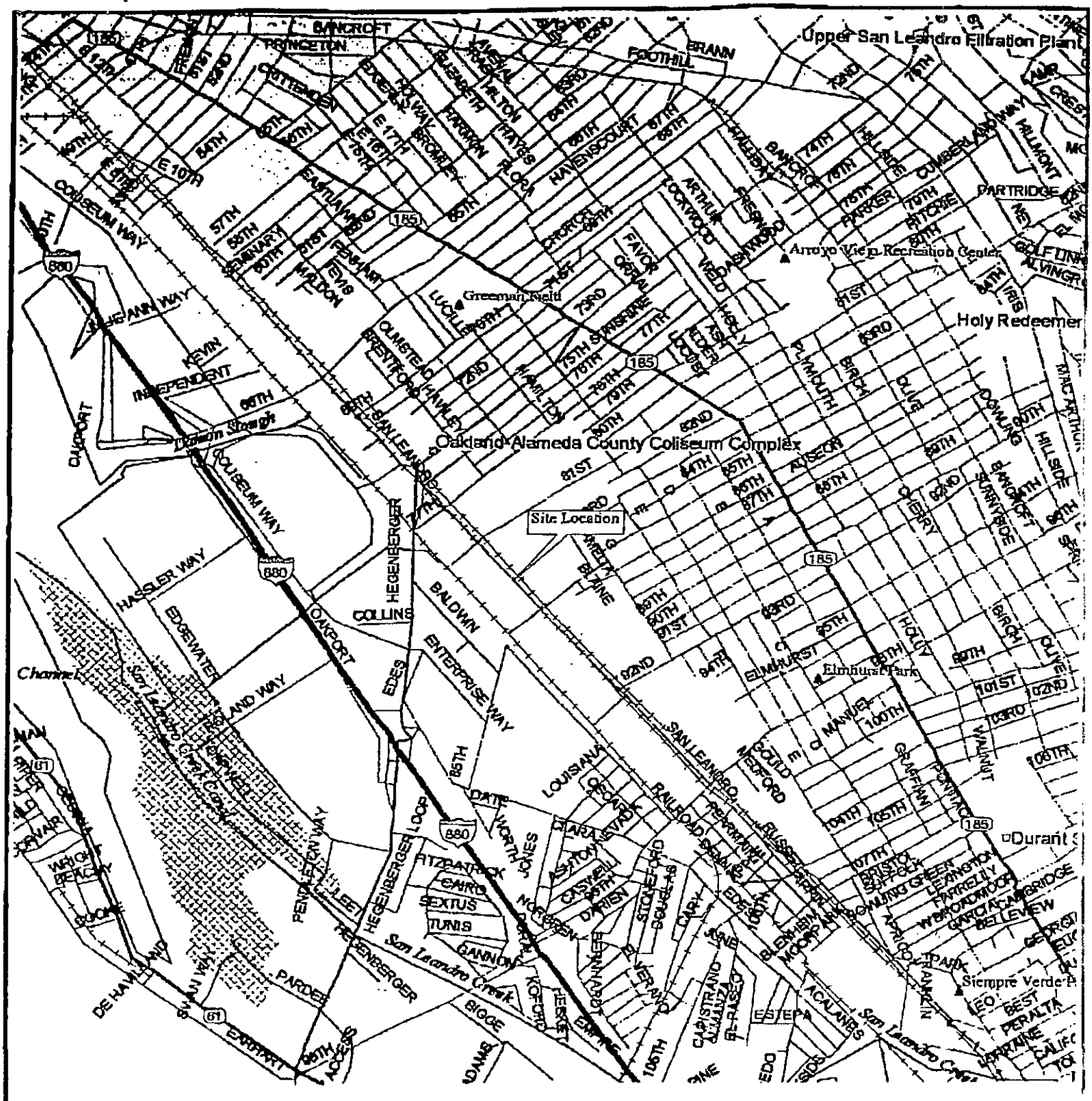
Sincerely,

PENN ENVIRONMENTAL

Douglas Thompson
Project Manager

Robert Y. Chew
Geotechnical Engineer
G.E. 2009

Attachments: Figure 1 - Site Location Map
Figure 2 - Site Investigation Plan



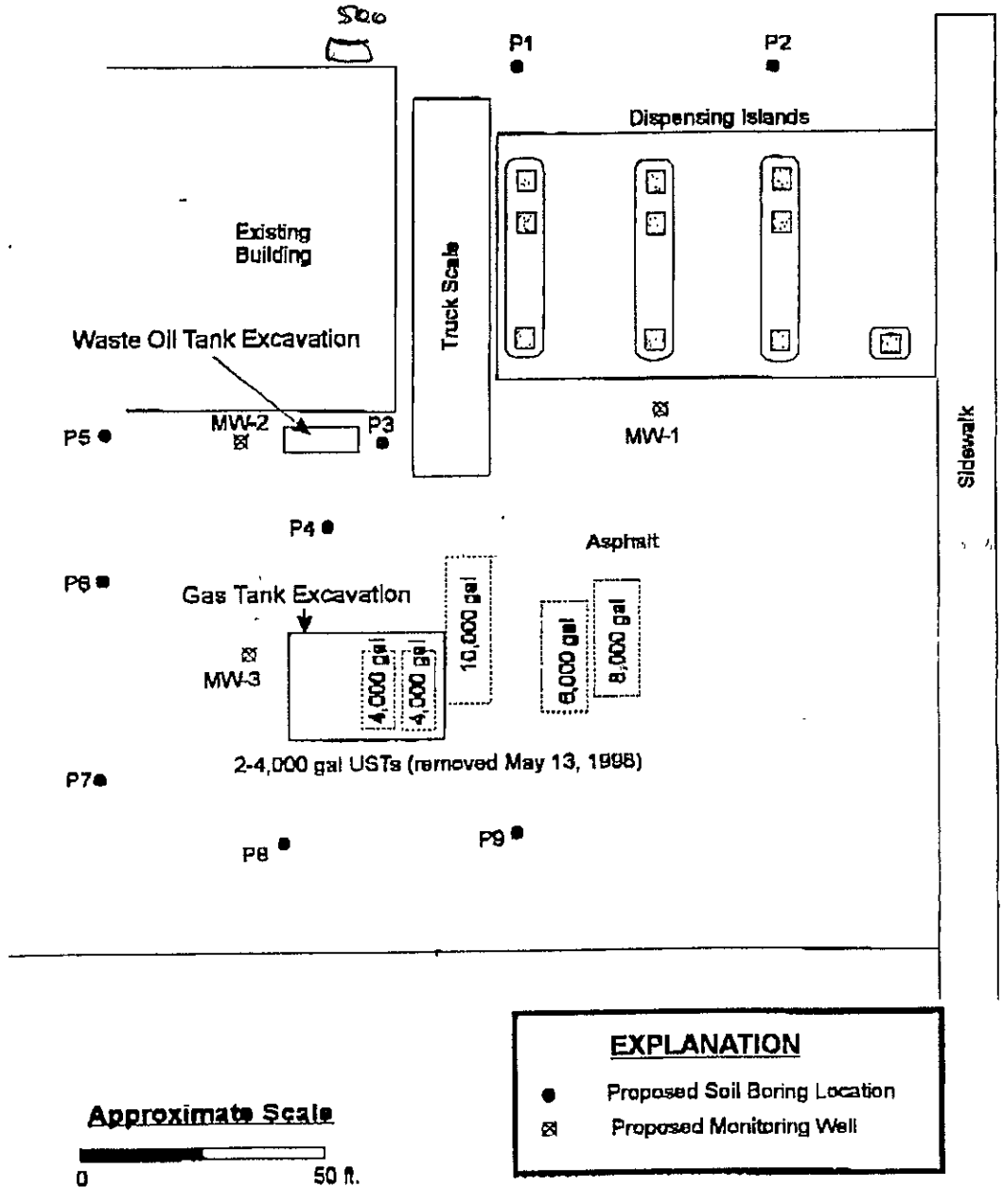
Project No: 3785

August 1998

Checked by:

Site Location Map
Oakland Truck Stop
8255 San Leandro Street
Oakland, California

Figure 1



Project No 3758 August 1998	**SITE INVESTIGATION PLAN** **Oakland Truck Stop** **8255 San Leandro Street** **Oakland, California**	**Figure 2**