WORKPLAN/REPORT
ANTHONY'S AUTO SERVICE
19592 CENTER STREET
CASTRO VALLEY, CALIFORNIA

Submitted By:
TANK PROTECT ENGINEERING
Of Northern California
September 17, 1990

WORKPLAN/REPORT

ANTHONY'S AUTO SERVICE
19592 Center Street
Castro Valley, California

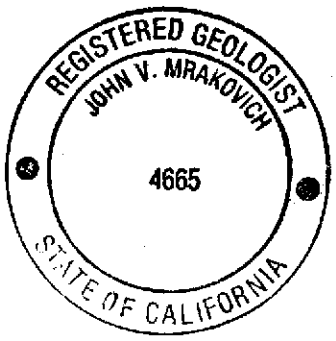
September 17, 1990

This workplan/report has been prepared by the staff of **Tank Protect Engineering** under the supervision of an Engineer and/or Geologist whose seal(s) and signature(s) appear hereon.

The findings, recommendations, specifications or professional opinions are presented, within the limits prescribed by the client, after being prepared in accordance with generally accepted professional engineering and geologic practice. We make no other warranty, either expressed or implied.

John V. Mrakovich

John V. Mrakovich, Ph.D.
Registered Geologist



Jeff Farhoomand

Jeff Farhoomand
Civil Engineer

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INTRODUCTION

The subject site is located at 19592 Center Street in the City of Castro Valley in Alameda County, California (see Figure 1). Chemical analyses of subsurface soil samples collected during removal of three underground fuel storage tanks and one underground waste oil tank indicate the subsurface soils have experienced a confirmed release of petroleum hydrocarbons. This Workplan/Report documents tank removal activities, results of soil borings, and presents a workplan for soil remediation and determining if groundwater has been impacted by the petroleum release.

SITE HISTORY

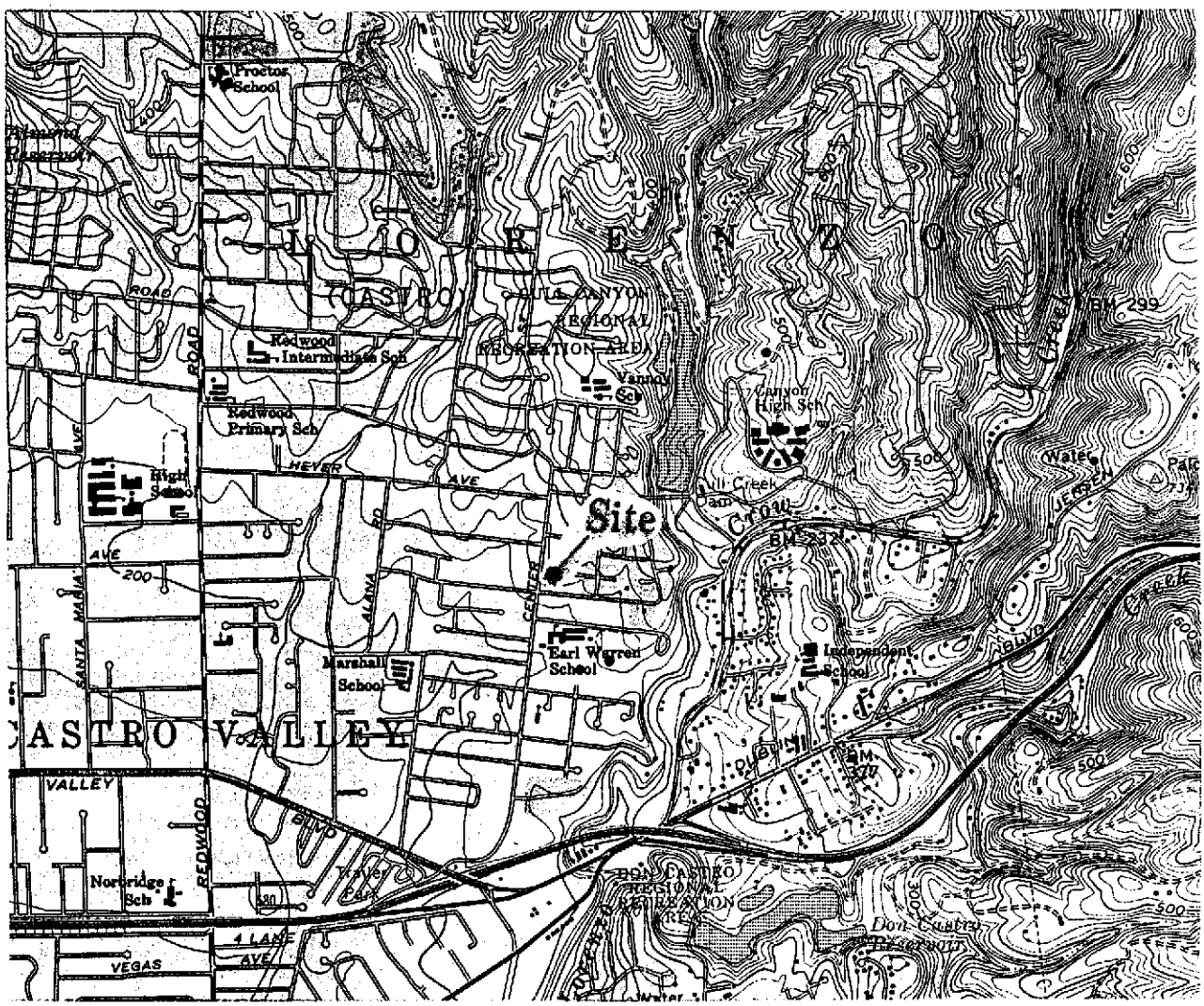
The site is a former gasoline station currently owned by the Estate of John G. Pettiti (EJGP). John Pettiti purchased the property in 1986 from Wayne DelRio who owned the property and operated a gasoline service station for about 3 to 4 years. Ownership prior to Wayne DelRio is unknown, however, the gasoline service station is believed to have been constructed and in operation from 1956 to 1986.

When John Pettiti purchased the property in 1986, he leased the property to his son Anthony who has since operated an automotive repair business at the site known as Anthony's Auto Service.

The on-site underground fuel tanks are believed to have been in use since 1956. Between 1956 and 1986, the tanks are believed to have been used to dispense Shell and Texaco gasoline products. Since 1986, Anthony's Auto Service and Trick Racing Gasoline (as lessee to Anthony's Auto Service) have used the tanks for storage and dispensing of high octane, [redacted], racing gasoline.

TANK REMOVAL

On July 12, 1990, Tank Protect Engineering (TPE), under contract to EJGP, removed one 4,000-gallon, steel, underground gasoline tank, two 3,000-gallon, steel, underground gasoline tanks; and one 250-gallon, steel, underground waste oil tank. A tank removal permit was obtained from the Alameda County Health Care Services Agency (ACHCSA), Department of Environmental Health, Hazardous Materials Division (see Appendix A).



L E G E N D

REFERENCE: USGS 7.5 MINUTE
SERIES QUADRANGLE MAP,
HAYWARD, CALIFORNIA,
PHOTO REVISED 1980

0 2000

SCALE IN FEET

-N-

TANK PROTECT ENGINEERING
Of Northern California

SITE VICINITY MAP
ANTHONY'S AUTO SERVICE
19592 CENTER STREET
CASTRO VALLEY, CALIFORNIA

FIGURE
1

Prior to tank removal activities by TPE, all tanks were emptied of petroleum products by the client. During tank removal, TPE purged flammable vapors from within the tanks (in-situ) with dry ice. After purging the tanks of flammable vapors, as indicated by a combustible gas indicator, the tanks were removed by TPE and transported off site by Erickson, Inc. as hazardous waste under Uniform Hazardous Waste Manifest, State Manifest Document Number 89890729 (see Appendix A). About 250 cubic yards of soil were excavated, covered with plastic and stockpiled on site as a result of tank removal activities (see Figure 2).

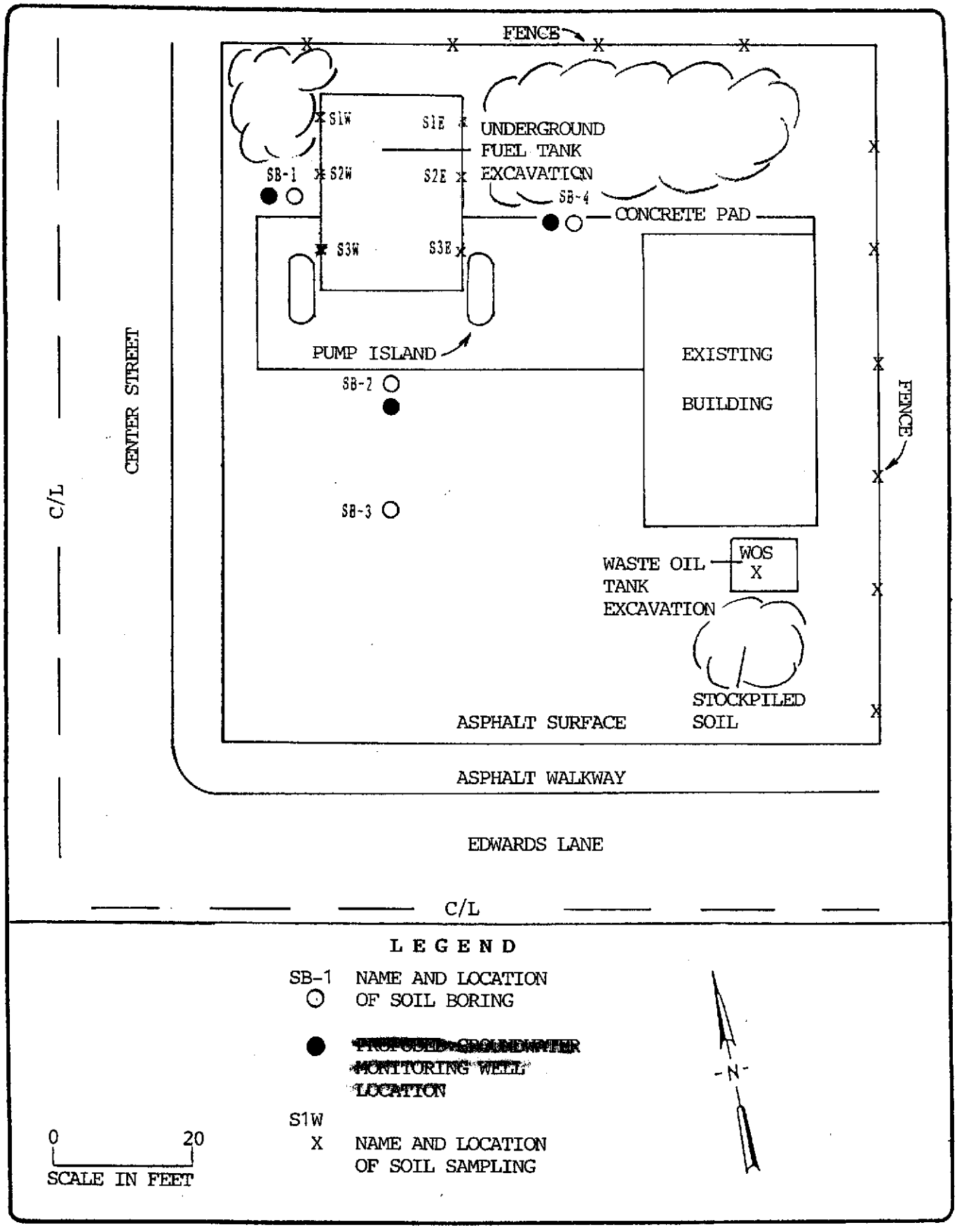
Tank removal and subsequent soil sampling were conducted under the supervision of a representative of ACHCSA and in accordance with "Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks", 2 June, 1988, revised 9 November, 1989, and underground storage tank removal regulations established by the ACHCSA. During tank removal TPE observed that native soils were visually discolored and emitted a hydrocarbon odor indicating that leaky tanks, piping, and/or overfilling has contaminated the soils. Because of the contamination an Underground Tank Unauthorized Release(Leak)/Contamination Site Report was prepared for the ACHCSA (see Appendix A).

SOIL SAMPLING:

Seven soil samples were collected for chemical analysis below the fuel and waste oil tanks from about 1-foot below the native soil interface. One sample was collected from each end of each gasoline tank and one sample from below the center of the waste oil tank (see Figure 2). Undisturbed soil samples were collected by excavating soil with a backhoe and driving a clean brass tube into a newly exposed soil surface in the bucket of the backhoe with a slide hammer corer. After collection of each soil sample, the brass tube ends were quickly covered with aluminum foil and capped with plastic end-caps which were taped to the brass tubes with duct tape. The tubes were then labeled and placed in an iced cooler for transport to a State-certified laboratory accompanied by chain-of-custody documentation (see Appendix B).

The soil samples were analyzed by Sequoia Analytical located in Redwood City, CA, for total petroleum hydrocarbons as gasoline (TPHG) and for benzene, toluene, ethylbenzene, and xylenes (BTEX) by United States Environmental Protection Agency (EPA) Methods 5030/8015 and 5030/8020, respectively, according to the California Regional Water Quality Control Board - San Francisco Bay Region (CRWQCB) recommended and California Department of Health Services (DHS) approved methods.

Additionally, the soil sample collected below the waste oil tank was analyzed for total petroleum hydrocarbons as diesel (TPHD), total oil and grease (TOG), and halogenated volatile organics by



TANK PROTECT ENGINEERING
Of Northern California

SITE PLAN
ANTHONY'S AUTO SERVICE
19592 CENTER STREET
CASTRO VALLEY, CALIFORNIA

FIGURE
2

EPA Methods 3550/8015, SM 503 D&E (Gravimetric), and 5030/8010, respectively. The above soil sample was also analyzed for the metals cadmium, chromium, lead, and zinc.

ANALYTICAL RESULTS:

The analytical results showed high concentrations of TPHG [up to 3,200 parts per million (ppm)] and BTEX present in soil samples collected near the ends of the former locations of the two 3,000-gallon underground gasoline tanks. The soil sample collected below the waste oil tank detected only trace amounts of benzene, toluene, and xylenes, and low levels of chromium, lead, and zinc. Analytical results are summarized in Tables 1 and 2, and documented with certified analytical reports and chain-of-custodies in Appendix B.

DRILLING AND SOIL SAMPLING

Because excavated soil, and soil in the sidewalls and base of the excavation had an odor of hydrocarbons and were visually stained, EJGP contracted with TPE to conduct soil borings to determine the horizontal and vertical extent of overexcavation as a remedial method to cleanup the contaminated vadose zone soil.

On August 16, 1990, TPE drilled four soil borings at the locations shown in Figure 2 to assess the vertical and horizontal extent of hydrocarbon contamination within the vadose zone soil. These borings were drilled under Alameda County Flood Control and Water Conservation District, Water Resources Management Zone 7, Permit Number 90489 (see Appendix A).

Prior to drilling the soil borings, TPE contracted with subsurface locators and conducted a USA location request (no. 243207) to ensure that drilling activities would not encounter any buried utilities or underground objects.

The exploratory borings were located along the three sides of the excavation at locations on site and accessible by a drill rig. The borings nearest the excavation were drilled first. If these borings contained contaminated soils based on field screening of samples with a combustible gas indicator, additional borings were drilled further outward from the excavation, if possible, in an attempt to find the horizontal limit of soil contamination (i.e. soil borings SB-1 and SB-2). The borings were drilled to a depth of 35-feet which was the depth that field screening indicated the absence of contamination.

The exploratory borings were drilled using 8-inch diameter hollow-stem auger drilling equipment. The augers and sampling equipment were steam-cleaned before drilling each boring to prevent

TABLE 1
SUMMARY OF SOIL ANALYTICAL RESULTS
FOR SAMPLES COLLECTED DURING TANK REMOVAL*
(ppm)

Sample Identification	TOG	TPHD	TPHG	Benzene	Toluene	Ethyl-Benzene	Xylenes
WOS	<30	<1.0	<1.0	.0055	.0094	<.0050	.0086
S1W	NA**	NA	<1.0	.0050	.0140	.0076	.0110
S2W	NA	NA	2,500	1.5000	57	54	310
S3W	NA	NA	990	7.3000	150	1.8000	34
S1E	NA	NA	1.9	.0090	.2000	.0260	.2400
S2E	NA	NA	3,200	2.2000	87	74	470
S3E	NA	NA	720	12	140	3.1000	54

* No halogenated volatile organics (EPA 8010) were present above their detection limits (see Appendix B)

** Not Analyzed

cross contamination between borings or the introduction of off-site contamination for the initial boring. Representative soil samples were collected at approximately 5-foot depth intervals below the ground surface by advancing a California split-spoon sampler, equipped with brass tubes, into the undisturbed soil beyond the tip of the augers. The sampling equipment was cleaned before each sampling event by washing with a trisodium phosphate solution and rinsing in distilled water. After collection of the soil samples, the brass tube ends were quickly covered with aluminum foil and capped with plastic end-caps which were taped to the brass tubes with duct tape. The tubes were then labeled and placed in an iced cooler for transport to a State-certified laboratory accompanied by chain-of-custody documentation (see Appendix B). See Appendices C, D, and E for TPE's protocol relative to hollow-stem auger drilling and soil sampling procedures, sample handling techniques, and waste handling and decontamination procedures.

A detailed boring log has been prepared from auger return material and split-spoon samples (see Appendix F). The soil was logged according to the Unified Soil Classification System by a California registered geologist.

No groundwater was encountered while drilling the soil borings.

All soil samples were analyzed by Sequoia Analytical located in Redwood City, CA according to the CRWQCB recommended and DHS approved methods. Soil samples were analyzed for TPHG and BTEX by EPA Methods 5030/8025 and 5030/8020, respectively.

SOIL BORING ANALYTICAL RESULTS:

All borings (SB-1 through SB-4) were drilled to a depth of 35-feet and sampled for chemical analysis to a depth of 36.5-feet except boring SB-4 which was sampled to a depth of 31.5-feet. The sample at 36.5-feet in boring SB-4 encountered apparent bedrock and only partial sample recovery made the sample inadequate for chemical analysis.

No TPHG, and only trace amounts of some BTEX chemicals were present in soil borings SB-1 and SB-4. The only TPHG present in soil boring SB-2 was at a concentration of 1.2 ppm at a depth of about 26-feet with only trace amounts of some BTEX chemicals present. Soil Boring SB-3 detected TPHG at a concentration of 2.7 ppm and 15.0 ppm at depths of about 11-feet and 26-feet, respectively. Only trace amounts of some BTEX chemicals were present in the boring. Results of chemical analyses are summarized in Table 3 and documented with certified analytical reports and chain-of-custodies in Appendix B.

Because some soil samples contained detectable quantities of TPHG, TPE has requested additional chemical analysis of these samples,

TABLE 3
SUMMARY OF SOIL ANALYTICAL RESULTS
FOR SAMPLES COLLECTED FROM SOIL BORINGS
(ppm)

Sample Identification	Depth (feet)	TPHG	Benzene	Toluene	Ethyl-Benzene	Xylenes
SB-1	06.0-06.5	<1.0	<.0500	<.1000	<.1000	<.1000
SB-1	11.0-11.5	<1.0	<.0500	<.1000	<.1000	<.1000
SB-1	16.0-16.5	<1.0	.0070	.0050	<.1000	<.1000
SB-1	20.5-21.0	<1.0	<.0500	<.1000	<.1000	<.1000
SB-1	26.0-26.5	<1.0	<.0500	<.1000	<.1000	<.1000
SB-1	31.0-31.5	<1.0	<.0500	<.1000	<.1000	<.1000
SB-1	36.0-36.5	<1.0	<.0500	<.1000	<.1000	<.1000
SB-2	06.0-06.5	<1.0	<.0500	<.1000	<.1000	<.1000
SB-2	11.0-11.5	<1.0	<.0500	<.1000	<.1000	<.1000
SB-2	16.0-16.5	<1.0	<.0500	<.1000	<.1000	<.1000
SB-2	21.0-21.5	<1.0	<.0500	<.1000	<.1000	<.1000
SB-2	26.0-26.5	1.2	<.0500	.0280	.0220	.0460
SB-2	31.0-31.5	<1.0	<.0500	<.1000	<.1000	<.1000
SB-2	36.0-36.5	<1.0	<.0500	<.1000	.0087	.0410
SB-3	06.0-06.5	<1.0	<.0500	.0079	.0068	.0160
SB-3	11.0-11.5	2.7	<.0500	.0067	.0270	.0650
SB-3	16.0-16.5	<1.0	.0063	.0063	<.1000	<.1000
SB-3	21.0-21.5	<1.0	.0065	.0017	<.1000	<.1000
SB-3	26.0-26.5	15.0	<.0500	<.1000	<.1000	.0270
SB-3	31.0-31.5	<1.0	<.0500	<.1000	<.1000	<.1000
SB-3	36.0-36.5	<1.0	.0051	.0250	.0230	.0570
SB-4	06.0-06.5	<1.0	.0050	.0058	<.1000	.1100
SB-4	11.0-11.5	<1.0	.0069	.0420	.0250	.1000
SB-4	16.0-16.5	<1.0	<.0500	.0068	<.1000	.0063
SB-4	21.0-21.5	<1.0	.0073	.0100	<.1000	.0190
SB-4	26.0-26.5	<1.0	<.0500	<.1000	<.1000	<.1000
SB-4	31.0-31.5	<1.0	<.0500	<.1000	<.1000	<.1000

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS
FOR SELECTED METALS
(ppm)

Sample Identification	Cadmium	Chromium	Lead	Zinc
WOS	<.50	17	3.8	23

and samples at the same depths in the uncontaminated borings, for total lead by AA method. TPE is awaiting results of these analyses and will document the results in a later report.

CONCLUSIONS

Based upon the results of chemical analyses presented above, no significant pattern of soil contamination was detected in the soil borings drilled on the perimeter of the gasoline tank excavation (see Figure 2). Soil contamination appears to be confined to the area of the excavation.

Because soil sample WOS, collected beneath the waste oil tank, contained only trace amounts of benzene, toluene, and xylenes, TPE recommends no further remediation of soil in the area of the waste oil tank.

RECOMMENDATIONS FOR SOIL REMEDIATION AND ASSESSMENT OF IMPACT TO GROUNDWATER

The following workplan is proposed by TPE to remediate soils and evaluate potential hydrocarbon impact to groundwater.

- Conduct additional soil excavation on the sidewalls and base of the underground gasoline tank excavation.
- After excavating contaminated soils in the above task (confirmed by chemical analyses of verification soil samples), backfill the excavation.
- Remediate the stockpiled soils on site, if appropriate.
- Conduct a file review at the CRWQCB for documented off-site sources of contamination and for regional groundwater flow direction.
- Install one to three groundwater monitoring wells.
- If borings for the above monitoring wells are located farther than 5-feet from the borings previously drilled, collect soil samples for chemical analysis.
- Develop, purge, and sample groundwater from each monitoring well for chemical analysis.
- Analyze soil and groundwater samples for TPHG and BTEX, additionally analyze groundwater for lead. 1 organic

- Survey top-of-well casings for elevation and determine groundwater flow direction and gradient if three wells are installed.

- Write a report documenting work performed and analytical results with conclusions and recommendations.

Details of the above workplan are presented below.

OVEREXCAVATION OF CONTAMINATED SOIL:

The extent of overexcavation will be based upon field screening of excavation sidewall and floor soil samples for volatile organic compounds using a combustible gas indicator. When the limit of horizontal and vertical contamination of vadose zone soils has been reached, based upon field screening, verification soil samples will be collected for chemical analysis. Soil samples will be collected for verification analysis at 20-foot intervals both horizontally and vertically. Additional excavation will be conducted if all contaminated soil has not been removed based on chemical analyses.

After overexcavation has been completed, the excavation will be appropriately backfilled.

REMEDIATION OF STOCKPILED SOIL:

Based on concentrations of contaminants and volume of soil excavated, TPE will recommend to the client disposal of contaminated soil to an appropriate landfill or on-site treatment of contaminated soil followed by disposal to an appropriate landfill or on-site reuse of the soil.

If stockpiled soil is recommended to be treated on site, TPE may recommend treatment by chemical oxidation of the hydrocarbons. Treatment will consist of spreading the contaminated soil on the ground over a layer of about 8-inches of clean dirt which is underlain by polyethylene plastic. The chemical oxidizer will be applied until the soil is moist. The soil will be turned to expose all surfaces. Chemical oxidation will only be conducted with the approval of ACHCSA and after notifying the Bay Area Air Quality Management District.

After treatment, verification soil samples will be collected to confirm an appropriate cleanup level.

FILE REVIEW:

TPE will review CRWQCB files to determine if any documented contaminated sites exist in the area of the subject site. This

information may be useful in determining groundwater depth and gradient beneath the site which will assist TPE in optimally locating up to three groundwater monitoring wells and determining if the subject site may be potentially contaminated by upgradient sources of contamination.

GROUNDWATER MONITORING WELL INSTALLATION:

After overexcavation a ~~minimum of one,~~ and up to three groundwater monitoring wells will be installed. If the direction of groundwater flow can be determined by the above CRWQCB file review, one groundwater monitoring well will be installed downgradient and within 10-feet of the former underground tank location with the approval of ACHCSA. If direction of groundwater flow cannot be determined by the above file review or approval of the ACHCSA, three monitoring wells will be installed at the approximate locations shown on Figure 2. The monitoring well design, construction, and field oversight will be supervised by a civil engineer, geologist, or engineering geologist registered or certified in the State of California. The monitoring wells will be installed, developed, and sampled in accordance with TPE QA/QC protocol (see Appendices G through J).

Upon the completion of well installation, the elevation of the top of the PVC casing or top of the protective well cover for each well will be surveyed with respect to USGS Mean Sea Level Datum or a Site Datum. This survey will be performed by a professional engineer (civil) or licensed land surveyor.

Results of monitoring well installation and water analyses will be reported to the regulatory agencies in a Site Assessment Report or Quarterly Progress Report.

If the soil borings for the proposed monitoring wells are located farther than 5-feet from the previous borings discussed under Drilling And Soil Sampling, soil samples will be collected from the soil borings for the proposed monitoring wells for chemical analysis. Soil boring and sampling procedures, and preservation of soil samples for chemical analyses will be conducted as discussed above under Drilling And Soil Sampling.

GROUNDWATER GRADIENT EVALUATION:

The groundwater gradient at the site will be evaluated by triangulation if TPE installs three groundwater monitoring wells. The stabilized depth of water in the wells will provide the groundwater elevations on the dates measured. From this

information, the groundwater gradient and flow direction will be evaluated. If TPE installs only one well (downgradient) based on results of the CRWQCB file review discussed above, this task will not be performed.

SOIL WASTE AND WATER WASTE:

Waste materials generated during site characterization activities will be handled and stored on site as hazardous waste (see Appendix E). Anticipated waste materials include drill cuttings, development water, purge water, water generated during decontamination, and used personnel protection equipment such as gloves and Tyvek.

Drill cuttings, produced fluids, equipment rinsate, and disposable equipment will be stored on site until characterized. Drums or visquene containing potentially contaminated soil and water will be labeled. The on-site location for temporary storage of wastes will be determined by the current site owner(s). Waste disposal, if necessary, will be the responsibility of the client. TPE can assist in coordinating treatment and/or disposal activities as an additional work item. The cost of treatment, waste disposal, and coordination will be dependent on reported concentrations, and amounts and types of waste encountered.

CHEMICAL ANALYSES:

Soil samples will be screened in the field for volatile organic compounds with a combustible gas indicator. Soil samples that are selected for analysis, if any, and all water samples will be transported to a State-certified laboratory for analysis.

Groundwater and soil samples will be analyzed for TPHG and BTEX using EPA Methods GCFID 5030/8015 and 5030/8020, respectively. Additionally, groundwater samples will be analyzed for total lead by AA method.

Tables summarizing analytical results of the soil samples taken from each soil boring, sample depths, depth to groundwater/free product thickness, water and well head elevations, and analytical results of the groundwater samples will be included in a Site Assessment Report or subsequent Quarterly Monitoring Reports.

SITE ASSESSMENT REPORT:

The information collected, analytical results received, and TPE's conclusions and recommendations will be summarized in a report. The

report will describe the work performed, include a vicinity map, a detailed site plan, graphic boring logs, graphic monitoring well details and other documentation to support the conclusions. TPE'S conclusions regarding the extent and type(s) of contamination will be presented within the context of this workplan. Recommendations for feasible remedial alternatives and/or supplemental sampling and analyses will be included.

SITE SAFETY PLAN

A Site Safety Plan for conducting work under this workplan is included in Appendix K.

STATEMENT OF QUALIFICATIONS

A statement of qualifications for the lead professional to perform work under this workplan is included in Appendix L.

TIME SCHEDULE

The projected time schedule for implementation of the activities described in this workplan is presented below. The schedule reflects a relatively problem-free program. However, delays in the workplan review, permitting, or laboratory analyses could lengthen the project schedule. Access difficulties and adverse weather conditions could also delay the proposed time schedule. TPE will make every effort to adhere to the project schedule.

Week 1:	Submit Workplan/Report for Regulatory Review Obtain Soil Boring/Monitoring Well Permits
Week 2:	Workplan/Report Review Completed
Week 3:	Soil Boring/Monitoring Well Permit Granted Subcontracting Complete
Week 5:	Field Sampling Conduct Chemical Analysis
Week 6:	Conduct Chemical Analysis
Week 7:	Conduct Chemical Analysis Data Interpretation
Week 8:	Site Characterization Report Preparation
Week 9:	Deliver Report to Client

APPENDIX A

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY PERMIT, GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION, UNIFORM HAZARDOUS WASTE MANIFEST, AND UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE(LEAK)/CONTAMINATION SITE REPORT

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY
DEPARTMENT OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS DIVISION
80 SWAN WAY, ROOM 200
OAKLAND, CA 94621
PHONE NO. 415/271-4320

505.90 ACCEPTED 6-29-90
DEPARTMENT OF ENVIRONMENTAL HEALTH
470 - 27th Street, Third Floor
Oakland, CA 946 2
Telephone (4 5) 874-7237

These plans have been reviewed and found to be acceptable and essentially meet the requirements of State and local health laws. Changes to, or plans indicated by this Department are to secure compliance with State and local laws. The project proponent is now obligated for issuance of any required health permits for construction.

One copy of these accepted plans must be with the job and available to all contractors and craftsmen involved with the removal.

Any change or alterations of these plans and specifications must be submitted to this Department and to the Fire and Building Inspection Department to determine if changes meet the requirements of State and local laws.

Notify this Department at least 48 hours prior to the following required inspections:

_____Removal of Tank and Piping
_____Sampling
_____Final Inspection

Issuance of a permit to operate is dependent on compliance with accepted plans and all applicable laws and regulations.

THIS ACCEPTANCE DOES NOT [illegible]

UNDERGROUND TANK CLOSURE/MODIFICATION PLANS

1. Business Name Anthony's Auto Service
   Business Owner The Estate of John Pettiti
2. Site Address 19592 Center Street
   City Castro Valley Zip 94546 Phone 415-538-1288
3. Mailing Address 19592 Center Street
   City Castro Valley Zip 94546 Phone 415-538-1288
4. Land Owner The Estate of John Pettiti
   Address 19592 Center St. City, State Castro Valley CA Zip 94546
5. EPA I.D. No. CAC000297233
6. Contractor Tank Protect Engineering
   Address 2821 Whipple Rd.
   City Union City, CA Phone (415)429-8088
   License Type A ID# 575837
7. Consultant Tank Protect Engineering
   Address 2821 Whipple Rd.
   City Union City Phone (415) 429-8088

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE ♦ PLEASANTON, CALIFORNIA 94566 ♦ (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 19592 CENTER STREET
CASTRO VALLEY, CA 94546

CLIENT
Name ESTATE OF JOHN PETTITI
Address 19592 CENTER ST Phone 415 538 1288
City CASTRO VALLEY, CA Zip 94546

APPLICANT
Name JOHN MRAKOVICH
TANK PROTECT ENGINEERING
Address 2821 WHIPPLE RD Phone 415 429 8088
City UNION CITY, CA Zip 94587

TYPE OF PROJECT
Well Construction
Cathodic Protection ___
Water Supply ___
Monitoring ___
Geotechnical Investigation
General
Contamination X
Well Destruction ___

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. 484288

WELL PROJECTS
Drill Hole Diameter ___ In. Maximum
Casing Diameter ___ In. Depth ___ ft.
Surface Seal Depth ___ ft. Number ___

GEOTECHNICAL PROJECTS
Number of Borings 4-8 Maximum
Hole Diameter 8 In. Depth 30 ft.

ESTIMATED STARTING DATE 8/16/90
ESTIMATED COMPLETION DATE 8/16/90

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE John V. Mrakovich Date 8/10/90

FOR OFFICE USE

PERMIT NUMBER 90489
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

A. GENERAL
(1.) A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
(3.) Permit is void if project not begun within 90 days of approval date.

B. WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

(C.) GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 10 Aug 90
Wyman Hong

121989

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-91)
Please print or type. *(Form designed for use on elite (12-pitch typewriter).* 72319

Front of Page 7

Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAC000297233 | Manifest Document No. 00001

2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: Anthony's Auto Service, 19592 Center Street, Castro Valley, Ca. 94546

4. Generator's Phone (415 538-1288

A. State Manifest Document Number: 89890729

B. State Generator's ID:

5. Transporter 1 Company Name: Erickson Trucking, Inc. | 6. US EPA ID Number: CAD009466392

C. State Transporter's ID: 106249

D. Transporter's Phone: (415) 235-1393

7. Transporter 2 Company Name | 8. US EPA ID Number

E. State Transporter's ID:

F. Transporter's Phone:

9. Designated Facility Name and Site Address: Erickson, Inc., 255 Parr Blvd., Richmond, CA 94801 | 10. US EPA ID Number: CAD009466392

G. State Facility's ID: CAD009466392

H. Facility's Phone: (415) 235-1393

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste empty storage tank Non-RCRA Hazardous Waste Solid	0104	T P	82710	P	State 512
					EPA/Other None
b.					State
					EPA/Other
c.					State
					EPA/Other
d.					State
					EPA/Other

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above: a. 01 b. c. d.

15. Special Handling Instructions and Additional Information

Keep away from sources of ignition. Always wear hardhats when working around U.S.T.'s

16.

GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: ANTHONY DIAZ | Signature | Month Day Year: 07/12/90

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Maxine Shagley | Signature: Maxine Shagley | Month Day Year: 07/12/90

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: HARRISON L. STOCKTON | Signature | Month Day Year: 07/12/90

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

89890729

DHS 8022 A (1/88)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

Do Not Write Below This Line

White: TSDF SENDS THIS COPY TO DOHS WITHIN 30 DAYS
to: P. O. Box 1000, Sacramento, CA 95812

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

EMERGENCY ☐ YES ☒ NO

HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? ☐ YES ☒ NO

REPORT DATE: 08/08/90 | CASE #:

FOR LOCAL AGENCY USE ONLY
I HEREBY CERTIFY THAT I AM A DESIGNATED GOVERNMENT EMPLOYEE AND THAT I HAVE REPORTED THIS INFORMATION TO LOCAL OFFICIALS PURSUANT TO SECTION 25180.7 OF THE HEALTH AND SAFTY CODE.
SIGNED: _____ DATE: _____

REPORTED BY
NAME OF INDIVIDUAL FILING REPORT: Marc Zomorodi | PHONE: (415) 429-8088 | SIGNATURE:
REPRESENTING ☒ OWNER/OPERATOR ☐ REGIONAL BOARD ☐ LOCAL AGENCY ☐ OTHER _____
COMPANY OR AGENCY NAME: Tank Protect Engineering of Northern California
ADDRESS: 2821 Whipple Rd STREET | CITY: Union City | STATE: CA | ZIP: 94587

RESPONSIBLE PARTY
NAME: The Estate of John Pettite ☐ UNKNOWN | CONTACT PERSON: | PHONE: (415) 538-1288
ADDRESS: 19592 Center Street STREET | CITY: Castro Valley | STATE: CA | ZIP: 94546

SITE LOCATION
FACILITY NAME (IF APPLICABLE): The Estate of John Pettite (Anthony's Auto Service) | OPERATOR: | PHONE: (415) 538-122
ADDRESS: 19592 Center Street STREET | CITY: Castro Valley | COUNTY: CA | ZIP: 94546
CROSS STREET:

IMPLEMENTING AGENCIES
LOCAL AGENCY / AGENCY NAME: Alameda County Health Agency | CONTACT PERSON: Paul Smith | PHONE: (415) 271-4320
REGIONAL BOARD: S.F. Bay Region | PHONE: (415) 464-1255

SUBSTANCES INVOLVED
(1) NAME: Petroleum Hydrocarbons- see below | QUANTITY LOST (GALLONS): _____ ☒ UNKNOWN
(2) _____ ☐ UNKNOWN

DISCOVERY/ABATEMENT
DATE DISCOVERED: 07/19/90
HOW DISCOVERED: ☐ INVENTORY CONTROL ☐ SUBSURFACE MONITORING ☐ NUISANCE CONDITIONS ☐ TANK TEST ☒ TANK REMOVAL ☐ OTHER _____
DATE DISCHARGE BEGAN: ☒ UNKNOWN
HAS DISCHARGE BEEN STOPPED? ☐ YES ☐ NO IF YES, DATE
METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY)
☒ REMOVE CONTENTS ☐ REPLACE TANK ☐ CLOSE TANK ☐ REPAIR TANK ☐ REPAIR PIPING ☐ CHANGE PROCEDURE ☐ OTHER Remove Tank (s)

SOURCE/CAUSE
SOURCE OF DISCHARGE: ☐ TANK LEAK ☒ UNKNOWN ☐ PIPING LEAK ☐ OTHER
CAUSE(S): ☐ OVERFILL ☐ RUPTURE/FAILURE ☐ SPILL ☐ CORROSION ☒ UNKNOWN ☐ OTHER _____

CASE TYPE
CHECK ONE ONLY
☒ UNDETERMINED ☐ SOIL ONLY ☐ GROUNDWATER ☐ DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)

CURRENT STATUS
CHECK ONE ONLY
☒ NO ACTION TAKEN ☐ PRELIMINARY SITE ASSESSMENT WORKPLAN SUBMITTED ☐ POLLUTION CHARACTERIZATION
☐ LEAK BEING CONFIRMED ☐ PRELIMINARY SITE ASSESSMENT UNDERWAY ☐ POST CLEANUP MONITORING IN PROGRESS
☐ REMEDIATION PLAN ☐ CASE CLOSED (CLEANUP COMPLETED OR UNNECESSARY) ☐ CLEANUP UNDERWAY

REMEDIAL ACTION
CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS)
☐ CAP SITE (CD) ☐ CONTAINMENT BARRIER (CB) ☐ VACUUM EXTRACT (VE)
☐ EXCAVATE & DISPOSE (ED) ☒ EXCAVATE & TREAT (ET) ☐ NO ACTION REQUIRED (NA) ☐ OTHER (OT) _____
☐ REMOVE FREE PRODUCT (FP) ☐ PUMP & TREAT GROUNDWATER (GT) ☐ TREATMENT AT HOOKUP (HU)
☐ ENHANCED BIO DEGRADATION (IT) ☐ REPLACE SUPPLY (RS) ☐ VENT SOIL (VS)

COMMENTS
Two (2) 3000 gallon fuel tanks one (1) 4000 fuel tank one (1) 250 gallon waste oil tank have been removed.

APPENDIX B

CERTIFIED ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Tank Protect Engineering of N. Calif.	Client Project ID:	#121-071290, 19592 Center St., Castro Valley	Sampled:	Jul 12, 1990
2821 Whipple Road	Matrix Descript:	Soil	Received:	Jul 17, 1990
Union City, CA 94587	Analysis Method:	EPA 5030/8015/8020		
Attention: John Marokovich	First Sample #:	007-2554	Reported:	Aug 6, 1990

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
007-2554	W-O-S	N.D.	0.0055	0.0094	N.D.	0.0086
007-2555	S-1-W	N.D.	0.0050	0.014	0.0076	0.011
007-2556	S-2-W	2,500	1.5	57	54	310
007-2557	S-3-W	990	7.3	150	1.8	34
007-2558	S-1-E	1.9	0.0090	0.20	0.026	0.24
007-2559	S-2-E	3,200	2.2	87	74	470
007-2560	S-3-E	720	12	140	3.1	54
Detection Limits:		**1.0**	**0.0050**	**0.0050**	**0.0050**	**0.0050**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Maile A. McBirney
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Tank Protect Engineering of N. Calif.	Client Project ID:	#121-071290, 19592 Center St., Castro Valley	Sampled:	Jul 12, 1990
2821 Whipple Road	Matrix Descript:	Soil	Received:	Jul 17, 1990
Union City, CA 94587	Analysis Method:	EPA 3550/8015	Extracted:	Jul 25, 1990
Attention: John Marokovich	First Sample #:	007-2554	Analyzed:	Jul 30, 1990
			Reported:	Aug 6, 1990

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons mg/kg (ppm)
007-2554	W-O-S	N.D.

Detection Limits:	**1.0**

High Boiling Point Hydrocarbons are quantitated against a diesel fuel standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Maile A. McBirney
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Tank Protect Engineering of N. Calif.	Client Project ID:	#121-071290, 19592 Center St., Castro Valley	Sampled:	Jul 12, 1990
2821 Whipple Road	Matrix Descript:	Soil	Received:	Jul 17, 1990
Union City, CA 94587	Analysis Method:	SM 503 D&E (Gravimetric)	Extracted:	Jul 19, 1990
Attention: John Marokovich	First Sample #:	007-2554	Analyzed:	Jul 20, 1990
			Reported:	Aug 6, 1990

TOTAL RECOVERABLE PETROLEUM OIL

Sample Number	Sample Description	Oil & Grease mg/kg (ppm)
007-2554	W-O-S	N.D.

Detection Limits:	**30**

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Maile A. McBirney
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Tank Protect Engineering of N. Calif.	Client Project ID:	#121-071290, 19592 Center St., Castro Valley	Sampled:	Jul 12, 1990
2821 Whipple Road	Sample Descript:	Soil, W-O-S	Received:	Jul 17, 1990
Union City, CA 94587	Analysis Method:	EPA 5030/8010	Analyzed:	Jul 26, 1990
Attention: John Marokovich	Lab Number:	007-2554	Reported:	Aug 6, 1990

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Bromodichloromethane	5.0	N.D.
Bromoform	5.0	N.D.
Bromomethane	5.0	N.D.
Carbon tetrachloride	5.0	N.D.
Chlorobenzene	5.0	N.D.
Chloroethane	25	N.D.
2-Chloroethylvinyl ether	5.0	N.D.
Chloroform	5.0	N.D.
Chloromethane	5.0	N.D.
Dibromochloromethane	5.0	N.D.
1,2-Dichlorobenzene	10	N.D.
1,3-Dichlorobenzene	10	N.D.
1,4-Dichlorobenzene	10	N.D.
1,1-Dichloroethane	5.0	N.D.
1,2-Dichloroethane	5.0	N.D.
1,1-Dichloroethene	5.0	N.D.
Total 1,2-Dichloroethene	5.0	N.D.
1,2-Dichloropropane	5.0	N.D.
cis-1,3-Dichloropropene	5.0	N.D.
trans-1,3-Dichloropropene	5.0	N.D.
Methylene chloride	10	N.D.
1,1,2,2-Tetrachloroethane	5.0	N.D.
Tetrachloroethene	5.0	N.D.
1,1,1-Trichloroethane	5.0	N.D.
1,1,2-Trichloroethane	5.0	N.D.
Trichloroethene	5.0	N.D.
Trichlorofluoromethane	5.0	N.D.
Vinyl chloride	10	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Maile A. McBirney
Project Manager

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Tank Protect Engineering of N. Calif.	Client Project ID:	#121-071290, 19592 Center St., Castro Valley	Sampled:	Jul 12, 1990
2821 Whipple Road	Sample Descript:	Soil, W-O-S	Received:	Jul 17, 1990
Union City, CA 94587				
Attention: John Marokovich	Lab Number:	007-2554		
			Reported:	Aug 6, 1990

LABORATORY ANALYSIS

Analyte	Detection Limit mg/kg	Sample Results mg/kg
Cadmium	0.50	N.D.
Chromium	0.25	17
Lead	0.25	3.8
Zinc	0.50	23

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Maile A. McBirney
Project Manager

TANK PROTECT ENGINEERING
Of Northern California

2821 WHIPPLE ROAD
UNION CITY, CA. 94587
PHONE #(415) 429-8088
(800) 523-8088

CHAIN OF CUSTODY

PROJECT NO.: 121-071290

SITE NAME & ADDRESS: 19592 CENTER STREET, CASTRO VALLEY, CA.

SAMPLERS--NAME, ADDRESS AND TELEPHONE NUMBER: TANK PROTECT ENGINEERING, 2821 WHIPPLE ROAD, UNION CITY CA. 94587 TEL#(415)429-8088

LAB NO.	DATE	TIME	SOIL	WATER	SAMPLING LOCATION	(1) TYPE OF CONTAINER	ANALYTES REQUESTED: TOTAL LIGHT HC	AROMATIC HC (BTX)	TOTAL HEAVY HC	OIL & GREASE	VOC SCAN (624's)	OTHER	REMARKS
W-0-S	7/1/90	1620	✓		W-0-S	BRASS TUBE				✓			TPH AS GASOLINE, TPH AS DIESEL, BTEX, CLHC, CAPOR AA
S-1-W	"	1730	✓		S-1-W	"							TPH AS GASOLINE, BTEX
S-2-W	"	1750	✓		S-2-W	"							" " " "
S-3W	"	1800	✓		S-3-W	"							" " " "
S-1-E	"	1810	✓		S-1-E	"							" " " "
S-2-E	"	1817	✓		S-2-E	"							" " " "
S-3-E	"	1821	✓		S-3-E	"							" " " "

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Josefina M. Alvarado	7/1/90 9:00A	Sophie P.	7/1/90 9:50		
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Remarks	

DATE.

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Tank Protect Engineering of N. Calif	Client Project ID:	#121B-081790	Sampled: Aug 16, 1990
2821 Whipple Road	Matrix Descript:	Soil	Received: relogged 8/17
Union City, CA 94587	Analysis Method:	EPA 5030/8015/8020	Analyzed: Aug 28-30, 1990
Attention: Marc Zomorodi	First Sample #:	008-3249	Reported: Sep 5, 1990

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
008-3249	SB-1 @ 6.0-6.5'	N.D.	N.D.	N.D.	N.D.	N.D.
008-3250	SB-1 @ 11.0-11.5'	N.D.	N.D.	N.D.	N.D.	N.D.
008-3251	SB-1 @ 16.0-16.5'	N.D.	0.0070	0.0050	N.D.	N.D.
008-3252	SB-1 @ 20.5-21.0'	N.D.	N.D.	N.D.	N.D.	N.D.
008-3253	SB-1 @ 26.0-26.5'	N.D.	N.D.	N.D.	N.D.	N.D.
008-3254	SB-1 @ 31.0-31.5'	N.D.	N.D.	N.D.	N.D.	N.D.
008-3255	SB-1 @ 36.0-36.5'	N.D.	N.D.	N.D.	N.D.	N.D.
008-3256	SB-2 @ 6.0-6.5'	N.D.	N.D.	N.D.	N.D.	N.D.
008-3257	SB-2 @ 11.0-11.5'	N.D.	N.D.	N.D.	N.D.	N.D.
008-3258	SB-2 @ 16.0-16.5'	N.D.	N.D.	N.D.	N.D.	N.D.
Detection Limits:		**1.0**	**0.05**	**0.1**	**0.1**	**0.1**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Maile A. McBirney
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Tank Protect Engineering of N. Calif	Client Project ID:	#121B-081790	Sampled: Aug 16, 1990
2821 Whipple Road	Matrix Descript:	Soil	Received: relogged 8/17
Union City, CA 94587	Analysis Method:	EPA 5030/8015/8020	Analyzed: Aug 28-30, 1990
Attention: Marc Zomorodi	First Sample #:	008-3259	Reported: Sep 5, 1990

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
008-3259	SB-2 @ 21.0-21.5'	N.D.	N.D.	N.D.	N.D.	N.D.
008-3260	SB-2 @ 26.0-26.5'	1.2	N.D.	0.028	0.022	0.046
008-3261	SB-2 @ 31.0-31.5'	N.D.	N.D.	N.D.	N.D.	N.D.
008-3262	SB-2 @ 36.0-36.5'	N.D.	N.D.	N.D.	0.0087	0.041
008-3263	SB-3 @ 6.0-6.5'	N.D.	N.D.	0.0079	0.0068	0.016
008-3264	SB-3 @ 11.0-11.5'	2.7	N.D.	0.0067	0.027	0.065
008-3265	SB-3 @ 16.0-16.5'	N.D.	0.0063	0.0063	N.D.	N.D.
008-3266	SB-3 @ 21.0-21.5'	N.D.	0.0065	0.0017	N.D.	N.D.
008-3267	SB-3 @ 26.0-26.5'	15	N.D.	N.D.	N.D.	0.027
008-3268	SB-3 @ 31.0-31.5'	N.D.	N.D.	N.D.	N.D.	N.D.
Detection Limits:		**1.0**	**0.05**	**0.1**	**0.1**	**0.1**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Maile A. McBitney
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Tank Protect Engineering of N. Calif	Client Project ID:	#121B-081790	Sampled: Aug 16, 1990
2821 Whipple Road	Matrix Descript:	Soil	Received: relogged 8/17
Union City, CA 94587	Analysis Method:	EPA 5030/8015/8020	Analyzed: Aug 28-31, 1990
Attention: Marc Zomorodi	First Sample #:	008-3269	Reported: Sep 5, 1990

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
008-3269	SB-3 @ 36.0-36.5'	N.D.	0.0051	0.025	0.023	0.057
008-3270	SB-4 @ 6.0-6.5'	N.D.	0.0050	0.0058	N.D.	0.11
008-3271	SB-4 @ 11.0-11.5'	N.D.	0.0069	0.042	0.025	0.10
008-3272	SB-4 @ 16.0-16.5'	N.D.	N.D.	0.0068	N.D.	0.0063
008-3273	SB-4 @ 21.0-21.5'	N.D.	0.0073	0.010	N.D.	0.019
008-3274	SB-4 @ 26.0-26.5'	N.D.	N.D.	N.D.	N.D.	N.D.
008-3275	SB-4 @ 31.0-31.5'	N.D.	N.D.	N.D.	N.D.	N.D.
Detection Limits:		**1.0**	**0.05**	**0.1**	**0.1**	**0.1**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Maile A. McBirney
Project Manager

TANK PROTECT ENGINEERING
2821 WHIPPLE ROAD
UNION CITY, CA 94587
(415)429-8088
(800)523-8088
FAX(415)429-8089

CHAIN OF CUSTODY SEQUOIA - NORMAL TURNAROUND 1 OF 4

PROJECT NO.: 1218-081790

SITE NAME & ADDRESS: 19592 CENTER STREET CASTRO VALLEY, CA

SAMPLER NAME, ADDRESS AND TELEPHONE NUMBER: JOHN MRAKOVICH, TANK PROTECT ENGINEERING

ID NO.	DATE	TIME	SOIL	WATER	SAMPLING LOCATION	(1) TYPE OF CONTAINER	ANALYTES REQUESTED: TOTAL LIGHT HC	AROMATIC HC (BTX)	TOTAL HEAVY HC	OIL & GREASE	VOC SCAN (624's)	OTHER	REMARKS
SB-1 6.0-6.5	8/16/90	845	✓		SB-1	BRASS TUBE	✓	✓					
SB-1 11.0-11.5		852									X		TOTAL LEAD AA
SB-1 16.0-16.5		900											
SB-1 20.5-21.0		910											
SB-1 26.0-26.5		925									X		TOTAL LEAD AA
SB-1 31.0-31.5		935											
SB-1 36.0-36.5		950											

Relinquished by : (Signature)	Date / Time	Received by : (Signature)	Relinquished by : (Signature)	Date / Time	Received by : (Signature)
John V. Mrakovich	8/17/90 930	Christopher Dorsh			
Relinquished by : (Signature)	Date / Time	Received by : (Signature)	Relinquished by : (Signature)	Date / Time	Received by : (Signature)
Relinquished by : (Signature)	Date / Time	Received for Laboratory by: [Signature]	Date / Time	Remarks	

DATE: 8/17/90

TANK PROTECT ENGINEERING
2821 WHIPPLE ROAD
UNION CITY, CA 94587
(415)429-8088
(800)523-8088
FAX(415)429-8089

CHAIN OF CUSTODY

SEQUOIA - NORMAL TURNAROUND

PROJECT NO.: 121B-081790

SITE NAME & ADDRESS: 19592 CENTER STREET, CASTRO VALLEY, CA

SAMPLER NAME, ADDRESS AND TELEPHONE NUMBER: JOHN MRAKOVICH, TANK PROTECT ENGINEERING

ID NO.	DATE	TIME	SOIL	WATER	SAMPLING LOCATION	(1) TYPE OF CON-TAINER	ANALYTES REQUESTED: TOTAL LIGHT HC	AROMATIC HC (BTX)	TOTAL HEAVY HC	OIL & GREASE	VOC SCAN (624's)	OTHER	REMARKS
SB-2 6.0-6.5	8/16/90	1038	✓		SB-2	BRASS TUBE	✓	✓					
SB-2 11.0-11.5		1050									X		TOTAL LEAD AA
SB-2 16.0-16.5		1100											
SB-2 21.0-21.5		1112											
SB-2 26.0-26.5		1125									X		TOTAL LEAD AA
SB-2 31.0-31.5		1135											
SB-2 36.0-36.5		1145											

Relinquished by : (Signature)	Date / Time	Received by : (Signature)	Relinquished by : (Signature)	Date / Time	Received by : (Signature)
John V. Mrakovich	8/17/90 930	Christopher Burke			
Relinquished by : (Signature)	Date / Time	Received by : (Signature)	Relinquished by : (Signature)	Date / Time	Received by : (Signature)
Relinquished by : (Signature)	Date / Time	Received for Laboratory by: [Signature]	Date / Time	Remarks	

DATE: 8/17/90

TANK PROTECT ENGINEERING
Of Northern California
Environmental Management

TANK PROTECT ENGINEERING
2821 WHIPPLE ROAD
UNION CITY, CA 94587
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CHAIN OF CUSTODY

SEQUOIA - NORMAL TURNAROUND

PROJECT NO.: 1218-081790

SITE NAME & ADDRESS: 19592 CENTER STREET, CASTRO VALLEY, CA

SAMPLER NAME, ADDRESS AND TELEPHONE NUMBER:
JOHN MRAKOVICH
TANK PROTECT ENGINEERING

ID NO.	DATE	TIME	SOIL	WATER	SAMPLING LOCATION	(1) TYPE OF CONTAINER	TOTAL LIGHT HC	AROMATIC HC (BTX)	TOTAL HEAVY HC	OIL & GREASE	VOC SCAN (624's)	OTHER	REMARKS
SB-3 6.0-6.5	8/16/90	1322	✓		SB-3	BRASS TUBE	✓	✓					
SB-3 11.0-11.5		1327									X		TOTAL LEAD AA
SB-3 16.0-16.5		1335											
SB-3 21.0-21.5		1345											
SB-3 26.0-26.5		1445									X		TOTAL LEAD AA
SB-3 31.0-31.5		1427											
SB-3 36.0-36.5		1450											

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John V. Mrakovich	8/17/90 9:30	Christopher Kanka			
Relinquished by : (Signature)	Date / Time	Received by : (Signature)	Relinquished by : (Signature)	Date / Time	Received by : (Signature)
Relinquished by : (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	

DATE: 8/17/90

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CHAIN OF CUSTODY

SEQUOIA - NORMAL TURNAROUND

PROJECT NO.: 1218-081790

SITE NAME & ADDRESS: 19592 CENTER STREET, CASTRO VALLEY, CA

SAMPLER NAME, ADDRESS AND TELEPHONE NUMBER: JOHN MRAKOVICH, TANK PROTECT ENGINEERING

ID NO.	DATE	TIME	SOIL	WATER	SAMPLING LOCATION	(1) TYPE OF CONTAINER	ANALYTES REQUESTED: TOTAL LIGHT HC	AROMATIC HC (BTX)	TOTAL HEAVY HC	OIL & GREASE	VOC SCAN (624's)	OTHER	REMARKS
SB-4 6.0-6.5	8/16/90	1530	✓		SB-4	BRASS TUBE	✓	✓					
SB-4 11.0-11.5		1540									X		TOTAL LEAD AA
SB-4 16.0-16.5		1547											
SB-4 21.0-21.5		1557											
SB-4 26.0-26.5		1607									X		TOTAL LEAD AA
SB-4 31.0-31.5		1615											

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John V. Mrakovich	8/17/90 930	Christopher Tombo			
Relinquished by : (Signature)	Date / Time	Received by : (Signature)	Relinquished by : (Signature)	Date / Time	Received by : (Signature)
Relinquished by : (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	

DATE: 8/17/90

APPENDIX C

HOLLOW-STEM AUGER DRILLING AND SOIL SAMPLING PROCEDURES

APPENDIX C

HOLLOW-STEM AUGER DRILLING AND SOIL SAMPLING PROCEDURES

Undisturbed soil samples shall be recovered from soil without introducing liquids into the borings. Soil samples as core or cutting shall be taken continuously from ground surface to termination depth, or through the aquifer zone of interest for lithologic logging.

Borings shall be drilled with a hollow-stem auger and sampled with a California or modified California-type split-spoon sampler. Soil samples shall be of sufficient volume to perform the analyses which may be required, including replicate analyses.

Soil from all borings shall be described in detail using the Unified Soil Classification System and shall be logged by a geologist, civil engineer, or engineering geologist who is registered or certified by the State of California and is experienced in the use of the Unified Soil Classification System. All wet zones above the free water zone shall be noted and accurately logged.

Soil samples will be collected in decontaminated brass or stainless steel sampling tubes in the split-spoon. Sediment traps will be used when unconsolidated sands and gravels fall from the sampler during retrieval. The brass tubes will be cut apart using a clean knife. The ends of the tubes will be covered with a thin sheet of Teflon tape or aluminum foil beneath plastic end caps and sealed with electrical or duct tape and properly labeled. The samples will be stored on ice at a temperature of 4 degrees Celsius.

Drill cuttings will be stored on site in 55-gallon drums or covered with visquene. Analytical results will be submitted immediately to the site owner for determination of appropriate disposal procedures. The soil borings not completed as wells will be backfilled with a cement grout.

APPENDIX D

SAMPLE HANDLING TECHNIQUES

APPENDIX D

SAMPLE HANDLING TECHNIQUES

Soil and groundwater samples will be packaged carefully to avoid breakage or contamination, and will be delivered to the laboratory at proper storage temperatures. The following sample packaging requirements will be followed.

* Sample bottle/sleeve lids will not be mixed. All sample lids will stay with the original containers and have custody seals affixed to them.

* Samples will be secured in coolers to maintain custody, control temperature, and prevent breakage during transporation to the laboratory.

* The original chain-of-custody form and one copy will be placed in a plastic bag and taped to the inside of the cooler lid.

* Ice or blue ice will be used to keep samples at a constant temperature during transport to the laboratory.

* Each sample will be identified by affixing a pressure sensitive, gummed label, or standardized tag on the container(s). This label will contain the sample identification number, date and time of sample collection, and the collector's initials.

All sample containers will be precleaned and will be obtained at 1-Chem Research in Hayward, California, or from a State Department of Health Services certified analytical laboratory.

Sample Control/Chain-of-Custody: All field personnel will refer to this work plan to verify the methods to be employed during sample collection. All sample gathering activities will be recorded in the site logbook; all sample transfers will be documented in the site logbook; samples are to be identified with TPE labels and all sample bottles are to be custody-sealed. All information is to be recorded in waterproof ink. All TPE field personnel are personally responsible for sample collection and the care and custody of collected samples until the samples are transferred or properly dispatched.

The custody record will be completed by the field technician who has been designated by the TPE project manager as being responsible for sample shipment to the appropriate laboratory. The custody record will include, among other things, the following information: name of person collecting the samples; date samples were collected; type of sampling conducted (composite/grab); location of sampling station; number and type of containers used; and signature of the TPE person relinquishing samples to a non-TPE person with the date and time of transfer noted. The relinquishing individual will also put all the specific shipping data on the custody record.

Site log books will be maintained by a designated TPE field employee to record, for each sample, sampling locations, station numbers, dates, times, sampler's name, designation of the samples as a grab or composite, notation of the type of sample (e.g. groundwater, soil boring, etc.), preservatives used, on-site measurement data, and other observations or remarks.

APPENDIX E

WASTE HANDLING AND DECONTAMINATION PROCEDURES

APPENDIX E

WASTE HANDLING AND DECONTAMINATION PROCEDURES

Decontamination: Any drilling, sampling or field measurement equipment that comes into contact with soils or groundwater will be properly decontaminated prior to its use at the site and after each incident of contact with the soils or groundwater being investigated. Proper decontamination is essential to obtain samples that are representative of environmental conditions and to accurately characterize the extent of soil and groundwater contamination. Hollow-stem auger flights and the drill bit will be steam-cleaned between the sampling of each well.

All sample equipment, including the split-tube sampler and brass tubes, will be cleaned by washing with tri-sodium phosphate detergent, followed by sequential rinsing with tap water, and deionized water.

Waste Handling: Waste materials generated during site characterization activities will be handled and stored as hazardous waste and will be stored on site in appropriately labeled containers. Waste materials anticipated include drill cuttings, development and purge water, water generated during aquifer testing, water generated during decontamination, and used personnel protection equipment such as gloves and Tyvek. The site owner will be responsible for providing the storage containers and will be responsible for the disposal of the waste materials. Drill cuttings from individual borings will be stored separately in drums or covered by visquene and the appropriate disposal procedure will be determined by the site owner or TPE following receipt of the soil sample analytical results.

APPENDIX F

LOGS OF EXPLORATORY BORINGS

LOG OF EXPLORATORY BORING

PROJECT NUMBER 121 — BORING NO. SB-1

PROJECT NAME 19592 Center Street, Castro Valley, CA — PAGE 1of 1

BY J. Mrakovich DATE 8/16/90 — SURFACE ELEV. 260'±

Recovery (ft/ft)	OVA (ppm)	Penetration (blws/ft)	DESCRIPTION
			Asphalt
			Aggregate Subbase: Gravelly, Silty Sand (SM), yellow-brown, 50 percent gravel, dry, no odor
1.5/1.5	0	69	@ 4", as above, base of subbase, less gravel, damp, possible slight odor.
1.0/1.0	0	50 for 6-inches	@ 3', as above, brown, no gravel, clayey, fine to medium-grained, clay balls, damp, no odor.
			@ 5', as above, very dense, no odor.
1.3/1.3	0	85 for 10-inches	@ 10', as above, olive-green, medium-grained, no odor.
			@ 11.5', as above, gravelly, slight odor.
.83/.83	0	50 for 4-inches	@ 15', as above, very green, damp, no odor
			Clayey Silt (ML), brown, damp, no odor.
1.4/1.4	0	75 for 11-inches	Gravelly, Clayey Sand (SP), mottled brown and red-brown, some rock fragments, damp, very dense, no odor.
			@ 25', as above, silty, light green-brown very fine-grained, damp, no odor.
1.5/1.5	0	88	@ 30', as above, brown, fine to medium-grained, dry, no odor.
			@ 34', driller reports gravel and cobbles.
.5/.5	-	70 for 6-inches	@ 35', as above, dry, no odor
			Boring terminated at 35 feet. Sampled to 36.5 feet.

GROUND WATER LEVELS — DEPTH IN FEET — SAMPLES — LITHOGRAPHIC COLUMN

5 10 15 20 25 30 35

REMARKS

Boring drilled with continuous-flight, hollow-stem, 8-inch augers. Samples collected in a 2.5-inch O.D. California sampler. Boring sealed with cement.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 121 — BORING NO. SB-2

PROJECT NAME 19592 Center Street, Castro Valley, CA — PAGE 1 of 2

BY J. Mrakovich — DATE 8/16/90 — SURFACE ELEV. 260'±

Recovery (ft/ft)	OVA (ppm)	Penetration (blws/ft)	DEPTH IN FEET	DESCRIPTION
				Asphalt
				Clay (CL), brown, soft to stiff, damp, no odor
1.5/1.5	0	75	5	Silty, Gravelly Sand (SM), orange-brown, fine to medium-grained, 10 percent gravel, damp, no odor.
1.5/1.5	0	80	10	@ 5', as above, very dense, no odor.
				@ 5.5', as above, light brown, no gravel, no odor.
1.0/1.0	20	50 for 6-inches	15	@ 10', as above, green, gravelly with coarse sand, damp, no odor.
				@10.5', as above, red-brown, medium to coarse-grained, damp, no odor.
.83/.83	73	50 for 4-inches	20	@ 15', as above, green, possible slight odor.
1.5/1.5	52	61	25	@ 20', as above, mottled green and brown, rock fragments to 1-inch diameter, clayey damp, no odor.
				@ 24', driller reports base of gravel.
1.5/1.5	0	85	30	@ 25', as above, no gravel, green, medium to coarse sand, no clay or silt, damp, slight odor.
				@ 30', as above, very gravelly, damp, no odor.
.5/.5	0	75 for 6-inches	35	@ 35', as above, brown, no gravel, very fine to fine-grained, silt, dry, no odor.

REMARKS

Boring drilled with continuous-flight, hollow-stem, 8-inch augers. Samples collected in a 2.5 inch O.D. California sampler. Boring sealed with cement.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 121

BORING NO. SB-2

PROJECT NAME 19592 Center Street, Castro Valley, CA

BY J. Mrakovich DATE 8/16/90

SURFACE ELEV 260'±

Recovery (ft/ft)	OVA (ppm)	Penetration (blws/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
							Boring terminated at 35 feet. Sampled to 36.5 feet.

REMARKS

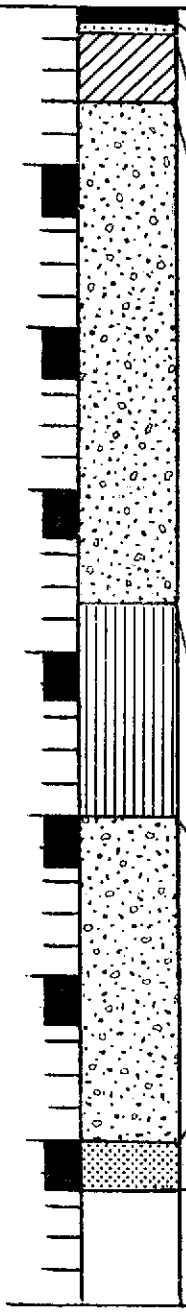
LOG OF EXPLORATORY BORING

PROJECT NUMBER 121 — BORING NO. SB-3

PROJECT NAME 19592 Center Street, Castro Valley, CA — PAGE 1 of 1

BY J. Mrakovich DATE 8/16/90 — SURFACE ELEV. 260'±

Recovery (ft/ft)	OVA (ppm)	Penetration (blws/ft)	DEPTH IN FEET	DESCRIPTION
				Asphalt
				Aggregate Subbase: Gravelly, Silty Sand (SM), red-brown, fine to meduim-grained, damp, no odor.
1.5/1.5	0	62	5	Silty Clay (CL), mottled red and black, soft, damp, no odor.
1.3/1.5	0	87	10	Clayey, Gravelly Sand (SP), light brown, fine to medium-grained, 10 percent gravel, clay balls, damp, no odor.
1.5/1.5	0	83	15	@ 5', as above, no gravel, red-brown, little clay, very dense, damp, no odor.
				@ 10', as above, light grey, damp, no odor.
1.5/1.5	0	71 for 11.5-inches	20	@ 15', as above, red-brown, medium to coarse-grained, gravelly, gravel fragments to 1-inch diameter, damp, no odor.
.5/ .5	0	69 for 6-inches	25	Sandy Silt (ML), olive-brown, very dense, damp, no odor.
1.0/1.0	0	78	30	Gravelly Sand (SP), red-brown, medium to coarse-grained, gravel fragments to 1-inch diameter, 15 percent gravel, very dense. moist, no odor.
				@ 30', as above, damp, no odor.
.42/ .5	0	60 for 6-inches	35	Sandstone, brown, medium-grained, dry, no odor.
				Boring terminated at 35 feet. Sampled to 36.5 feet.



REMARKS

Boring drilled with continuous-flight, hollow-stem, 8-inch augers. Samples collected in a 2.5-inch O.D. California sampler. Boring sealed with cement.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 121

PROJECT NAME 19592 Center Street, Castro Valley, CA

BORING NO. SB-4

PAGE 1 of 1

BY J. Mrakovich DATE 8/16/90

SURFACE ELEV. 260'±

Recovery (ft/ft)	OVA (ppm)	Penetration (blws/ft)	DEPTH IN FEET	DESCRIPTION
				Concrete
				Aggregare Subbase: Gravelly, Silty Sand (SM), brown, fine to medium-grained, damp, no odor.
1.5/1.5	0	70	5	@.5', as above, brown, base of subbase, less gravel (10 percent), damp, no odor.
1.0/1.0	0	97	10	@ 5', as above, orange-brown, medium to coarse-grained, no clay, very dense, fine gravel, damp, no odor.
1.5/1.5	0	86	15	@ 10', as above, very gravelly, gravel fragments to 1-inch diameter, damp, no odor.
				Sandy Silt (ML), olive-light brown, very dense, quartz gravel pockets, damp, no odor.
1.5/1.5	0	82	20	Gravelly, Clayey, Silty Sand (SM) orange-brown, fine to medium-grained, 50 percent gravel, damp, no odor.
1.5/1.5	25	63	25	@ 24', driller reports base of gravel.
				@ 25', as above, olive-grey, no gravel, fine-grained, damp, no odor.
.83/.83	5	74 for 10-inches	30	@ 30', as above, mottled yellow-grey, medium to coarse-grained, damp, no odor.
				Sandstone, brown, fine to medium-grained, poorly consolidated, damp, no odor.
.33/.33	0	80 for 4-inches	35	Boring terminated at 35 feet. Sampled to 36.5 feet.

REMARKS

Boring drilled with continuous-flight, hollow-stem, 8-inch augers. Samples collected in a 2.5-inch O.D. California sampler. Boring sealed with cement.

APPENDIX G

GROUNDWATER MONITORING WELL CONSTRUCTION PROCEDURES

APPENDIX G

GROUNDWATER MONITORING WELL CONSTRUCTION PROCEDURES

BOREHOLE DESIGN

Casing Diameter: The minimum diameter of well casings shall be 2 inches (nominal).

Borehole Diameter: The diameter of the borehole shall be a minimum of 4 inches and a maximum of 12 inches greater than the diameter of the well casing

Shallow (Unconfined Zone) Wells: When groundwater is encountered or known to be within 45 feet of the ground surface, the borehole will be advanced through the aquifer to an underlying competent aquitard. The competency of the aquitard may be tested by sampling 5 feet into the underlying aquitard and backfilling the excess hole with either bentonite pellets or neat cement placed by tremie pipe method. An aquitard found to be less than 5 feet thick, is assumed to represent a local lens. The screened interval will begin a minimum of 5 feet above the saturated zone and extend the full thickness of the aquifer or no more than 20 feet into the saturated zone, whichever is reached first. The well screen will not extend into the aquitard, nor shall the screened interval exceed 25 feet in length.

Deep (Confined Zone) Wells: Any monitoring well to be screened below the upper aquifer shall be installed as a double-cased well. A steel conductor casing shall be placed through the upper water-bearing zone to prevent aquifer cross-contamination.

The conductor casing shall be installed in the following manner: a large diameter borehole (typically 18 inches) shall be drilled until it is determined that the first competent aquitard has been reached. A low carbon steel conductor casing shall be placed in the borehole to the depth drilled. Centralizers shall be used to center the casing in the borehole. The annular space between the conductor casing and the formation shall be cement-grouted from bottom to top by tremie pipe method. The grout shall be allowed to set for a minimum of 72 hours.

Drilling may continue inside the conductor casing, with a drill bit of smaller diameter than the conductor casing. If additional known aquifers are to be fully penetrated, the procedure can be repeated with successively smaller diameter conductor casings.

The bottom of the well screen in a confined aquifer shall be determined by presence or lack of a competent (5 foot) aquitard as described above. The screened interval in a confined zone shall extend across the entire saturated zone of the aquifer or up to a length of 20 feet, which ever is less. The screened zone and filter pack shall not cross connect to another aquifer.

CONSTRUCTION MATERIALS

Casing Materials: Well casing shall be constructed of materials that have the least potential for affecting the quality of the sample. The most suitable material for a particular installation will depend upon the parameters to be monitored. Acceptable materials include PVC, stainless steel, or low carbon steel.

Casing Joints: Joints shall be connected by flush threaded couplers. Organic bonding compounds and solvents will not be used on joints.

Well Screen Slots: Well screen shall be factory slotted. The size of the slots shall be selected to allow sufficient groundwater flow to the well for sampling, minimize the passage of formation materials into the well, and ensure sufficient structural integrity to prevent the collapse of the intake structure.

Casing Bottom Plug: The bottom of the well casing will be permanently plugged, either by flush threaded screw-on or friction cap. Friction caps shall be secured with stainless steel set screws. No organic solvents or cements will be applied.

Filter Pack Material: Filter envelope materials shall be durable, waterworn, and washed clean of silt, dirt, and foreign matter. Sand size particles shall be screened silica sand. Particles shall be well rounded and graded to an appropriate size for retention of aquifer materials.

Bentonite Seal Material: Bentonite shall be pure and free of additives that may effect groundwater quality. Bentonite shall be hydrated with clean water.

Grout Seal Material: Cement grout shall consist of a proper mixture if Type 1/11 Portland cement, hydrated with clean water. Up to 3% bentonite may be added to the mixture to control shrinkage.

CONSTRUCTION PROCEDURES

Decontamination: All downhole tools, well casings, casing fittings, screens, and all other components that are installed in the well shall be thoroughly cleaned immediately before starting each well installation. When available, each component shall be cleaned with a high temperature, high pressure washer for a minimum of five minutes. When a washer is not available, components shall be cleaned with water and detergent or tri-sodium phosphate, rinsed in clean water, than rinsed in distilled water.

Soil and water sampling equipment and material used to construct the wells shall not donate to, capture, mask, nor alter the chemical composition of the soil and groundwater.

Drilling Methods: Acceptable drilling methods include solid and hollow-stem auger, percussion, direct circulation mud and air rotary, and reverse rotary. The best alternative is that which minimizes the introduction of foreign materials or fluids. If drilling fluid is employed, drilling fluid additives shall be limited to inorganic and non-hazardous compounds. Compressed air introduced to the borehole shall be adequately filtered to remove oil and particulates.

Casing Installation: The casing will be set under tension to ensure straightness. Centralizers will be used where necessary to prevent curvature or stress to the casing.

Sand Pack Installation: The sand pack will be installed so as to avoid bridging and the creation of void spaces. The tremie pipe method will be used where installation conditions or local regulations require. Drilling mud, when used, will be thinned prior to pack placement. The sand pack shall cover the entire screened interval and rise a minimum of two feet above the highest perforation.

Bentonite Seal Placement: The bentonite seal will be placed by a method that prevents bridging. Bentonite pellets can be placed by free fall if proper sinking through annular water can be assured. Bentonite slurry will be placed by the tremie pipe method from the bottom upward. The bentonite seal should not be less than 1 foot in thickness above the sand pack.

Grout Seal Placement: The cement grout mixture shall be hydrated with clean water and thoroughly mixed prior to placement. If substantial groundwater exists in the bore hole, the grout shall be

placed by tremie pipe method from the bottom upward. In a dry borehole, the grout may be surface poured. Grout will be placed in one continuous lift and will extend to the surface or to the well vault if the wellhead is completed below grade. A minimum of 5 feet of grout seal will be installed, unless impractical due to the shallow nature of the well.

Surface Completion: The wellhead will be protected from fluid entry, accidental damage, unauthorized access, and vandalism. A watertight cap shall be installed on the well casing. Access to the casing will be controlled by a keyed lock.

Wellheads completed below grade will be completed in a concrete and/or steel vault, installed to drain surface runoff away from the vault.

Well Identification: Each well will be identified by well number, owner, and type of installation. Construction data, including depth, hole and casing diameter, and screened interval will be noted.

APPENDIX H

GROUNDWATER MONITORING WELL DEVELOPMENT PROCEDURES

APPENDIX H

GROUNDWATER MONITORING WELL DEVELOPMENT PROCEDURES

INTRODUCTION

Newly installed groundwater monitoring wells will be developed to restore natural hydraulic conductivity of the formation, remove sediments from well casing and filter pack, stabilize the filter pack and aquifer material, and promote turbidity-free groundwater samples.

Wells may be developed by bailing, mechanical pumping, air lift pumping, surging, swabbing, or an effective combination of methods. Wells will be developed until the well is free of sand, silt, and turbidity.

In some cases where low permeability formations are involved or the drilling mud used fails to respond to cleanup, initial development pumping may immediately dewater the well casing and thereby inhibit development. When this occurs, clean, potable grade water may be introduced into the well, followed by surging of the introduced waters with a surge block. This operation will be followed by pumping. The procedure may be repeated as required to establish full development.

METHODOLOGY

Seal Stabilization: Cement and bentonite annular seals shall set and cure not less then 24 hours prior to well development.

Decontamination: All well development tools and equipment shall be thoroughly cleaned immediately before starting each well installation. When available, each component shall be cleaned with a high temperature, high pressure washer for a minimum of five minutes. When a washer is not available, components shall be cleaned with clean water, then rinsed with distilled water.

Development equipment shall not donate to, capture, mask, nor alter the chemical composition of the soils and groundwater.

Introduction of Water: Initial development of wells in low permeability formations may dewater the casing and filter pack. When this occurs, clean, potable water will be introduced into the well to enhance development.

Bailing: Development will begin by bailing to remove heavy sediments from the well casing. Care will be taken to not damage the well bottom cap during lowering of the bailer.

Surging: Care will be exercised when using a surge block to avoid damaging the well screen and casing. When surging wells screened in coarse (sand/gravelly) aquifers, the rate of surge block lifting shall be slow and constant. When surging wells screened in fine (silty) aquifers, more vigorous lifting may be required. Between surging episodes, wells will be bailed to remove accumulated sediments.

Pumping: Development pumping rates shall be less than the recharge rate of the well in order to avoid de-watering.

Discharged Water Containment and Disposal: All water and sediment generated by well development shall be collected in 55-gallon steel drums. Development water will be temporarily contained on site, pending sampling and laboratory analysis. All hazardous development water will be transported off site by a licensed transporter to a hazardous waste disposal or treatment facility. No hazardous development water will be released to the environment.

APPENDIX I

GROUNDWATER SAMPLING PROCEDURES

APPENDIX I

GROUNDWATER SAMPLING PROCEDURES

Groundwater samples will be obtained using either a bladder pump or a clear Teflon bailer. Prior to sampling, sampling equipment will be thoroughly decontaminated to prevent introduction of contaminants into the well and to avoid cross-contamination. Monitoring wells will be sampled after three to five wetted casing volumes of groundwater have been evacuated and after the TPE sampling team leader determines that water representative of the formation is being obtained. The well will be purged until conductivity has been stabilized (three consecutive conductivity reading within 15% of one another). If the well is emptied before four to ten well volumes are removed, the sample shall be taken when the water level in the well recovers to 80% of its initial water level or better.

TPE will also measure the thickness of any floating product in the monitoring wells using a probe or clear Teflon bailer. The floating product will be measured after well development but prior to the collection of groundwater samples. If floating product is present in the well, TPE will recommend to the client that product removal be commenced immediately and reported to the appropriate regulatory agency.

Unless specifically waived or changed by the local, prevailing regulatory agency, water samples shall be handled and preserved according to the latest EPA methods as described in the Federal Register (Volume 44, No.233, Page 69544, Table 11) for the type of analysis to be performed.

MEASUREMENTS

Purged Water Parameter: During purging, discharged water will be measured for the following parameters.

Parameter	Units of Measurment
PH	Units
Electrical conductivity	Umhos
Temperature	Degrees F or C
Depth to Water	Feet/Tenths
Volume of Water Discharged	Gallons

Documentation: All parameter measurements shall be documented in writing on TPE development logs.

APPENDIX J

QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

APPENDIX J

QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

The overall objectives of the field sampling program include generation of reliable data that will support development of a remedial action plan. Sample quality will be checked by the use of proper sampling, handling, and testing methods. **Additional sample quality control methods may include the use of background samples, equipment rinsate samples, and trip and field blanks.** Chain-of-custody forms, use of a qualified laboratory, acceptable detection limits, and proper sample preservation and holding times also provide assurance of accurate analytical data.

TPE will follow a QA/QC program in the field to ensure that all samples collected and field measurements taken are representative of actual field and environmental conditions and that data obtained are accurate and reproducible. These activities and laboratory QA/QC procedures are described below.

Field Samples: Additional samples taken in the field are used to evaluate both sampling and analytical methods. Three basic categories of QA/QC samples that may be collected are trip samples, field blanks, and duplicate samples.

Trip blanks are a check for cross-contamination during sample collection, shipment, and in the laboratory. Analytically confirmed organic-free water shall be used for organic parameters and deionized water for metal parameters. Blanks will be prepared by the laboratory supplying the sample containers. The blank shall be numbered, packaged, and sealed in the same manner as the other samples. One trip blank will be used for each sample set of less than 20 samples. At least 5% blanks will be used for sets greater than 20 samples. The trip blank is a water sample that remains with the collected samples during transportation and is analyzed along with the field samples to check for residual contamination. The trip blank is not to be opened by either the sample collectors or the handlers.

The field blank is a water sample that is taken into the field and is opened and exposed at the sampling point to detect contamination from air exposure. The water sample is poured into appropriate containers to simulate actual sampling conditions. Contamination for air exposure can vary considerably from site to site.

The laboratory will not be informed about the presence of field and trip blanks and a false identifying number will be put on the label. Full documentation of these collection and decoy procedure will be made in the site logbook.

Duplicate samples are identical sample pairs (collected in the same place and at the same time), placed in identical containers. For soils, adjacent sample liners will be analyzed. For the purpose of data reporting, one is arbitrarily designated the sample, and the other is designated as a duplicate sample. Both sets of results are reported to give an indication of the precision of sampling and analytical methods.

The laboratory's precision will be assessed without the laboratory's knowledge by labeling one of the duplicates with false identifying information. Data quality will be evaluated on the basis of the duplicate results.

Laboratory QA/QC: Execution of a strict QA/QC program is an essential ingredient in high-quality analytical results. By using accredited laboratory techniques and analytical procedures, estimates of the experimental values can be very close to the actual value of the environmental sample. The experimental value is monitored for its precision and accuracy by preforming QC test designed to measure the amount of random and systematic errors and to signal when correction of these errors is needed.

The QA/QC program describes methods for performing QC tests. These methods involve analyzing method blanks, calibration standards, check standards (both independent and EPA-certified standards), duplicates, replicates, and sample spikes. Internal QC also requires adherence to written methods, procedural documentation, and record keeping, and the observance of good laboratory practices.

APPENDIX K

SITE SAFETY PLAN

TANK PROTECT ENGINEERING OF NORTHERN CALIFORNIA, INC.
SITE SAFETY PLAN

Site 19592 Center Street Project Number 121

Original Site Safety Plan: Yes (X) No () Revision Number N/A

Plan Prepared by John Mrakovich Date 9/17/90

Plan Approved by Marc Zomorodi Date 9/17/90

Please respond to each item as completely as possible. Where an items is not applicable, please mark "N/A".

1. **KEY PERSONNEL AND RESPONSIBILITIES**

(Include name, telephone number and health and safety responsibilities; i.e., project manager - Joe Smith - responsible for supervision of all site activities.)

Project Manager John Mrakovich, (415) 429-8088

Site Safety Manager John Mrakovich - Supervise Site Activities

Alternate Site Safety Manager

Field Team Members

Agency Reps: [Please specify by one of the following symbols: Federal: (F), State: (S), Local: (L), Contractor(s): (C)

(L) ALAMEDA COUNTY DEPARTMENT OF ENVIRONMENTAL HEALTH, ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT-WATER RESOURCES MANAGEMENT ZONE 7

TPE SITE SAFETY PLAN

2. JOB HAZARD ANALYSIS

2.1 OVERALL HAZARD EVALUATION

Hazard Level: High ( ) Moderate ( ) Low (X) Unknown ( )

Hazard Type: Liquid ( ) Solid ( ) Sludge ( ) Vapor/Gas (X)

Known or suspected hazardous materials present on site
Benzene, toluene, ethylbenzene, xylene (BTEX)

Characteristics of hazardous materials included above (complete for each chemical presents):

MATERIAL #1 Corrosive ( ) Ignitable (X) Toxic (X)
Reactive ( ) Volatile (X) Radioactive ( )
BTEX
Biological Agent ( )
Exposure Routes: Inhalation (X) Ingestion ( ) Contact (X)

MATERIAL #2 Corrosive ( ) Ignitable ( ) Toxic ( )
Reactive ( ) Volatile ( ) Radioactive ( )
Biological Agent ( )
Exposure Routes: Inhalation ( ) Ingestion ( ) Contact ( )

MATERIAL #3 Corrosive ( ) Ignitable ( ) Toxic ( )
Reactive ( ) Volatile ( ) Radioactive ( )
Biological Agent ( )
Exposure Routes: Inhalation ( ) Ingestion ( ) Contact ( )

MATERIAL #4 Corrosive ( ) Ignitable ( ) Toxic ( )
Reactive ( ) Volatile ( ) Radioactive ( )
Biological Agent ( )
Exposure Routes: Inhalation ( ) Ingestion ( ) Contact ( )

2.2 JOB-SPECIFIC HAZARDS

For each labor category specify the possible hazards based on information available (i.e., Task-driller, Hazards-trauma from drill rig accidents, etc.) For each hazard, indicate steps to be taken to minimize the hazard.

Driller/Helper - Trauma from drill rig accidents - wear hard hat, gloves, steel-toed boots.

The following additional hazards are expected on site (i.e., snake infested area, extreme heat, etc.):

Temporary open bore holes

Measures to minimize the effects of the additional hazards are:

Cone unattended bore holes

3. MONITORING PLAN

3.1 (a) Air Monitoring Plan

Action levels for implementation of air monitoring. Action levels should be based on published data available on contaminants of concern. Action levels should be set by persons experienced in industrial hygiene.

Level (i.e.,.5ppm)	Action Taken (i.e., commence perimeter monitoring)
.2 ppm	commence perimeter monitoring

(b) Air Monitoring Equipment

Outline the specific equipment to be used, calibration method, frequency of monitoring, locations to be monitored, and analysis of samples (if applicable).

Gastech Model 1314, hexane calibration. Monitor at bore hole during each sampling event if vapors detected.

If air monitoring is not to be implemented for this site, explain why:

3.2 Personnel Monitoring
(Include hierarchy of responsibilities decision making on the site)

Site safety manager to make decision.

3.3 Sampling Monitoring

(a) Techniques used for sampling Sample air at bore hole with Gastech Model 1314

(b) Equipments used for sampling Gastech Model 1314

(c) Maintenance and calibration of equipments

Calibrate to hexane prior to operation

4. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Equipment used by employees for the site tasks and operations being conducted. Be Specific (i.e., hard hat, impact resistance goggles, other protective glove, etc.).

Hard hat, protective gloves (when necessary).

5. SITE CONTROL AND SECURITY MEASURES

The following general work zone security guidelines should be implemented:

- Work zone shall be barricaded and caution tape used.
- Excavations shall be closed when drilling and sampling activities are not actually taking place.
- No excavations shall be left unattended. Visitors will not enter the work zone unless they have attended a project safety briefing.

6. DECONTAMINATION PROCEDURE

List the procedures and specific steps to be taken to decontaminate equipment and PPE.

Wash equipment with trisodium phosphate solution and rinse with clean water.

7. TRAINING REQUIREMENTS

Prior to mobilization at the job site, employees will attend a safety briefing. The briefing will include the nature of the wastes and the site, donning personal protection equipment, decontamination procedures and emergency procedures.

8. MEDICAL SURVEILLANCE REQUIREMENTS

If any task requires a very high personnel protection level, personnel shall provide assurances that they have received a physical examination and they are fit to do the task. Also personnel will be instructed to look for any symptom of heat stress, heat stroke, heat exhaustion or any other unusual symptom. if there is any report of that kind it will be immediately followed through, and appropriate action will be taken.

9. STANDARD OPERATION PROCEDURES

Tank Protect Engineering of Northern California Inc. is responsible for the safety of all Tank Protect Engineering of Northern California Inc. employees on site. Each contractor shall provide all the equipment necessary to meet safe operation practices and procedures for their personnel on site and be responsible for the safety of their workers.

A " Three Warning " system is utilized to enforce compliance with Health and Safety procedures practices which will be implemented at the site for worker safety:

* Eating, drinking, chewing gum or tobacco, and smoking will be allowed only in designated areas.

* Wash facilities will be utilized by workers in the work areas before eating, drinking, or use of the toiled facilities.

* Containers will be labeled identifying them as waste, debris or contaminated clothing.

* All Excavation/drilling work will comply with regulatory agencies requirement.

* All site personnel will be required to wear hard hats and advised to take adequate measures for self protection.

* Any other action which is determined to be unsafe by the site safety officer.

10. CONFINED SPACE ENTRY PROCEDURES

No one is allowed to enter any confined space operation without proper safety measures. Specifically in case of an excavated Tank Pit no one should enter at no time.

11. EMERGENCY RESPONSE PLAN

Fire extinguisher(s) will be on site prior to excavation. Relevant phone numbers:

Person	Title	Phone No.
John Mrakovich	Project Manager	(415) 429-8088
	Fire	911 or
	Police	911 or
	Ambulance	911 or
	Poison Control Center	(800)523-2222
	Site Phone	
	Nearest off-site no.	
	Medical Advisor	
Anthony Pettiti	Client Contact	(415) 538-1288

TPE SITE SAFETY PLAN

U.S EPA - ERT		(201) 321-6660
Chemtrec		(800) 424-9300
Centers for Disease Control	Day	(404) 329-3311
	night	(404) 329-2888
National Response Center		(800) 424-8802
Superfund/RCRA Hotline		(800) 424-8802
TSCA Hotline		(800) 424-9065
National Pesticide Information Services		(800) 845-7633
Bureau of Alcohol, Tobacco, and Firearms		(800) 424-9555

HEALTH AND SAFETY COMPLIANCE STATEMENT

I, _____, have received and read a copy of the project Health and Safety Plan.

I understand that I am required to have read the aforementioned document and have received proper training under the occupational Safety and Health Act [illegible] Part 1910.120) prior to conducting site activities at the site.

_____ _____

Signature Date

NEAREST HOSPITAL: EDEN HOSPITAL
20103 LAKE CHABOT RD.
CASTRO VALLEY , CA 94546

DIRECTIONS FROM SITE:

GO SOUTH ON CENTER STREET TO CASTRO VALLEY BOULEVARD, TURN RIGHT (WEST) ONTO CASTRO VALLEY BOULEVARD AND PROCEED TO LAKE CHABOT ROAD, TURN RIGHT (NORTH) ONTO LAKE CHABOT ROAD AND PROCEED ABOUT 3 BLOCKS TO EDEN HOSPITAL ON LEFT (WEST) SIDE OF ROAD.

APPENDIX L

STATEMENT OF QUALIFICATIONS

JOHN V. MRAKOVICH

REGISTERED GEOLOGIST

CAREER SUMMARY

Over 15 years of diversified experience as a geologist, engineering geologist, and hydrogeologist. Extensive experience in coordinating various disciplines for project completion. Strong organizational and technical skills. Effective in oral and written communications.

PROFESSIONAL EXPERIENCE

SUPERVISORY OR PROJECT MANAGEMENT

- Supervised and coordinated drilling operations such as well drilling, sample taking, casing point selection, and borehole electric logging.
- Supervised, coordinated, and reviewed activities of hydrologists, hydrogeologists, field geologists, groundwater modelers, soil scientists, and consultants relative to soil and groundwater restoration.
- Developed budgets for groundwater and soil investigations.
- Acted as Chief Geologist, maintaining continuity in operations and on-going projects.
- Evaluated personnel and interviewed and recommended hiring of professional support staff.

INVESTIGATION AND EVALUATION

- Designed well construction and screen placements for groundwater extraction, recharge, and monitor wells.
- Determined site-wide hydrogeologic settings based on geophysical and lithological data.
- Performed characterization analyses of reservoirs using porosity, permeability, fracture determinations, reservoir geology, fluid flow, and pressure data.
- Developed hydrogeologic input for analytical and numerical groundwater flow and chemical transport models.
- Reviewed and monitored quality of lithologic and geophysical data.

- Designed soil and groundwater sampling and monitoring plans to determine the extent of fuel contamination from numerous leaky underground fuel tanks.

- Supervised pump tests and determined aquifer parameters.

- Selected lithologic samples for split-spoon and Shelby tube samplers; identified samples according to the Unified Soil Classification System; analyzed rock samples for porosity, permeability, and water saturation; directed logging operations; monitored and coordinated drilling with geologic requirements.

- Advised drilling personnel and engineers of expected rock and soil characteristics on site.

- Assisted in design of seismic surveys and performed seismic interpretations.

- Developed reports and recommendations regarding systems to extract, and recharge chemical plumes in groundwater (TCE. NDMA. EDC. chloroform, freon).

- Monitored and evaluated horizontal and vertical groundwater flow.

- Evaluated hydraulic zones of capture and movement of chemical plumes.

PROPOSAL AND REPORT PREPARATION

- Wrote proposals responding to RFPs and final reports for industrial site assessments.

- Wrote hydrogeologic section of RCRA, Part B, Subpart X, proposal for EPA and state regulators.

- Wrote text material, i.e., Preliminary Safety Analysis Reports for Nuclear Regulatory Commission, geologic reports, and professional publications, and prepared diagrams and figures.

- Edited proposals and reports by others for clarity and content.

- Contributed to hydrogeologic sections of scoping and RI/FS reports.

OTHER WORK EXPERIENCE AND SKILLS

- Made geologic presentations to the Federal Energy Regulatory Commission.
- Performed economic analyses and bid strategies for oil and gas exploration.
- Published geological papers in professional journals.

EDUCATION

B.S., Geology, Kent State University, Kent, OH 1967
M.S., Geology, Kent State University, Kent, OH 1969
Ph.D., Geology, Michigan State University, East Landing, MI 1974

WORK HISTORY

Tank Protect Engineering, Union City, CA March 1990-Present
Project Manager

EMCON Associates, San Jose, CA 1989-1990
Project Manager

Aerojet Gencorp (Superfund Site), Sacramento, CA 1987-1989
Hydrogeologist

Meridian Oil, Inc., Houston, TX 1982-1987
Exploration Geologist

MHP Exploration Company, Houston, TX 1981-1982
President

Home Petroleum Corporation, Houston, TX 1979-1981
Exploration Geologist

Natural Gas Pipeline Co. of America, Houston, TX 1976-1979
Reservoir Geologist

Bechtel Incorporated, Houston, TX 1974-1976
Engineering Geologist

Gulf Oil Corporation, New Orleans, LA 1969-1971
Development/Exploration Geologist

PROFESSIONAL MEMBERSHIPS

Association of Groundwater Scientists and Engineers (NWWA)

Association of Professional Geological Scientists

American Association of Petroleum Geologists

REGISTRATIONS

California Registered Geologist No. 4665

SHORT COURSES

Computer Modeling of Groundwater Flow and Chemical Transport, National Water Well Association, 5-Day Course

Fundamentals of Groundwater, National Water Well Association, 3-Day Course

Sampling Methods and Analyses for Chemicals in Groundwater, United States Geological Survey, Division of Groundwater, 5-Day Course

OSHA Training, Radian Corporation, 6-Day Course

REFERENCES

J. C. Isham, Project Manager
EMCON Associates
320 Harris, Suite A
Sacramento, CA 95838
916/641-6664

Donald E. Vanderkar, Manager
Aerojet Gencorp
P.O. Box 15699C, Dept. 1520
Sacramento, CA 95852
916/355-4000

Sherman MacKay, Hydrogeologist
McBride-Ratcliff & Associates, Inc.
7220 Langtry
Houston, TX 77040

Tom Williamson, Senior Geophysicist
Meridian Oil, Inc.
Houston, TX
713/878-3780