-WEGE-
WESTERN GEO-ENGINEERS
CALIF. CONTRACTOR # 513857 A CORPORATION
REGISTERED GEOLOGISTS

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December 18, 1989
(revised January 12, 1990)
(revised January 29, 1990)

Mr. Ted Simas
XTRA OIL COMPANY
2307 Pacific Ave.
Alameda, Ca. 94501

90 FEB -5 AM 10

RE: Site assessment Work Plan for XTRA Oil Company, Shell Service Station at 3495 Castro Valley Blvd., Castro Valley, California.

Dear Mr. Simas:

Thank you for giving Western Geo-Engineers (WEGE) the opportunity to provide the consulting service for the assessment of the above mentioned site. As to our proposal and the ensuing phone conversations of December 1 and 8 respectively, and the FAXed correspondence from Mr. Scott Seery on January 4, 1990, the following outline of events should adequately assess your site.

The following is a revision of the January 12. 1990 revision: Item I. "Soil Probe Survey" will not be performed at this time. This survey maybe useful for delineating soil contamination prior to station upgrade, which will occur at a later date.

I. Installation of three ground water monitoring wells.

A. Location of ground water monitoring wells.
   1. Based upon local topography.
   2. The BP station east of the site has no monitor wells; never experienced a loss.

B. "Over excavation"
   1. During the installation of the three onsite monitor wells, the drilling rig will perform exploratory borings to obtain soil samples that will aid in the delineation of the contamination associated with the waste oil excavation.

   2. Outline area that needs to be "over excavated" around the existing waste oil excavation. Over excavate and prepare this area for tank closure.

C. Completion of site assessment report.

II. Tank pull, over excavation, and ground water monitoring.

III. Ground water treatment, if found necessary.

IV. Update status reports, etc., until site closure.

The above outline will be used for the assessment and if needed remediation of your site. The assessment will be conducted in phases. This will allow control of the expenditures and adjustments to the next phase of the assessment, if found necessary and also enable you to secure loans and/or process claims for any remediation of this site in accordance to SB-299. After completion of a phase, a report will be submitted for your review and upon your approval the report will then be submitted to the appropriate regulatory agencies along with the recommendations as to the scope and procedures of the next phase.

WORK PLAN

I. INTRODUCTION

A. SCOPE OF WORK

The proposed scope of work consists of developing a satisfactory work plan, to permit, drill, sample, install and develop three ground water monitor wells. Soil and ground water samples will be analyzed for petroleum hydrocarbons. The following discusses the involved tasks in greater detail.

B. SITE LOCATION

The Xtra Oil Company property is operated as a Shell Station and is located at 3495 Castro Valley Boulevard and Redwood Road, Castro Valley, Alameda County, California. The site is approximately 175 feet above mean sea level in projected section 5: T3S; R2W; MBD&M, see figures 1 and 2.

C. SITE BACKGROUND

A 550 gallon waste oil tank was removed from this property in 1988. Soil samples were not attained at that time, but a soil sample was later collected at the base of the excavation by Aqua Science Engineers Inc. (ASE) and submitted to Trace Laboratories which analyzed the soil sample using EPA methods for Volatile Organics, Total Oil and Grease, and Extractable Fuels. This analysis detected 980 mg/Kg as Diesel and heavier, 426.5 mg/Kg as Oil and Grease, Toluene - 12 ug/Kg, Ethylbenzene - 18 ug/Kg, and Xylene(s) - 266 ug/Kg.

ASE submitted a revised plan of correction for the site assessment on August 14, 1989, to Mr. Scott Seery of Alameda County Health.

Western Geo-Engineers (WEGE) visited the site on September 28, 1989, with Mr. Ted Simas. At that time it was decided that WEGE would perform the assessment of the site.

A proposed work plan was submitted to Mr. Simas by WEGE on December 1, 1989, and revised on December 18, 1989. Mr. Simas reviewed, agreed to, and submitted this plan to Mr. Scott Seery. Upon review of the work plan, Mr. Seery FAXed Appendix A of the SFRWQCB guidelines for addressing the assessment of UST leak sites, and a revison was prepared on January 12, 1990. After review to the revision, Mr. Ted Simas elected to forgo the "Soil Probe Survey" and gave WEGE the go ahead to submit a work plan for the placement of three on site ground water monitoring wells, which is this revision.

D. SITE HISTORY

1. & 2. The site was purchased from ARCO Petroleum in 1983, who operated it as a retail fuel station. Since the purchase, the site has continued to operate as a retail fuel station under the Shell Oil Company sign.

3. a. The underground storage tanks and product lines are constructed of single-walled carbon steel. There are a total of four underground storage tanks presently at this site; 1-10,000 gallon diesel, 1-10,000 gallon leaded gasoline, and 2-10,000 gallon unleaded gasoline, see figure 3.

b. & c. As mentioned previously in SITE BACKGROUND, a 550 gallon waste oil tank was removed by H & H Ship Service Co. on November 11, 1988. This tank was excavated in November of 1988. The tank was reported as having corrosion and probable leaks associated with the corrosion. The excavated soil has been left on the site and covered with a polyethylene liner. The excavation has been partially backfilled with clean sand and is also covered with a polyethylene liner, see Appendix B-August 14, 1989 ASE report.

d. An Underground Storage Tank Unauthorized Release (leak) Contamination Site Report was filed July 24, 1989, to Alameda County Health.

e. Tank testing occured on August 10 and 12, 1988 and on August 30, 1989. All four tanks passed and showed to be tight. Inventory reconciliation for the pass three years (1987, 1988, and 1989) indicates no loss of inventory. Daily tank measurements were used for the iventory reconciliation.

4. There has not been any documented spills, leaks, or accidents at this site other that the removal of the 550 gallon waste oil tank that was mentioned earlier.

5. As far as we know the only subsurface investigations performed at this site was that performed by ASE. East of the site (across Redwood Road) a BP service station is located. Phone

communications with BP indicated there are no monitor wells on their site, since they have never experienced an unauthorized release.

II. SITE DESCRIPTION

A., B., C. The site is located in a commercial/residential area of Castro Valley. The present owners operate the site as a retail Shell Service Station. The station retails fuel only and does not have garage facilities. Currently, the station has four 10,000 gallon underground storage tanks in service. A 550 gallon waste oil tank was removed in 1988. This tank was never used by the present owner, who purchased the station in 1983. The station is scheduled to undergo construction this spring. The old underground storage tanks (UST's) and product dispensing system is to be removed and upgraded with new double contained fiberglas tanks and piping, see figures 1, 2, and 3.

The site is at an elevation of approximately 175 feet above mean sea level and is situated within a narrow northeast trending valley (approximately 2 miles wide and 3 1/2 miles long). This valley is within the Coastal Valley geomorphic providence. The site is situated almost at the center of this valley, which slopes to the south-southwest. Approximately 1 mile to the south is the west flowing San Lorenzo Creek. An intermittent stream is located approximately 500 feet to the east of the site and flows south into San Lorenzo Creek, see figure 2.

Ground water occurrence is most likely shallow (above the 20' depth) and should flow to the south, based upon the local topography.

D. Existing excavation and sample results.

As mentioned earlier a 550 gallon waste oil tank was excavated and removed in 1988. On May 5, 1989 AES obtained a soil sample at the base of the waste oil tank excavation. This sample was obtained from approximately 11 feet below the surface, no ground water was noted. The sample was taken from a backhoe bucket by driving a clean 2" X 4" brass sleeve into the excavated soil, caping the sleeve with teflon tape, then plastic end caps and placed on ice fro chain of custody delivery to Trace Laboratories of Navato, California. The sample was analyzed for Total Petroleum Hydrocarbons (TPH)- EPA methods 3550/8015, Total Oil and Grease - EPA method 9071, and Volatile Organics - EPA method 8240 GC/MS. The following are the detectable constituents only, all other constituents were below the detection limits:

Method Used	Constituents	Detected
3550/8015	Diesel	980 mg/Kg
9071	Oil & Grease	426.5 mg/Kg

8240 GC/MS	Toluene	12 ug/Kg
	Ethylbenzene	18 ug/Kg
	Xylene(s)	266 ug/Kg

In June of 1989, Mr. Ted Simas, per the instructions of AES, contracted an electrician who removed and relocated any conduit at or near the waste oil tank. This work preceeded the scheduled overexcavation of the waste oil tank area.

During the site visit conducted by WEGE on September 28, 1989, it was noted that the native soil associated with the waste oil tank excavtion is a medium grey silty clay. It was also noted that this clay was moist at approximately the 8 to 9 foot depth, no petroleum odor was noticed from the excavation.

The soil produced from the excavation of the waste oil tank is being stored under polyethylene liner at the present and a polyethylene liner is covering the excavation, the excavation and excavated soil pile have barricades with caution tape encompassing them as well as 24 hour watch by the station attendants.

III. PLAN FOR DETERMINING EXTENT OF ON SITE SOIL AND GROUND WATER CONTAMINATION.

A. The determination of extent of ground water and soil contamination will be a phase approach.

Phase I, will utilize on site exploratory borings. All drilling, destroying, etc., of the exploratory borings will be performed under Western Geo-Engineer's C-57 license (513857). Selected borings will be converted into ground water monitor wells.

PHASE I

INSTALLATION AND SAMPLING OF ONSITE GROUND WATER MONITORING WELLS.

The wells will be drilled using Hogate Drilling Co.'s Mobile B-40 Drilling Rig under the direct supervision of the WEGE project geologist. Ground water should be encountered between 15 and 20 feet below the surface and should flow to the south-southeast.

WELL PLACEMENT

Based upon the local topography, three wells will be placed on the site to determine the ground water gradient and flow direction, and also to obtain representative soil and ground water samples.

WELL BORING AND CONSTRUCTION

The lateral and vertical extent of the contamination associated with the waste oil tank excavation will be assessed using Hogate Drilling Co's., truck mounted MOBILE DRILL B-40. The drilling will be performed under WEGE's C-57 licences # 513857. The

drilling will utilize 10" hollow stem augers; sample intervals will be every 5 feet using a California split spoon sampler. Sampling will commence at the 5 foot depth. All borings that are not to be utilized as ground water monitor wells will be backfilled with neat cement; trimie method.

Well construction will occur immediately after completion of a boring. The wells placed in the borings produced by Hogates Drilling rig will be constructed using 4" sch 40 F480 PVC casing. The PVC casing will be machined slotted, 0.02" slots, from the total depth of the boring (approximately 20' depth) to the 10 foot depth, (ground water may rise to the 12 foot depth). After placement of the PVC casing, a sand envelope consisting of #3 Monterey sand (or equivalent) will be placed from total depth to the 8 foot depth. Neat cement, with less than 5% bentonite, then will be used from the 8 foot depth to the 2 foot depth as a sanitary seal. A 12" lockable traffic box within a 3 foot reinforced concrete pad will be placed over the casing for easy access and security of the wellhead, see Table 1 and Figure 4.

WELL DEVELOPMENT

After construction of the wells, they will be developed by swabbing and bailing. A WEGE designed swabbing tool is lowered into the well and is rapidly raised and lowered through the screened interval to swab the well. Once this is completed, the well is purged by either a submersible or centrifugal pump until the ground water is low in suspended solids and the temperature, Ph, and conductivity are stable. The well is then allowed to stabilize for 48 hours prior to the intial sampling.

WELL SAMPLING

Prior to obtaining water samples from the wells, the depth to ground water are measured. A resistivity probe is lowered into the well and the depth of ground water is measured to the nearest 0.01 of a foot. A special floating product bailer is then lowered into the well to determine if any floating product exists. If floating product is found, it is measured to the nearest 0.01 of a foot and described. If there is floating product in the well, a water sample will not be collected. If the well is free of floating product, the well is purged of at least three (3) well volumes and until the pH, conductivity and temperature of the water stabilizes indicating that the water sampled is representative of the surronding formation ground water. The purging will utilize either a submersible pump, centrifugal pump, or bailer. A water sample is then taken by lowering a sterile PVC bailer into the well. The collected ground water sample is transferred into a liter boston round and four 40cc VOA vials. The bailers are fitted with a special low volume valve which reduces volatilization of any compounds in the ground water when it is transferred into the containers. The sample bottles are capped and check to guarantee there is no airspace, security sealed, labeled, logged on a chain of custody from, placed on ice

within a cooler and chain of custody hand delivered to a certified laboratory.

SAMPLES

All samples will be obtained by a qualified geologist working directly under the supervision of California Registered Geologist #3037. The samples will be collected, preserved, labeled and chain of custody hand delivered to ChemTech Analytical Laboratories, 3017 Kilgore Road #110, Rancho Cordova, CA 95742 (916-635-3962). ChemTech is a State of California certified lab (#359). All soil samples obtained from borings will be analyzed using the following EPA and DOHS methods: 5030 for Extraction, 8015-TPH, 9071- Oil and Grease, 8020-BTEX, DOHS-TEL and EDB-DOHS-AB 1803. If initial sampling indicates that TEL and EDB does not exist at this site these analyses will not be carried on to the next samples. The initial waste oil excavation sample obtained by AES indicated that there are no solvents or chlorinated compounds associated with this site, therefore the 8240/601 analysis will not be ran.

Ground water samples collected from the monitor wells will be analyzed using EPA and DOHS methods: 8015-TPH, 9071-Oil and Grease, 602-BTEX, DOHS-TEL and EDB-DOHS AB 1803.

All samples will be collected, labeled, preserved and chain of custody delivered using EPA and LUST protocol. Soil samples will be screened, using a PID analyzer calibrated to a 25 ppm gasoline vapor standard, prior to sealing the sample. Soil samples will be classified using the ASTM D 2488-84 (the Unified Soil Classification System).

STORAGE OF DRILLING CUTTINGS, RINSATE AND ANY PURGED WATER FROM BORINGS/MONITOR WELLS.

All fluids produced from the cleaning of the drilling and sampling equipment and/or the purging and sampling of the borings/monitor wells will be contained on site in 17E Hazardous Materials drums and labeled as gasoline contaminated material until laboratory analysis indicates how the stored fluids shall be handled.

All cuttings produced from the drilling and sampling activities that are not to be used for chemical and physical analysis will be placed on and covered with polyethylene liner(s) with the previously excavated soil from the waste oil tank area, and will be treated and/or disposed of after chemical analysis indicates how this soil is to be handled.

PHASE II.

OVER EXCAVATION OF WASTE OIL EXCAVATION.

Based upon the results obtained from Phase I, the soil sample results obtained from the boring(s) near the waste oil excavation,

a plan to overexcavate the waste oil tank area will be submitted.

Any needed overexcavation of the waste oil tank area will occur during the up coming tank pull/station upgrade that is scheduled for the spring of 1990.

HEALTH AND SAFETY

The borings will be continuously monitored with a LEL/02 meter and the site periodically monitored with a hand held PID meter. All personnel involved with this site have a current OSHA-SARA Certificate of Training, see Appendix C-Health and Safety Plan. The site, until found otherwise, is being treated as class D.

If you have any questions please call (916) 662-4541.

Sincerely yours,

George L. Converse
Project Geologist

Jack E. Napper
State of California
Reg. Geologist # 3037

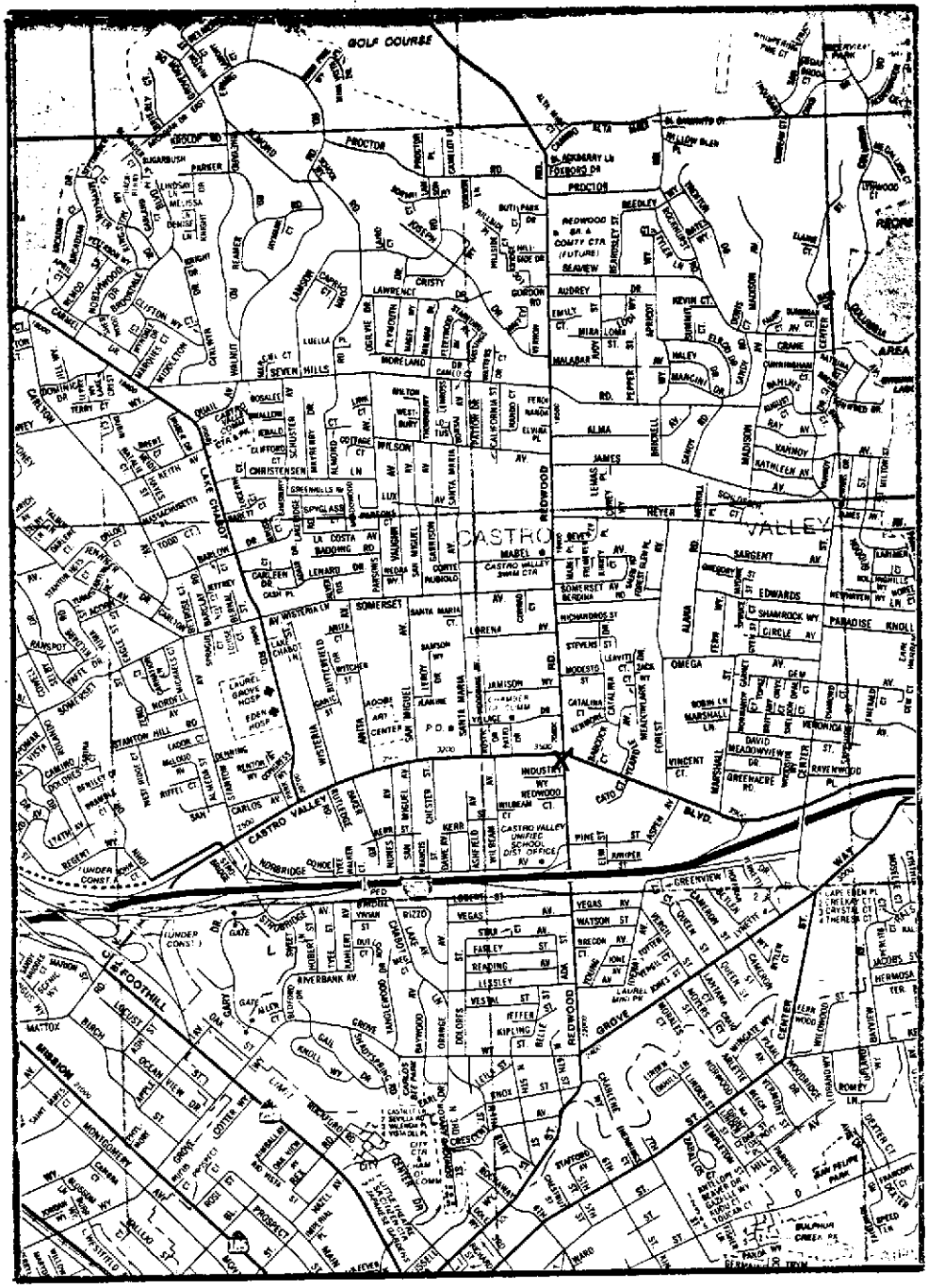


FIGURE 1

Location (AAA Map)

- WEGE -

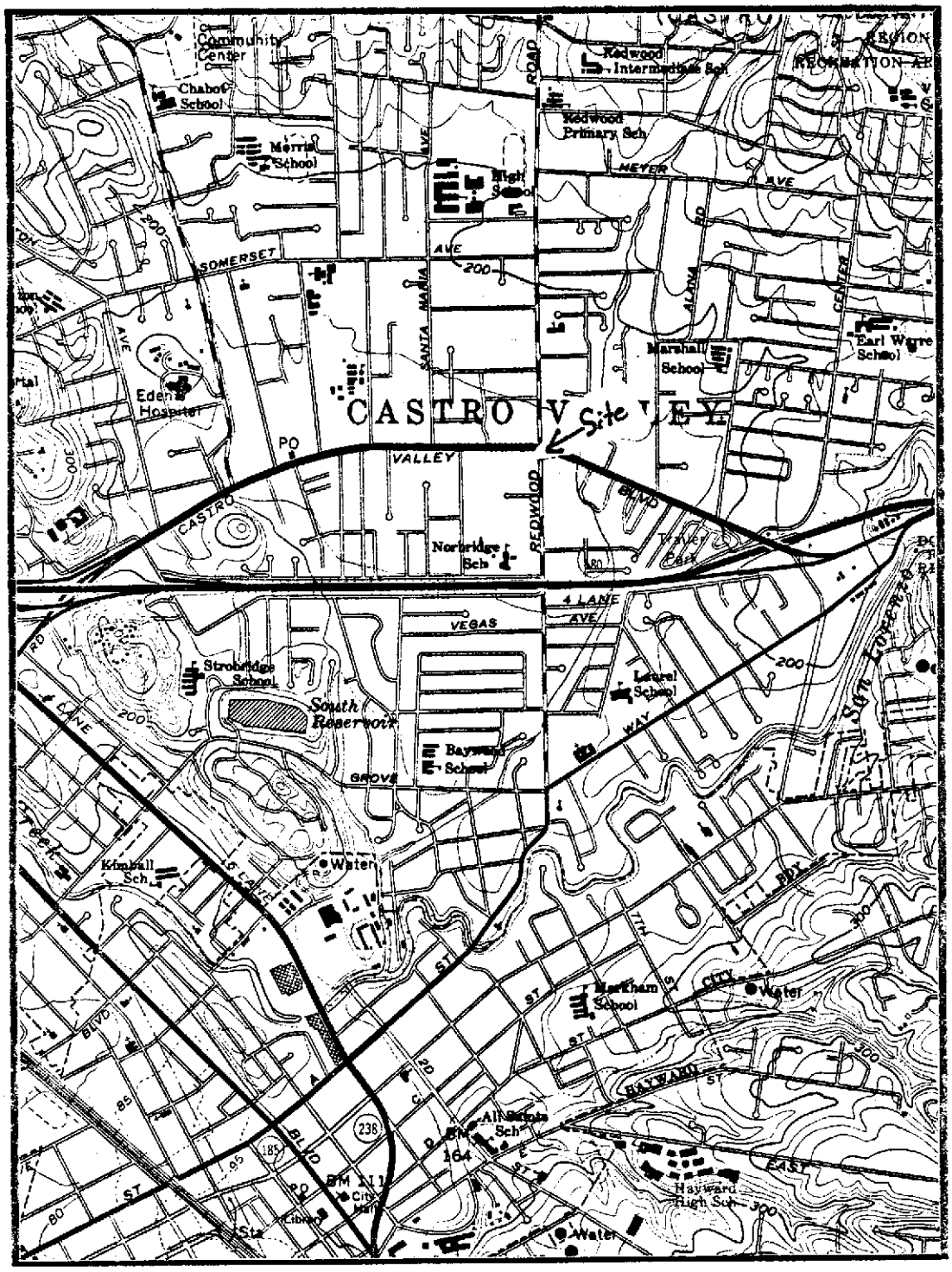
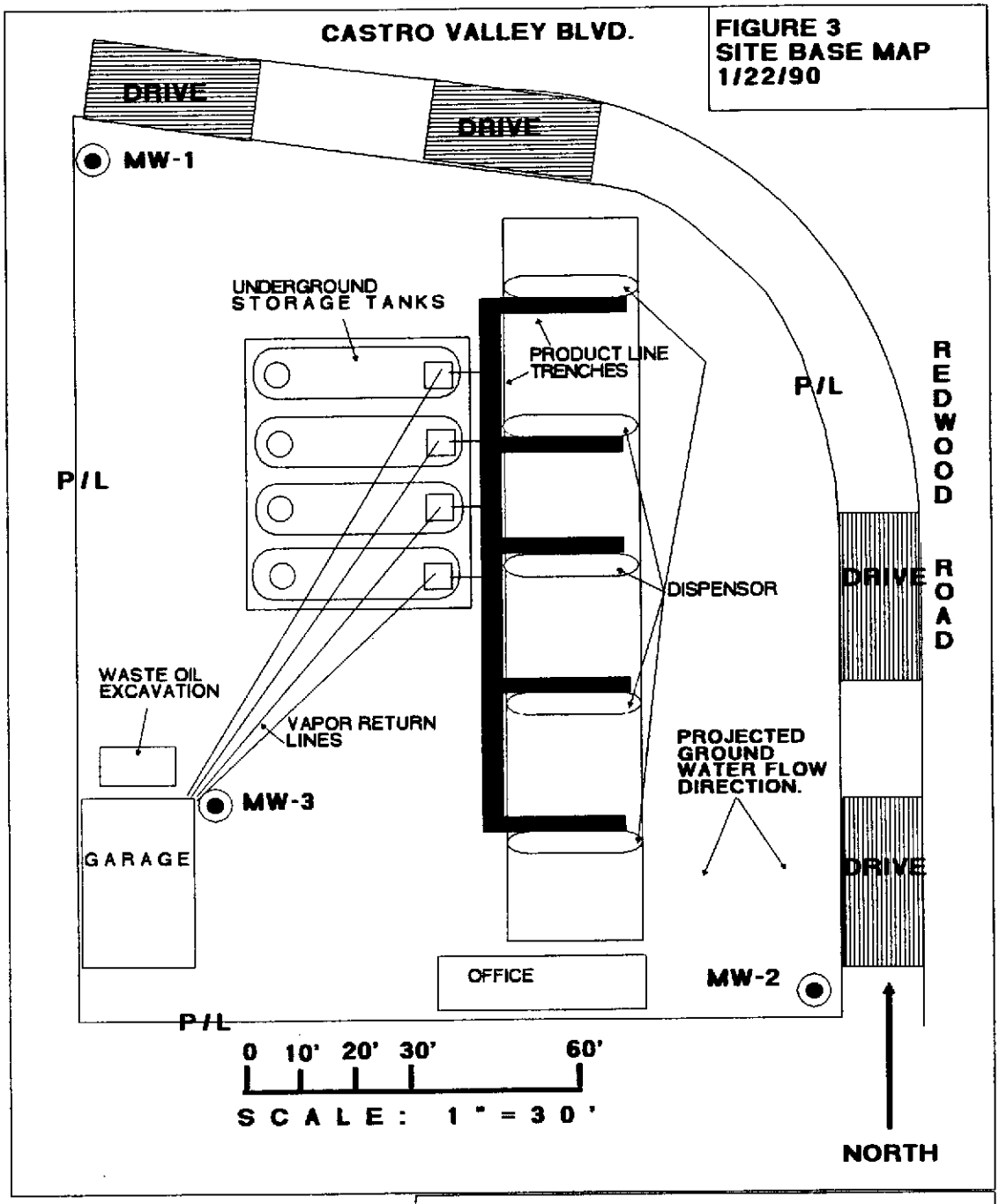


FIGURE 2. LOCATION (USGS TOPO SHEET)



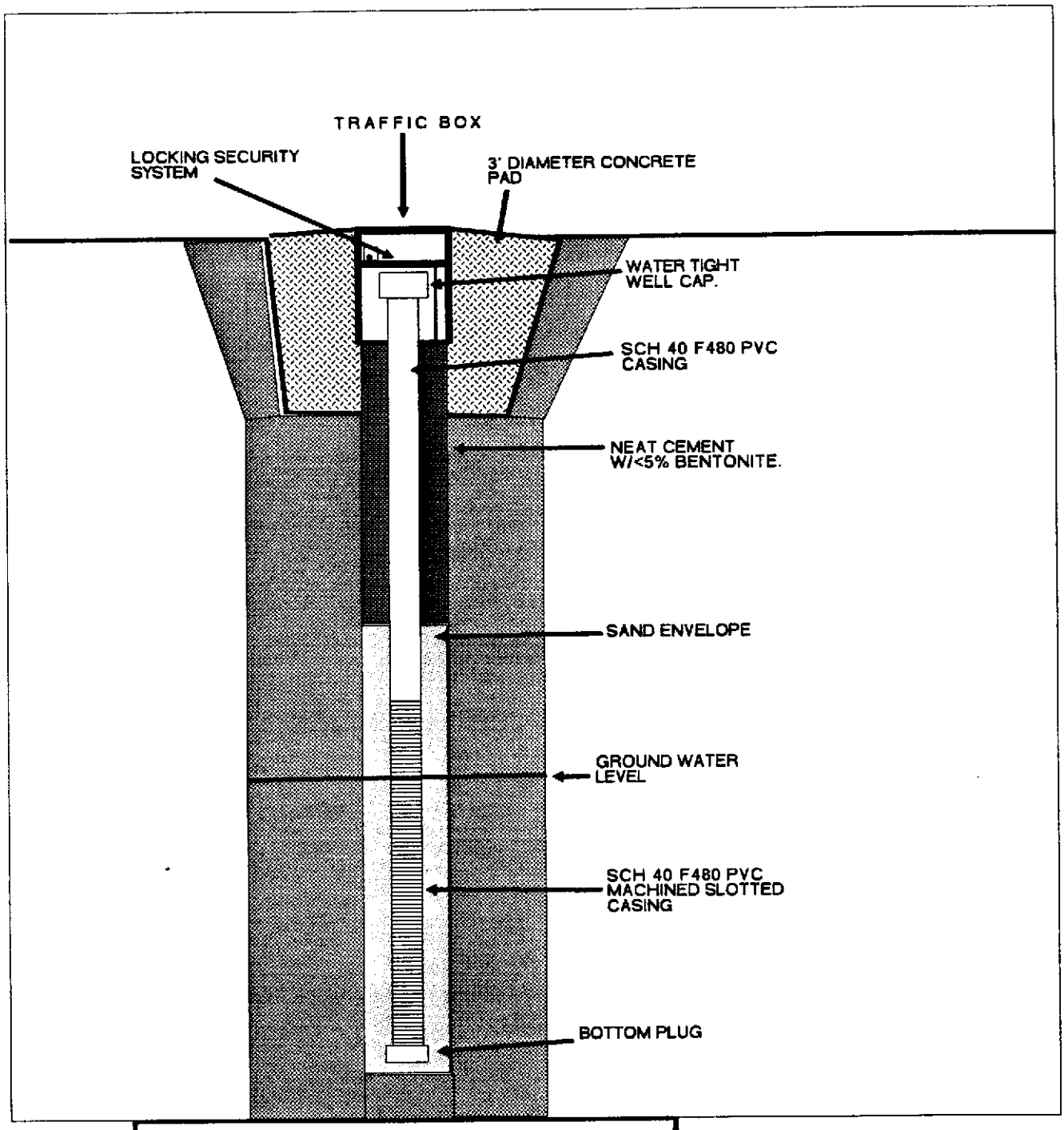
PROPOSED MONITOR WELL LOCATIONS

P/L PROPERTY LINE

XTRA OIL COMPANY
SHELL SERVICE STATION
3496 CASTRO VALLEY BLVD.
CASTRO VALLEY, CALIFORNIA
PROJ. SEC. 5; T3S; R2W; MDB&M

BASE MAP TAKEN FROM "MONTGOMERY & DAVIS: PLOT PLAN 8-14-1959"

BY WESTERN GEO-ENGINEERS:
GEORGE L. CONVERSE 1-22-1990.



TYPICAL GROUND WATER MONITOR WELL DESIGN.

WESTERN GEO-ENGINEERS

FIGURE 4
GROUND WATER MONITORING WELL SCHEMATIC FOR XTRA OIL CO. CASTRO VALLEY SITE

JANUARY 29, 1990

TABLE 1 WELL CONSTRUCTION INFORMATION
Shell Station (KTRA OIL CO.)
3495 Castro Valley Blvd., Castro Valley, CALIFORNIA

GROUND WATER MONITORING WELL (MW-1, MW-2, AND MW-3)

ESTIMATED TOTAL DEPTH	20' (8 FEET BELOW TOP OF WATER)
BOREHOLE SIZE	10 INCHES IN DIAMETER
CASING MATERIAL	POLYVINYL CHLORIDE (PVC)
SCREENED INTERVAL	TOTAL DEPTH TO 10' BELOW THE SURFACE
SAND PACK	#3 MONTERREY SAND FROM TOTAL DEPTH TO 8' BELOW THE SURFACE
SCREEN SLOT SIZE	0.02"
CASING DIAMETER	4 INCHES

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 3495 Castro Valley Blvd., Castro Valley, California

CLIENT
Name Ted Simas
Address 2307 Pacific Ave Phone (415) 865-9503
City Alameda, CA Zip 94501

APPLICANT
Name Western Geo-Engineers
Address 1386 E. Beamer Street Phone (916) 662-4541
City Woodland, CA Zip 95695

TYPE OF PROJECT

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

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

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

DRILLER'S LICENSE NO. WEGE 513857 C-57
Drilling Contractor Hogate Drilling 401530 C-57

WELL PROJECTS
Drill Hole Diameter 10 in. Maximum
Casing Diameter 4 in. Depth 20 ft.
Surface Seal Depth ___ ft. Number 3

GEOTECHNICAL PROJECTS
Number of Borings 5 Maximum
Hole Diameter 6 in. Depth 20 ft.

ESTIMATED STARTING DATE 2/13/90
ESTIMATED COMPLETION DATE 2/14/90

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

APPLICANT'S SIGNATURE George Clement Date 2/1/90

FOR OFFICE USE

PERMIT NUMBER ___
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 ___ Date ___

121989

Aqua Science Engineers Inc.

August 14, 1989

Mr. Scott Seery
Hazardous Materials Specialist
Alameda County Health Care Division
80 Swan Way, Rm 200
Oakland, CA 94621

RE: REVISED PLAN OF CORRECTION FOR WASTE OIL TANK AT SHELL SERVICE STATION, 3496 CASTRO VALLEY BOULEVARD, CASTRO VALLEY, CA

Dear Mr. Seery:

On behalf of Mr. Ted Simas of Xtra Oil Company I am providing you with the a revised Plan of Correction for the former waste oil tank located at the above address in response to our agreement to follow the foremat of the Regional Water Quality Control Board, Workplan for Initial Subsurface Investigation - Appendix A.

I. Introduction:

A 550-gallon waste oil tank was removed from the above property in 1989. Soil samples were not taken at the time of removal and, subsequently, the owner was contacted by your office requiring that a Plan of Correction be submitted for the proposed work. The following is the proposed plan to address agency concerns.

The subject waste oil tank was removed on Novemvber 11, 1988 and disposed of under a hazardous waste manifest, Appendix A. The tank was empty of all contents at the time of removal. An unauthorized release report was recently submitted and a copy is contained in Appendix B in responce to the soil sample results obtained by ASE on April 24, 1989, Appendix C.

A. Site Location. The site is located at 3496 Castro Valley Boulevard, Castro Valley, California.

B. Background. We were contacted by the owner of the site, Mr. Ted Simas, in early April 1989 and asked to collect a soil samples, per agency requirements, from beneath a 550-gallon waste oil tank located at the above address. On April 24, 1989 I contacted Mr. Scott Seery of Alameda County Health Services Department to inform him of the projected soil sample collection. Mr. Seery indicated that a Plan of Correction should be prepared prior to any activity at the site and submitted for his review.

D. Site History. The site was purchased in 1983 from ARCO Petroleum and since that time has been a retail fuel station for transportation fuels operating under the Shell Oil.

The underground storage tanks and lines are constructed of single-walled carbon steel. There are four operating tanks; 1-10,000 diesel, 1-10,000 gallon leaded

Aqua Science Engineers Inc., P.O. Box 535, San Ramon, CA 94583 · 415-820-9391

gasoline, and 2-10,000 gallon unleaded gasoline, Figure 1. No other tanks exist at the site. The site is served by four standard serivce islands with four dispensors per island. Tank testing records indicate that the subject waste oil tank was not tested by the present owner and it is not known if the previous owner performed the tests. Tank testing results for the remaining tanks indicates that the tanks are within acceptable standads, Appendix D.

II. Site Description

A. The site is located in a commercial/residentail area of Castro Valley, California. The site is a retail Shell Service Station located at the Southwest corner of Castro Valley Boulevard and Redwood Road in Castro Valley, California (Figure 1). The station retails fuel only and does not have garage facilities. Currently, the station has four 10,000-gallon underground fuel tanks servicing the facility. The subject waste oil tank was used by the previous owner and was not in use under the present owner since the station changed ownership in 1983.

B. Soil Sampling Results.

On May 5, 1989 a single soil sample was taken in native soil from beneath the former 550-gallon waste oil tank. The sample was taken from a backhoe bucket by driving a 2-inch by 4-inch brass tube into the soil using a wooden mallet. The sample was removed from the soil, capped with Teflon tape and plastic end caps and placed on ice for delivery to the laboratory. The sample depth was approximately 11 feet below ground surface; groundwater was not encountered. The sample was analyzed for TPH-Heavy (EPA 3550/8015), Total Oil and Grease (EPA 9071), and volitle organics (EPA 8240 GC/MS). Detectabale constituents only are shown in Table I; all other constituents were below the level of detection.

III. Plan for Determining Extent of Soil and Groundwater Contamination on Site.

A. Based on the results of the soil sample taken from the former waste oil tank, we intent to further evaluate the impact of the release of contaminants from the waste oil tank on soil and groundwater in the vicinity of the site. ASE intends to complete the work in three tasks.

Task 1 Re-excavate soil from the waste oil tank and stockpile the soil on visqueen. We intend to excavate as much of the contaminated soil as possible. Soil samples will be taken from the excavated pit to confirm if the contaminated soil was removed. Soil samples will be collected from the stockpiled soil and the results will determine the suitability of disposal at a Class I or Class II site. No on site treatment is proposed.

Task 2 In accordance with agency guidelines, we intent to install and sample one groundwater monitoring well within 10 feet of the waste oil tank. According to the Alameda County Water District - Zone 7, the seasonal high for groundwater in the vicinity is 40 to 45 feet. Should groundwater not be encountered, the well will be completed into a clay aquitard 5-feet in thickness. Based on the results of the samples taken from the well, additional wells may be proposed.

Task 3 ASE will prepare a written report summarizing the work performed

after completion of all field work and once analytical results are known. The report will include recommendations for further work and well sampling.

Task 1 - Re-excavate Tank Pit.

The excavation will take place in the area of the former waste oil tank. We proposed to excavate the pit and stockpile the removed soil on-site. Soil samples will be taken from areas from within the pit and from the stockpiled soil. At this time it is not known the quantity of soil to be removed, however every attempt will be made to remove all contaminated soil. Once the excavation is complete and soil sample results are known, the pit will be backfilled with imported backfill to ground surface.

We do not propose on-site treatment due to the limited size areaavallable for current soil remediation techniques. The contalminated soil will be hauled to either a Class I or Class II disposal site within California, pending sample results.

Task 2 - Install a Groundwater Monitoring Well.

The hydrogeologic information in the site area is limited, however, groundwater is expected to be found at 40 to 45 feet.

The well will be installed within 10 feet of the waste oil tank and will be constructed of 4-inch diameter PVC casing with a locking christy box street cover. The proposed well will be installed to 15 feet into groundwater or terminated in an aquitard of at least 5 feet in thickness.

In the event that groundwater is not encountered either before a 5-foot clay aquitard is encountered or a depth of 45 feet is reached, the well will be completed to that depth. If groundwater is found, than two subsequent 2-inch diameter perimeter wells will be installed (proposed location, Figure 1).

Groundwater well MW-1 will be used to monitor groundwater on a monthly basis for the first quarter than quarterly for three quarters (per requirements of Alameda County Water District). Groundwater wells MW-2 and MW-3 will provide depth to groundwater measurements and directin of groundwater flow will be determined from the three wells.

The actual well construction of all wells will follow Alameda County Water District requirements. A typical well installation diagram is shown in Figure 2. In addition to following the requirements of Alameda County Water District we intent to design a gravel pack and well casing slot size based on the formation material encountered. Soil samples will be collected beginning at the maxium depth of the excavation and then at 5-foot intervals to groundwater.

Following installation each well will be developed, sampled and analyzed for the waste oil protocal (LUFT). Drill cuttings will either be stockpiled with the excavated soil material or placed into hazardous waste drums (17-H). The extracted groundwater from well development will be placed in seperate 17-H drums. All drums will be manifested as necessary. The completed wells will be measured from top of casing to a bench mark with elevation above mean sea level (MSL) to the nearest 0.01 feet.

Task 3 - Provide a Written Report.

The report will describe the excavation activities, sample results, and will provide recommendations for further actions. Prior to installing the well(s) the report will be submitted for agency review.

We expect to begin the excavation upon approval from the Alameda County Health Department and complete the work contained above by September 25, 1989.

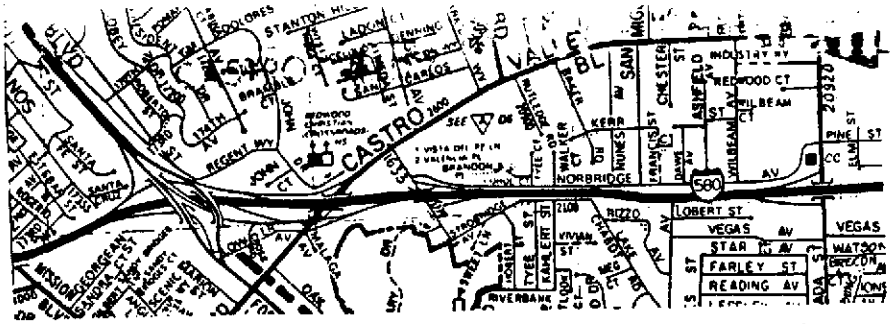
We look forward to your comments at your earliest convenience.

Respectfully submitted,

Terry
Terrance E. Carter
AQUA SCIENCE ENGINEERS, INC.

FIGURE 1 - Site Plan - 3496 Castro Valley Boulevard, Castro Valley, California.

FIGURE 2 - Typical Well Construction Diagram



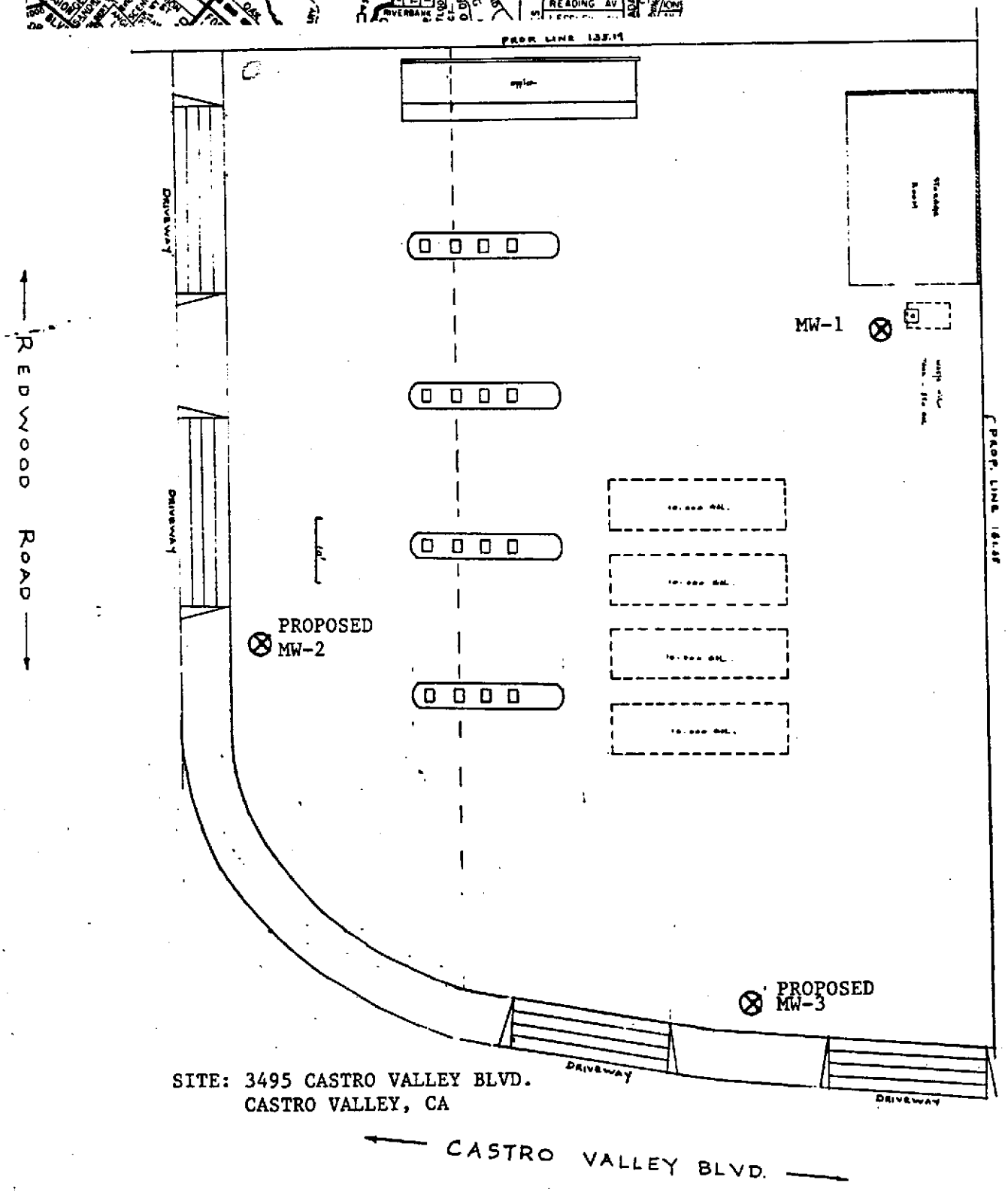


FIGURE 1.

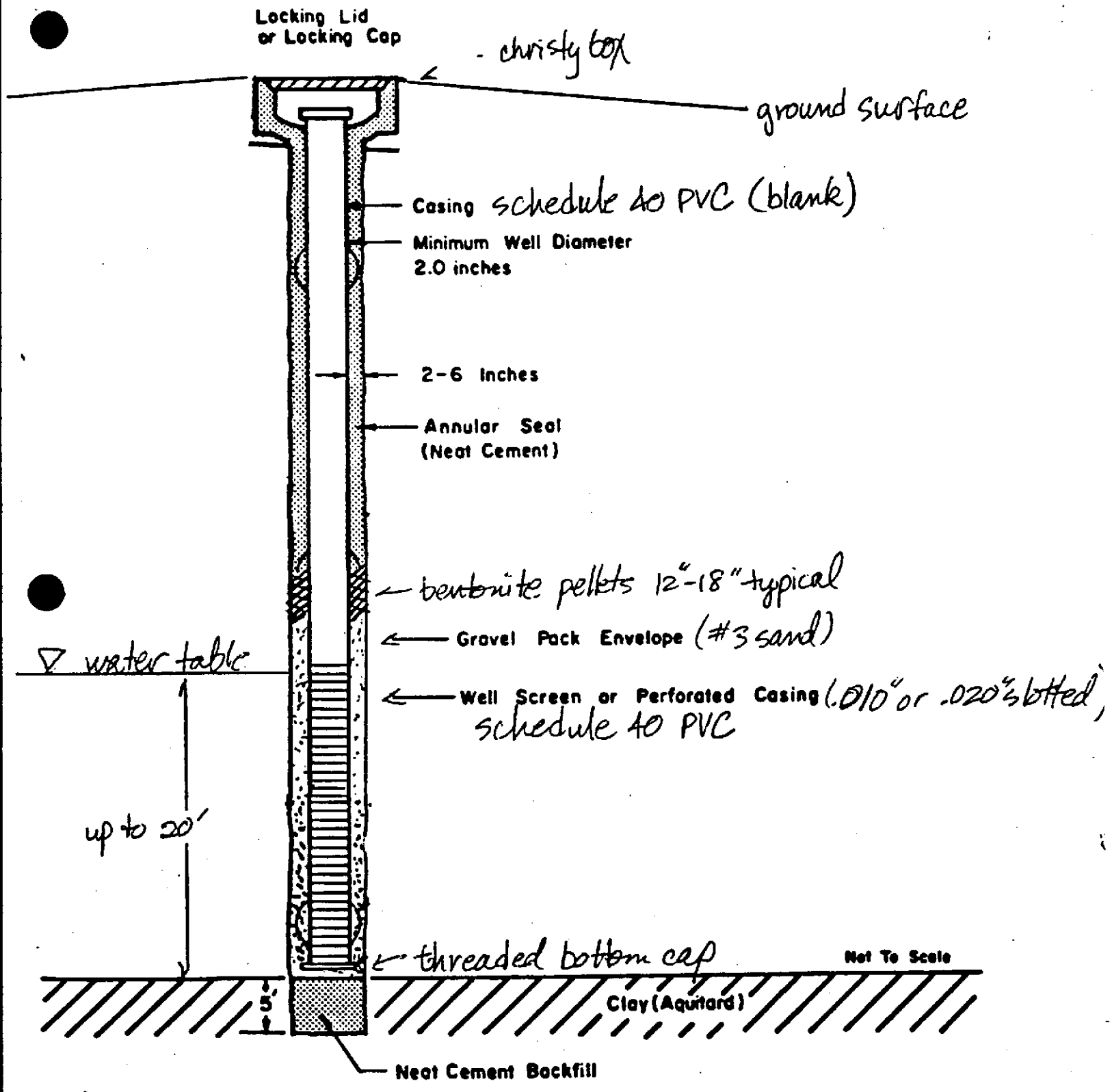


FIGURE 2.

AQUA SCIENCE ENGINEERS

TYPICAL MONITORING FACILITY

TABLE 1
Chemical Analysis of Soil Sample from Tank Removal at
3496 Castro Valley Blvd, Castro Valley, California, May 5, 1989.

Sample No.	Date	TPH-Diesel mg/kg	T Oil-Grease mg/kg	Toluene ~~mg/kg~~ ug/kg	Ethylbenzene ~~mg/kg~~ ug/kg	Xylene ~~mg/kg~~ ug/kg
T1	May 5	980	427	12	18	266

APPENDIX A:
HAZARDOUS WASTE MANIFEST DOCUMENTS

H & H SHIP SERVICE COMPANY
W. J. HARRIS

220 CHINA BASIN, P.O. BOX 77363 · SAN FRANCISCO, CA 94107 · DAY AND NIGHT: 543-4835

CERTIFICATE OF DISPOSAL

NOVEMBER 11, 1988

H & H Ship Service Company hereby certifies to XTRA OIL COMPANY that:

1. The storage tank(s), size(s) ONE (1) 1,000 GALS.

   removed from the SERVICE STATION

   facility at 3495 CASTRO VALLEY BLVD.

   CASTRO VALLEY, CALIFORNIA

   were transported to H & H Ship Service Company, 220 China Basin Street, San Francisco, California 94107.

2. The following tank(s), H & H Job Number: 9062 have been steamed cleaned, cut with approximately 2' X 2' holes, rendered harmless and disposed of as scrap metal.

3. Disposal site: LEVIN METALS CORPORATION, RICHMOND, CALIFORNIA.

4. The foregoing method of destruction/disposal is suitable for the materials involved, and fully complies with all applicable regulatory and permit requirements.

5. Should you require further information, please call (415) 543-4836.

Very Truly Yours,

Cleveland Walrey
Q. A. & Safety Coordinator

Please print or type. Form designed for use on elite (12-pitch) typewriter.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAC000127909 — Manifest Document No. 87891825

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

3. Generator's Name and Mailing Address: XTRA OIL CO 2200 DURANT AVE. Berkeley 94704

4. Generator's Phone (415) 548-0330

A. State Manifest Document Number: 87891825

B. State Generator's ID:

C. State Transporter's ID: 502465

D. Transporter's Phone: (415) 543-3635

5. Transporter 1 Company Name: H&H SHIP SERVICE CO. INC. — e. US EPA ID Number: CAD000477168

6. — US EPA ID Number:

7. Transporter 2 Company Name: — 10. US EPA ID Number:

E. State Transporter's ID:

F. Transporter's Phone:

8. Designated Facility Name and Site Address: H&H SHIP SERVICE CO. INC. 220 CHINA BASIN STREET SAN FRANCISCO CA 94107 — CAD000477168

G. State Facility's ID: 38-001-78

H. Facility's Phone: (415) 543-0906

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	K Waste No.
a. ~~H&H~~ WASTE, METAL, WASTE OIL NOS. CALIFORNIA REGULATED WASTE	001	TP	01000	G	State 512 / EPA/Other NA
b.					State 512 / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above: 1,000 GALLON UNDERGROUND WASTE OIL TANK W/APPROX 500 GALLONS SLUDGE REMAINS.

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

15. Special Handling Instructions and Additional Information: WEAR PROTECTIVE GEAR AS REQUIRED.

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: CAROL SIMAS — Signature: [signature] — Month Day Year: 11 10 88

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: SIDNEY W FOSTER — Signature: Sidney W Foster — Month Day Year: 11 10 88

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: Claudine Valley — Signature: [signature] — Month Day Year: 11 10 88

GENERATOR

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

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-86) Previous editions are obsolete

Blue: GENERATOR SENDS THIS COPY TO DOHS WITHIN 30 DAYS
To: P.O. Box 400, Sacramento, CA 95802

INSTRUCTIONS ON THE BACK

APPENDIX B:
UNAUTHORIZED RELEASE FORM

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

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

STATE TANK ID #:

REPORT DATE: 0M 7M 2D 4D 8Y 9Y

LOCAL CASE #:

REGIONAL BOARD CASE #:

US EPA ID #: CAC000127909

REPORTED BY

NAME OF INDIVIDUAL FILING REPORT: TERRANCE CARTER

PHONE: (415) 820-9391

SIGNATURE:

REPRESENTING ☐ LOCAL AGENCY ☐ OTHER ☒ OWNER/OPERATOR ☐ REGIONAL BOARD

COMPANY OR AGENCY NAME: AQUA SCIENCE ENGINEERS, INC.

ADDRESS: 2500 Old Crow Canyon Rd., #121 (STREET), San Ramon (CITY), CA (STATE) 94583 (ZIP)

RESPONSIBLE PARTY

NAME: Xtra Oil ☐ UNKNOWN

CONTACT PERSON: Ted Simas

PHONE: (415) 548-0330

ADDRESS: 2200 Durant Avenue (STREET), Berkeley (CITY), CA (STATE) 94704 (ZIP)

SITE LOCATION

FACILITY NAME (IF APPLICABLE): Xtra Oil Shell Oil

OPERATOR: Ted Simas

PHONE: (415) 548-0330

ADDRESS: 3496 Castro Valley Blvd. (STREET), Castro Valley (CITY), Alameda (COUNTY), CA (STATE) (ZIP)

CROSS STREET: Redwood

TYPE OF AREA: ☒ COMMERCIAL ☐ INDUSTRIAL ☒ RESIDENTIAL ☐ RURAL ☐ OTHER

TYPE OF BUSINESS: ☐ RETAIL FUEL STATION ☐ UNKNOWN ☐ OTHER

IMPLEMENTING AGENCIES

LOCAL AGENCY / AGENCY NAME	CONTACT PERSON	PHONE
Alameda County Health	Scott Seery	(415) 271-4320
REGIONAL BOARD: SFRWQCB	Leslie Furgeson	(415) 464-1255
TSCD: Underground tank program		( )

SUBSTANCE INVOLVED

CAS # (ATTACH EXTRA SHEET IF NEEDED) — NAME — QUANTITY LOST (GALLONS) ☐ UNKNOWN

(1)

(2) ☐ UNKNOWN

DISCOVERY/ABATEMENT

DATE DISCOVERED: 1M 1M 0D 7D 8Y 8Y

HOW DISCOVERED: ☐ INVENTORY CONTROL ☐ SUBSURFACE MONITORING ☐ ROUTINE MONITORING ☒ TANK REMOVAL ☐ NUISANCE CONDITIONS ☐ OTHER:

DATE DISCHARGE BEGAN: M M D D Y Y ☐ UNKNOWN

METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY): ☐ REMOVE CONTENTS ☐ REPLACE TANK ☒ CLOSE TANK ☐ REPAIR TANK ☐ REPAIR PIPING ☐ CHANGE PROCEDURES ☐ OTHER

HAS DISCHARGE BEEN STOPPED? ☒ YES ☐ NO IF YES, DATE: M M D D Y Y

SOURCE/CAUSE

SOURCE(S) OF DISCHARGE: ☒ TANK LEAK ☐ UNKNOWN ☐ PIPING LEAK ☐ OTHER (SPECIFY)

TANKS ONLY/CAPACITY: GAL

AGE: YRS. ☒ UNKNOWN

MATERIAL: ☐ STEEL ☐ FIBERGLASS ☐ OTHER

CAUSE(S): ☐ OVERFILL ☒ CORROSION ☐ RUPTURE/FAILURE ☐ SPILL ☐ UNKNOWN ☐ OTHER

SOURCES AFFECTED/AT RISK

RESOURCES AFFECTED	YES	NO	THREATENED	UNKNOWN
AIR (VAPOR)	☐	☒	☐	☐
SOIL (VADOSE ZONE)	☐	☐	☐	☒
GROUNDWATER	☐	☐	☐	☒
SURFACE WATER OR STORM DRAIN	☐	☐	☐	☒
BUILDING OR UTILITY VAULT	☐	☐	☐	☐
OTHER (SPECIFY)	☐	☐	☐	☐

GROUNDWATER BASIN NAME: SF Bay ☐ UNKNOWN

WATER SUPPLIES AFFECTED	YES	NO	THREATENED	UNKNOWN	# OF WELLS
PUBLIC DRINKING WATER	☐	☐	☐	☒	
PRIVATE DRINKING WATER	☐	☐	☐	☒	
INDUSTRIAL	☐	☐	☐	☒	
AGRICULTURAL	☐	☐	☐	☒	
OTHER (SPECIFY)	☐	☐	☐	☒	

COMMENTS

COMMENTS:

COMPLETE AND ATTACH A CLEANUP TRACKING REPORT IF ANY CLEANUP WORK OR PLANNING HAS STARTED

HSC 98 (11/88)

APPENDIX C:
LABORATORY DATA AND CHAIN-OF-CUSTODY

laboratories, inc.
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California

AquaScience Engineers, Inc.
2500 Old Crow Canyon Rd.
Suite 121
San Ramon, CA 94583

June 06, 1989
PACE Project Number: 490508502
PACE WP Number: WPPLAB #748

Attn: Mr. Terry Carter

Simas Oil

Date Sample(s) Collected: 05/05/89
Date Sample(s) Received: 05/08/89

PACE Sample Number:			728410
Parameter	Units	MDL	T1
ORGANIC ANALYSIS			
EXTRACTABLE FUELS			
Extractable Fuels, as Diesel	mg/kg	10	980(*)
Sonication Extraction, Date Started			05/09/89
TOTAL OIL AND GREASE (GRAV. EPA 9071)			
Total Oil and Grease (Freon Extractable)	mg/kg wet	50	426.5
Date Extracted			05/10/89
VOLATILE ORGANICS, EPA METHOD 8240 GC/MS			
Dichlorodifluoromethane	ug/kg	10	ND
Chloromethane	ug/kg	10	ND
Vinyl Chloride	ug/kg	10	ND
Bromomethane	ug/kg	10	ND
Chloroethane	ug/kg	10	ND
Trichlorofluoromethane	ug/kg	5	ND
2-Butanone (MEK)	ug/kg	10	ND
Iodomethane	ug/kg	5	ND
1,1-Dichloroethene	ug/kg	5	ND
Carbon Disulfide	ug/kg	5	ND
Acrylonitrile	ug/kg	5	ND
Methylene Chloride	ug/kg	5	ND
trans-1,2-Dichloroethene	ug/kg	5	ND
1,1-Dichloroethane	ug/kg	5	ND
Chloroform	ug/kg	5	ND
1,1,1-Trichloroethane	ug/kg	5	ND
1,2-Dichloroethane	ug/kg	5	ND
Carbon Tetrachloride	ug/kg	5	ND

MDL Method Detection Limit
ND Not detected at or above the MDL.
(*) Product heavier than diesel seen.

PACE Sample Number:			728410
Parameter	Units	MDL	T1
ORGANIC ANALYSIS			
VOLATILE ORGANICS, EPA METHOD 8240 GC/MS			
Benzene	ug/kg	5	ND
1,2-Dichloropropane	ug/kg	5	ND
Trichloroethene	ug/kg	5	ND
Dibromomethane	ug/kg	5	ND
Bromodichloromethane	ug/kg	5	ND
trans-1,3-Dichloropropene	ug/kg	5	ND
3-Methyl-2-pentanone (MIBK)	ug/kg	10	ND
Toluene	ug/kg	5	12
cis-1,3-Dichloropropene	ug/kg	5	ND
1,1,2-Trichloroethane	ug/kg	5	ND
2-Chloroethylvinyl Ether	ug/kg	5	ND
Ethylmethacrylate	ug/kg	5	ND
Dibromochloromethane	ug/kg	5	ND
Tetrachloroethene	ug/kg	5	ND
Chlorobenzene	ug/kg	5	ND
Ethylbenzene	ug/kg	5	18
Bromoform	ug/kg	5	ND
Xylene(s) Total	ug/kg	5	266
1,1,2,2,-Tetrachloroethane	ug/kg	5	ND
1,2,3-Trichloropropane	ug/kg	5	ND
1,4-Dichloro-2-butene	ug/kg	5	ND
1,3-Dichlorobenzene	ug/kg	5	ND
1,4-Dichlorobenzene	ug/kg	5	ND
1,2-Dichlorobenzene	ug/kg	5	ND
1,2-Dichloroethane-d4 (Surrog. Recovery)			107%
Toluene-d8 (Surrogate Recovery)			121%
4-Bromofluorobenzene (Surrog. Recovery)			88%

ND Not detected at or above the MDL.
MDL Method Detection Limit

* P.O. Box 535, San Ramon, CA 94583-0535
aqua science engineers inc. (ASE)
(415) 820-9391

Project Name: [illegible] Oil   Site: Hayward   Date: [illegible]   Laboratory: [illegible]

Sample ID	Sample/Container Type	Analyze/Hold	Analyze For:	Method - Detection Limit	Notes/Remarks
I1	[illegible]	A	Waste Oil Total Purge[illegible]		# 72341
					10/2

S = Soil W = Water O = Other
G = Glass BT = Brass Tube P = Plastic V = Vial O = Other

Chain of Custody

1. Sampled by: [illegible signature]
2. Courier: Donald Tokarski
Pace 1230 AM
5/8/89
3. Received by Lab: [illegible signature]
Date: [illegible] Time: [illegible]
4. Received in Office: Date. ____

☐ - Collate all samples for single analysis.
☐ - Collate and analyze two top samples and if clean, do not analyze other sample.
☐ - Call ASE for instructions.
☐ - See attached protocol.

APPENDIX D
TANK TESTING RESULTS

HUNTER ENVIRONMENTAL SERVICES, INC.
[redacted] MT. LANGLEY STREET, SUITE 101
FOUNTAIN VALLEY, CA 92708
800-247-9014 80[illegible] 247-2186

FINAL TEST RESULTS
TEST DATE: 8/12/88

LOCATION/IDENTIFICATION NO.:

CUSTOMER: SHELL
ADDRESS: 3495 CASTRO VALLEY BLVD.
CASTRO VALLEY, CA

TEST RESULTS SUMMARY

	SYSTEM	TANK SIZE		WATER	LEAK LOKATOR RESULTS			
NO.	PRODUCT	GALLONS	DIA/MATL	INCHES	LEVEL INCHES	AIR GPH	CONCLUSION	RECOMMENDATIONS
1	DIESEL	10000	95/ST	0	169	-.037	TIGHT	

PRODUCT LINES - HYDROSTATIC PRESSURE TEST RESULTS

		TYPE OF PUMP		POUNDS	POUNDS	MINUTES	PRODUCT	PRODUCT	CONCLUSION
NO.	PRODUCT	REMOTE	SUCTION	APPLIED	HELD	HELD	LOSS CC's	LOSS GPH	/RESULT
1	DIESEL	WAYNE		50		10			PASS

N[redacted] On suction systems, NEVER put more than 15 psi on any pump system.

DETAIL OF TEST RESULTS

	SYSTEM	TEST	TEST LEVEL	TIME		LEAK RATE		TEMPERATURE COMPENSATION		ABSOLUTE LEAK RATE		CHECK TEST
NO.	PRODUCT	NO.	(IN.)	CLOCK STATE	DURATION (HR-MIN)	CC/DIV	CC/MIN	DELTA °F	CC/MIN	CC/MIN	GPH	Y/N
1	DIESEL	1	169	11:30	:30	4.562	+7.557	+.035	+9.935	-2.378	-.037	N

*LEVEL - Inches from Tank Bottom to Test Level
AIR - Absolute Leak Rate (Measured Leak Rate - Temperature Compensation) in Gallons Per Hour
CONCLUSION - NFPA 329 criterion of +/- 0.05 GPA is used to certify tightness

CERTIFICATION

CERTIFIED

This is to certify that the above tank systems were tested, using the HUNTER ENVIRONMENTAL SERVICES, INC. LEAK LOKATOR according to all standard operating procedures. Those indicated as tight at full system meet the criterion established by the National Fire Protection Association Pamphlet 329 for Precision Testing.

Tests Conducted and Certified By: Test Van No. 4
[redacted] Team Manager: A. CHAND

HUNTER ENVIRONMENTAL SERVICES, INC.
18350 MT. LANGLEY STREET, SUITE 101
[redacted]UNTAIN VALLEY, CA 92708
800-247-9014 800-247-2186

FINAL TEST RESULTS
TEST DATE: 8/10/88

CUSTOMER: XTRA OIL
ADDRESS: 3495 CASTRO VALLEY BLVD.
CASTRO VALLEY, CA

LOCATION/IDENTIFICATION NO.:

TEST RESULTS SUMMARY

NO.	SYSTEM PRODUCT	TANK SIZE GALLONS	TANK SIZE DIA/MATL	WATER INCHES	LEAK LOKATOR RESULTS LEVEL INCHES	LEAK LOKATOR RESULTS AIR GPH	LEAK LOKATOR RESULTS CONCLUSION	LEAK LOKATOR RESULTS RECOMMENDATIONS
1	S/U	10000	95/ST	0	150	-.010	TIGHT	
2	U/L	10000	95/ST	0	159	+.011	TIGHT	
3	REG	10000	95/ST	0	154	+.041	TIGHT	
4	DIESEL	10000	95/ST	0	NO TEST			

OTHER INFORMATION: NO TEST ON DIESEL DUE TO LACK OF PRODUCT. RUNNING PRESSURE TESTS DUE TO INTERNAL CHECK VALVE.

PRODUCT LINES - HYDROSTATIC PRESSURE TEST RESULTS

NO.	SYSTEM PRODUCT	TYPE OF PUMP REMOTE	TYPE OF PUMP SUCTION	POUNDS APPLIED	POUNDS HELD	MINUTES HELD	PRODUCT LOSS CC's	PRODUCT LOSS GPH	CONCLUSION /RESULT
1	S/U	TOKHEIM		29		15			PASS
2	U/L	TOKHEIM		27		15			PASS
3	REG	RED JACKET		50		15			PASS
4	DIESEL	TOKHEIM		28		15			PASS

NOTE: On suction systems, NEVER put more than 15 psi on any pump system.

DETAIL OF TEST RESULTS

NO.	SYSTEM PRODUCT	TEST NO.	TEST LEVEL (IN.)	TIME CLOCK STATE	TIME DURATION (HR-MIN)	LEAK RATE CC/DIV	LEAK RATE CC/MIN	TEMPERATURE COMPENSATION DELTA °F	TEMPERATURE COMPENSATION CC/MIN	ABSOLUTE LEAK RATE CC/MIN	ABSOLUTE LEAK RATE GPH	CHECK TEST Y/N
1	S/U	1	150	10:40	:35	1.522	+21.827	+.054	+22.482	-.655	-.010	N
2	U/L	1	159	11:20	:30	1.195	+7.410	+.016	+6.661	+.749	+.011	N
3	REG	1	154	9:50	:45	1.360	+7.603	+.012	+4.996	+2.607	+.041	N

*LEVEL - Inches from Tank Bottom to Test Level
ALR - Absolute Leak Rate (Measured Leak Rate - Temperature Compensation) in Gallons Per Hour
CONCLUSION - NFPA 329 criterion of +/- 0.05 GPA is used to certify tightness

CERTIFIED

CERTIFICATION

This is to certify that the above tank systems were tested, using the HUNTER ENVIRONMENTAL SERVICES, INC. LEAK L[redacted]R according to all standard operating procedures. Those indicated as tight at full system meet the criterion es[redacted]lished by the National Fire Protection Association Pamphlet 329 for Precision Testing.

Tests Conducted and Certified By: Test Van No. 32
Team Manager: E. PRICE
Tank Testing Specialist: S. PORRAS

TANK AND LOCATION DATA

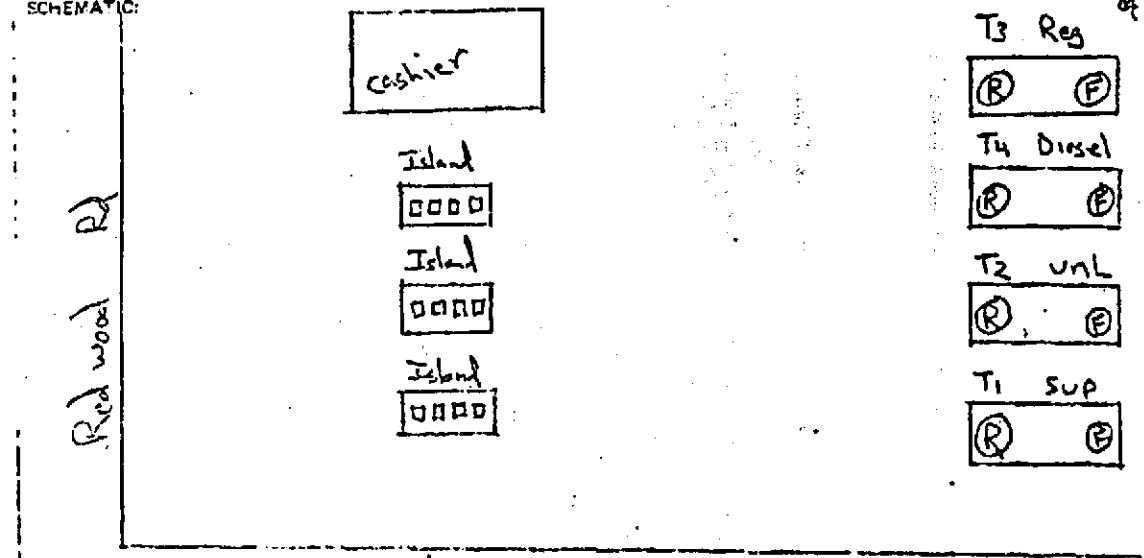
DATE: 1-31-86

CUSTOMER: SHELL CITY: Castro Valy

S.D. # 810910 STATE: CA

WEATHER	TIME	TEMPERATURE	COMMENTS
BEFORE TEST – Rain	10:00	45°	
AFTER TEST –	5:00		

SCHEMATIC:



Castro valley Blvd

	PRODUCT/TANK NO.	T1 SUP		T2 UNL		T3 REG		T4 DIESEL			
		Fill	Gauge	Fill	Gauge	Fill	Gauge	Fill	Gauge	Fill	
BEFORE DELIVERY	LEVEL										
	GALLONS WATER	0		0		0		0			
	TOP OF RISER	135		134		135		135			
	GRADE	141		141		142		141			
	DROP TUBE	Alum		Alum		Alum		ALUM			
	CAPACITY, GALLONS	10 000		10 000		10 000		10 000			
	DIAMETER, INCHES	95		95		95		95			
	MATERIAL	ST		ST		ST		ST			
	PUMP TYPE	Wayne		Wayne		RJ		Wayne			
	TYPE OF COVER	Conc		Conc		Conc.		Conc			
	AGE OF TANK	N/A		N/A		N/A		N/A			
	SIPHON	no		no		no		no			
	TANK OPENINGS	1-4		1-4		1-4		1-4			
	EXTRACTORS	none		none		none		none			

SITE SAFETY PLAN

FACILITY BACKGROUND

THE PROJECT SITE (XTRA OIL COMPANY) IS LOCATED AT 3495 CASTRO VALLEY BOULEVARD AVENUE IN CASTRO VALLEY, CALIFORNIA. AT THE PRESENT TIME ONE 550 GALLON WASTE OIL TANK HAS BEEN REMOVED FROM THE SITE. THE STATION IS DISPENSING GASOLINE & DIESEL TYPE FUELS FROM UNDERGROUND STORAGE TANKS CURRENTLY. ALTHOUGH WEGE WAS NOT PRESENT DURING THE WASTE OIL TANK EXHUMATION AND REMOVAL. DIESEL RANGE HYDROCARBONS WERE FOUND TO BE PRESENT IN THE SOIL BENEATH THE TANKS. IN ORDER TO ASSESS AND DOCUMENT THE PRESENCE OF PETROLEUM CONTAMINATION IN SITE SOILS AND/OR GROUND WATER, WEGE WAS SUB-CONTRACTED BY XTRA OIL COMPANY (XOC) TO 1) COLLECT SOIL & WATER SAMPLES, 2) MONITOR SOIL, WATER AND AIR (ambient) CONCURRENT WITH DRILLING OPERATIONS.

KEY PERSONNEL AND RESPONSIBILITIES

MR. JACK NAPPER, REGISTERED GEOLOGIST, WILL ACT AS PROJECT SUPERVISOR. MR. NAPPER HAS COMPLETED NUMEROUS PETROLEUM CONTAMINATION ANALYSES THROUGHOUT THE CENTRAL VALLEY AND NORTHERN CALIFORNIA. MR. GEORGE CONVERSE, PROJECT MANAGER, WILL DIRECT FIELD CHARACTERIZATION AND SAMPLING ACTIVITIES. MR. CONVERSE WILL ACT AS SITE SAFETY OFFICER. MR. MIKE THOMAS, PROJECT GEOLOGIST, WILL ASSIST MR. CONVERSE IN FIELD OPERATIONS AND SAFETY ENFORCEMENT. BOTH MR. CONVERSE AND MR. THOMAS REPORT DIRECTLY TO MR. NAPPER, THEREBY GIVING MR. NAPPER FULL AUTHORITY TO SUPERVISE HEALTH AND SAFETY OPERATIONS. MR. NAPPER AND MR. CONVERSE CAN BE CONTACTED 24 HOURS PER DAY AT **(916) 662-4541.** MR. THOMAS CAN BE CONTACTED AT THE JOB SITE DURING WORKING HOURS OR AT THE (XTRA OIL CO. 3495 CASTRO VALLY BOULEVARD).

JOB HAZARD ANALYSES

GASOLINE AND ITS CONSTITUENTS POSE HEALTH HAZARDS IN TWO MAJOR CLASSIFICATIONS: EXPLOSIVITY AND TOXICITY. THE EXTREME FLAMMABILITY OF GASOLINE IS COMMONLY KNOWN. THE LOWER EXPLOSION LIMIT (LEL) OF GASOLINE VAPOR IS 1.3 PERCENT IN AIR. IF THE CONCENTRATION OF GASOLINE VAPOR IN AIR EXCEEDS 1.3 PERCENT (13,000 PARTS PER MILLION) AND SUFFICIENT QUANTITIES OF OXYGEN ARE PRESENT, THEN THE INTRODUCTION OF SUFFICIENT HEAT, SPARK, OR FLAME WILL RESULT IN AN EXPLOSION. A LESSER KNOWN HEALTH HAZARD RESULTING FROM EXPOSURE TO GASOLINE IS TOXICITY. SEVERAL COMMON CONSTITUENTS OF GASOLINE HAVE BEEN LINKED TO VARIOUS HEALTH PROBLEMS. THE CONSTITUENTS OF GASOLINE THAT HAVE BEEN SHOWN TO CAUSE SERIOUS HEALTH PROBLEMS RESULTING FROM RELATIVELY MINOR EXPOSURES INCLUDE **BENZENE, TOLUENE,** meta. para, and ortho **XYLENES, ETHYL BENZENE,** AND **TETRAETHYL LEAD.**

TYPICAL PERCENTAGES (BY WEIGHT) OF THESE CONSTITUENTS IN GASOLINE ARE: BENZENE - 0.12-3.50%, TOLUENE - 2.73-21.80%, meta XYLENE - 1.77-3.87%, para XYLENE - 0.77-1.58%, ortho XYLENE - 0.68-2.686%, AND ETHYL BENZENE - 0.36-2.86%. TYPICAL PERCENTAGE OF TETRAETHYL LEAD IS NOT AVAILABLE.

UNITS USED TO DESCRIBE OCCUPATIONAL EXPOSURES TO HAZARDOUS SUBSTANCES INCLUDE: EXPOSURE LIMIT, ALSO KNOWN AS THE "THRESHOLD LIMIT VALUE" (TLV), CEILING LIMIT, AND THE CONCENTRATION LEVEL THAT IS "IMMEDIATELY DANGEROUS TO LIFE AND HEALTH" (IDLH). THE **EXPOSURE LIMIT** DEFINES THE MAXIMUM CONCENTRATION OF A SUBSTANCE TO WHICH ONE CAN BE EXPOSED DURING AN 8 HOUR PERIOD WITHOUT SUFFERING SIGNIFICANT HEALTH EFFECTS. THE **CEILING LIMIT** IS THE CONCENTRATION LEVEL THAT CANNOT BE EXCEEDED AT ANY TIME; i.e., A SUITABLE RESPIRATOR MUST BE WORN IF CONCENTRATION VALUES REACH THE CEILING LIMIT. THE **IDHL LEVEL** REPRESENTS A MAXIMUM CONCENTRATION FROM WHICH ONE COULD ESCAPE WITHIN 30 MINUTES OF RESPIRATOR FAILURE WITHOUT EXPERIENCING ESCAPE-IMPAIRMENT OR IRREVERSIBLE HEALTH DAMAGE. IDLH VALUES ARE NOT LISTED FOR SUBSTANCES THAT ARE POTENTIAL HUMAN CARCINOGENS.

EXPOSURE TABLE

SUBSTANCE	EXPOSURE LIMIT	CEILING LIMIT	IDLH
BENZENE	0.1ppm (8hrs)	1ppm (15min)	CARCINOGEN
TOLUENE	100ppm (10hrs)	200ppm (10min)	2000ppm
XYLENE	100ppm (8hrs)	200ppm (10min)	1000ppm
ETHYL BENZENE	100ppm (8hrs)	N.A.	2000ppm
TETRAETHYL LEAD	0.0067PPM	N.A.	3.6ppm

PROLONGED EXPOSURES TO CONCENTRATIONS ABOVE THE LIMITS NOTED MAY AFFECT THE CENTRAL NERVOUS SYSTEM, CARDIOVASCULAR SYSTEM, RESPIRATORY SYSTEM, EYES, SKIN, KIDNEYS, BONES AND BONE MARROW. RESEARCH HAS SHOWN THAT BENZENE IS A KNOWN CARCINOGEN.

IMMEDIATE SYMPTOMS OF OVER-EXPOSURE INCLUDE: EYE IRRITATION, NOSE AND THROAT IRRITATION, HEADACHE, NAUSEA, DIZZINESS, DROWSINESS, WEAKNESS, CONFUSION, EUPHORIA, EXCITEMENT, STAGGERED GAIT, ABDOMINAL PAIN, RESPIRATORY DIFFICULTIES, MUSCLE FATIGUE, AND COMA.

IN ORDER TO PROTECT AGAINST OVER-EXPOSURE TO THESE COMPOUNDS, THE AMBIENT AIR WILL BE MONITORED WITH A HANDHELD PHOTO IONIZING DETECTOR (PID). AS SOON AS VAPOR CONCENTRATIONS APPROACH 75% OF THE EXPOSURE LIMIT VALUE, WORK WILL CEASE UNTIL ALL ONSITE PERSONNEL HAVE DONNED PROTECTIVE CLOTHING AND SUITABLE RESPIRATORY DEVICES.

PERSONNEL EXPOSURES TO EXCESSIVE JOB-RELATED HAZARDS ARE EXPECTED TO BE MINIMAL USING THESE SAFEGUARDS.

IT SHOULD BE NOTED THAT WINTER TIME COLDNESS MAY INITIATE WEATHER STRESS-RELATED PROBLEMS AND DECREASE PRODUCTIVITY ON THE JOB SITE.

RISK ASSESSMENT

THE PRIMARY SAFETY GOAL DURING THE CONTAMINATION ANALYSIS IS TO PROTECT THE SAMPLING TEAM AND SUPPORT STAFF WHILE THE THEY ACQUIRE REPRESENTATIVES SAMPLES AND MONITOR AIR QUALITY. IF PROPER LEL VALUES ARE MAINTAINED, THEN THE RISK OF EXPLOSION AND RESULTING FIRE WILL BE MINIMAL. DUE TO THE UNCONFINED NATURE OF THE PROJECT SITE, TOXIC VAPORS RELEASED DURING THE DRILLING OPERATIONS WILL BE SUFFICIENTLY DILUTED BY AMBIENT AIR SO THAT THE SURROUNDING COMMUNITY WILL BE EXPOSED TO NEGLIGIBLE RISK. IN ORDER TO ASSURE THAT VAPOR DISPERSAL IS ADEQUATE, A HANDHELD PHOTO IONIZING DETECTOR (PID) WILL BE USED TO MONITOR VAPOR CONCENTRATIONS.

ALTHOUGH THE XTRA OIL STATION WILL BE IN OPERATION DURING OUR INVESTIGATIONS, BARRIERS OF VARIOUS TYPES WILL ENCOMPASS THE WORK AREA (DELINEATERS, BARRICADES, ETC.).

EXPOSURE MONITORING PLAN

ENVIROMENTAL EXPOSURE WILL BE MONITORED PERIODICALLY USING A HANDHELD PID. PERSONNEL EXPOSURE MONITORING (IN ADITION TO THE REQUIRED ANNUAL CHECK-UP) WILL NOT BE CONDUCTED.

PERSONNEL PROTECTION EQUIPMENT

DUE TO THE INHERENT PHYSICAL DANGER OF WORKING IN THE VICINITY OF HEAVY MOVING MACHINERY ALL WEGE PERSONNEL ALONG WITH SUB-CONTRACTORS WILL WEAR HARD HATS AND STEELTOED FOOTWEAR WHILE WORKING ON THIS SITE. IF DETECTED VAPOR CONCENTRATIONS EXCEED EXPOSURE LIMIT VALUES, THEN ALL WEGE PERSONNEL (AND SUBCONTRACTORS) WILL DON DISPOSABLE TYVEK COVERALLS, DISPOSABLE VINYL OR LATEX GLOVES, REUSABLE RUBBER BOOTS, AND NON-WOVEN HALF FACE RESPIRATORS WITH SUITABLE FILTER CARTRIDGES. DISPOSABLE ITEMS WILL BE DEPOSITED INTO A STEEL DRUM CONTAINER ON SITE. REUSABLE ITEMS WILL BE DECONTAMINATED AND STORED FOR REUSE.

WORK ZONES AND SECURITY MEASURES

THE WORK AREA WILL BE RESTRICTED TO THE SITE PROPERTY ONLY. THE DRILLING RIG AND IMMEDIATE AREA WILL BE RESTRICTED BY TEMPORARY BARRICADES AND CONES.

DECONTAMINATION MEASURES

AT THE END OF EACH WORK DAY ALL WEGE PERSONNEL (AND SUBCONTRACTORS) WILL THOROUGHLY WASH THEIR HANDS, FACE AND FOOTWEAR BEFORE LEAVING THE SITE. IN THE EVENT THAT PERSONNEL PROTECTIVE EQUIPMENT IS NECESSARY, ALL DISPOSABLE ITEMS WILL BE DEPOSITED INTO A STEEL DRUM CONTAINER ON SITE AND ALL REUSABLE ITEMS WILL BE WASHED WITH TSP DETERGENT AND RINSED WITH CLEAN WATER. RESIDUAL LIQUID WILL BE PLACED IN A STEEL DRUM CONTAINER ON SITE. PERSONNEL WILL NOT BE ALLOWED TO LEAVE THE CONTAMINATED AREA WITHOUT COMPLETING THE DECONTAMINATION PROCESS.

GENERAL SAFETY WORK PRACTICES

DRILLING OPERATIONS WILL BE CONDUCTED WITH A LARGE TRUCK-MOUNTED DRILL RIG. DRILL RIGS, WITH RESTRICTED OPERATOR VISION WILL BE IN USE. IT IS IMPERATIVE THAT ON-GROUND PERSONNEL BE AWARE OF MACHINERY MOTION AND THAT EYE CONTACT WITH EQUIPMENT OPERATOR BE ESTABLISHED BEFORE ENTERING THE WORK ZONE.

NO ONE WILL BE ALLOWED TO ENTER THE PROJECT SITE WITHOUT AUTHORIZATION OF TED SIMAS (XOC) AND/OR WEGE PERSONNEL OR THE SITE SAFETY OFFICER.

CONTINGENCY PLAN

SHOULD ANY SAFETY-RELATED DIFFICULTIES DEVELOP DURING SITE WORK, EMERGENCY CARE FACILITIES ARE LOCATED NEARBY. THE NEAREST HOSIPITAL (REDWOOD CONVALESCENT HOSPITAL (415) 537-8848) IS LOCATED APPROXIMATELY ___ MILES ____ (SEE MAP) AT REDWOOD ROAD. THE NEAREST FIRE DEPARTMENT PHONE NUMBER IS 911. THE NEAREST POLICE DEPARTMENT PHONE NUMBER IS 911.

TRAINING REQUIREMENTS

MR. CONVERSE AND MR. THOMAS HAVE COMPLETED THE HAZARDOUS WASTE TRAINING COURSE REQUIRED IN OSHA REGULATIONS 1919.120. THEY HAVE CONDUCTED NUMEROUS PETROLEUM CONTAMINATION INVESTIGATIONS AND ARE EXPERIENCED IN PROPER SAFETY AND SAMPLING TECHNIQUES. OTHER SAMPLING PERSONNEL AND SUPPORT STAFF WILL GO THROUGH AN IN-HOUSE INSTRUCTION PROGRAM THAT FOCUSES ON PETROLEUM FUEL CHARACTERISTICS AND HAZARDOUS WASTE SAMPLING PRACTICES. IF VAPOR CONCENTRATIONS APPROACH EXPOSURE LIMIT VALUES, THEN ALL WEGE PERSONNEL AND SUBCONTRACTORS THAT HAVE NOT BEEN CERTIFIED PERSUANT TO OSHA 1910.120 WILL BE IMMEDIATELY ESCORTED OUT OF THE WORK AREA.

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