aqua resources inc. a wholly owned subsidiary of The Earth Technology Corporation

2030 Addison Street, Suite 500 • Berkeley, California 94704 • 415 540-6954

March 11, 1992

Mr. Barney M. Chan
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, CA 94612

690262.2

Subject: PG&E Tank Cluster Area, 4930 Coliseum Way, Oakland, CA

Dear Mr. Chan:

Aqua Resources Inc. is pleased to submit, for your review and acceptance, the enclosed closure report for the above site, formerly contaminated with petroleum hydrocarbons.

Please do not hesitate to call if you have any questions.

Very truly yours,
AQUA RESOURCES INC.
a wholly owned subsidiary of The Earth Technology Corporation

Wojciech Bajsarowicz

Voytek Bajsarowicz, R.E.A.
Project Engineer

VB:blw

cc: Wally Pearce (w/enc)

90262.2\clos-rpt.ltr

SITE REMEDIATION AND CLOSURE REPORT

PG&E ENCON-GAS
Transmission and Distribution Construction Yard
Former Tank Cluster Area
4930 Coliseum Way
Oakland, California

Submitted to:

Alameda County Health Care Services Agency
Department of Environmental Health
Division of Hazardous Materials

Prepared by:

AQUA RESOURCES INC.
a wholly owned subsidiary of The Earth Technology Corporation
2030 Addison Street, Suite 500
Berkeley, California 94704

February 1992

Disk: 90262.2 File: closure.rpt

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

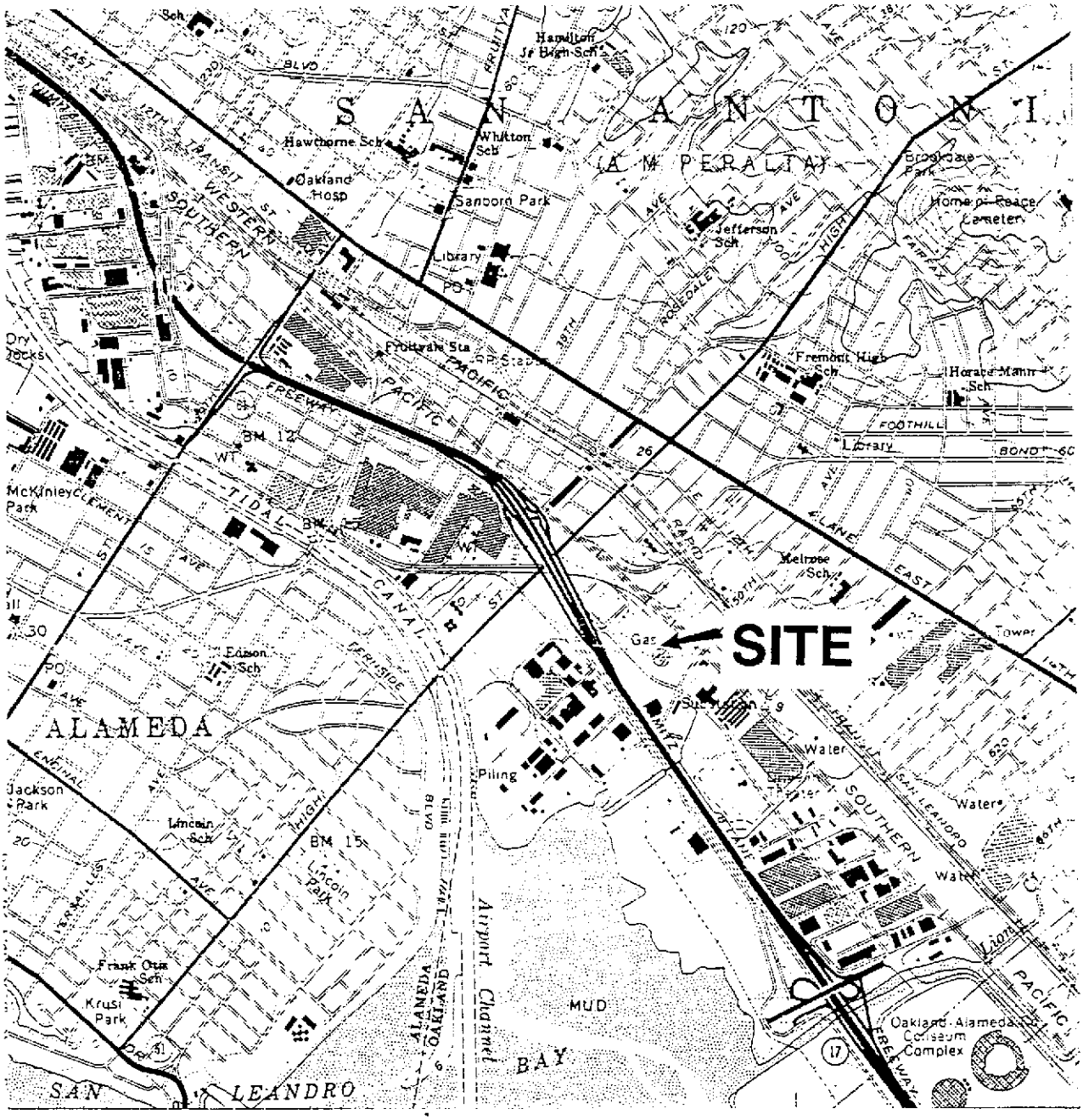
1.0 INTRODUCTION

1.1 STATEMENT OF PURPOSE

This report presents a summary of the activities performed by, and findings of, Aqua Resources Incorporated (ARI) associated with the remedial excavation of petroleum hydrocarbon impacted soil in the vicinity of a former underground tank cluster, a former sump, and a former vehicle maintenance shop location at the Pacific Gas and Electric (PG&E) ENCON-GAS Transmission and Distribution (T&D) construction yard. This work was complies with the scope of the general agreement between PG&E and ARI and was performed under the authority of PG&E. The site is located at 4930 Coliseum Way in the City of Oakland, California. The Site Location Map, Figure 1-1, shows the location of the site.

All sample analyses, manifest documentation, compaction testing results and settlement monitoring results are included as appendices to this report. The soil excavation, stockpiling and excavation backfilling was performed by STAMCO under the supervision of PG&E. ARI provided field engineering oversight, environmental sampling and consultation to PG&E during the conduct of the work.

The results of the herein described remedial effort and the associated conclusions and recommendations indicate that the extent of soil hydrocarbon contamination on PG&E property, in the vicinity of the former shop and tank cluster, has been remediated to levels below target concentrations established for the site by the Alameda County Health Care Agency. These site-specific targets were derived and are consistent with the procedures described in the Leaking Underground Fuel Tank Manual (LUFT) and the Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites.



Source: United States Geological Survey, 1959, photorevised 1980, Oakland East 7.5 minute topographic quadrangle.

AQUA RESOURCES, INC.
BERKELEY, CALIFORNIA

PG & E ENCON-Gas T & D Construction Yard

Site Location Map

JOB NO.	Figure 1.1
90262	DATE: July 23, 1991

1.2 REPORT ORGANIZATION

The Site Remediation and Closure Report consists of the following elements:

- Site Background
- Site Geology and Hydrogeology
- Description of Remediation Activities
- Potential Sources of Upgradient Contamination
- Conclusions and Recommendations of the Remedial Effort
- Limitations of the Evaluation

2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION

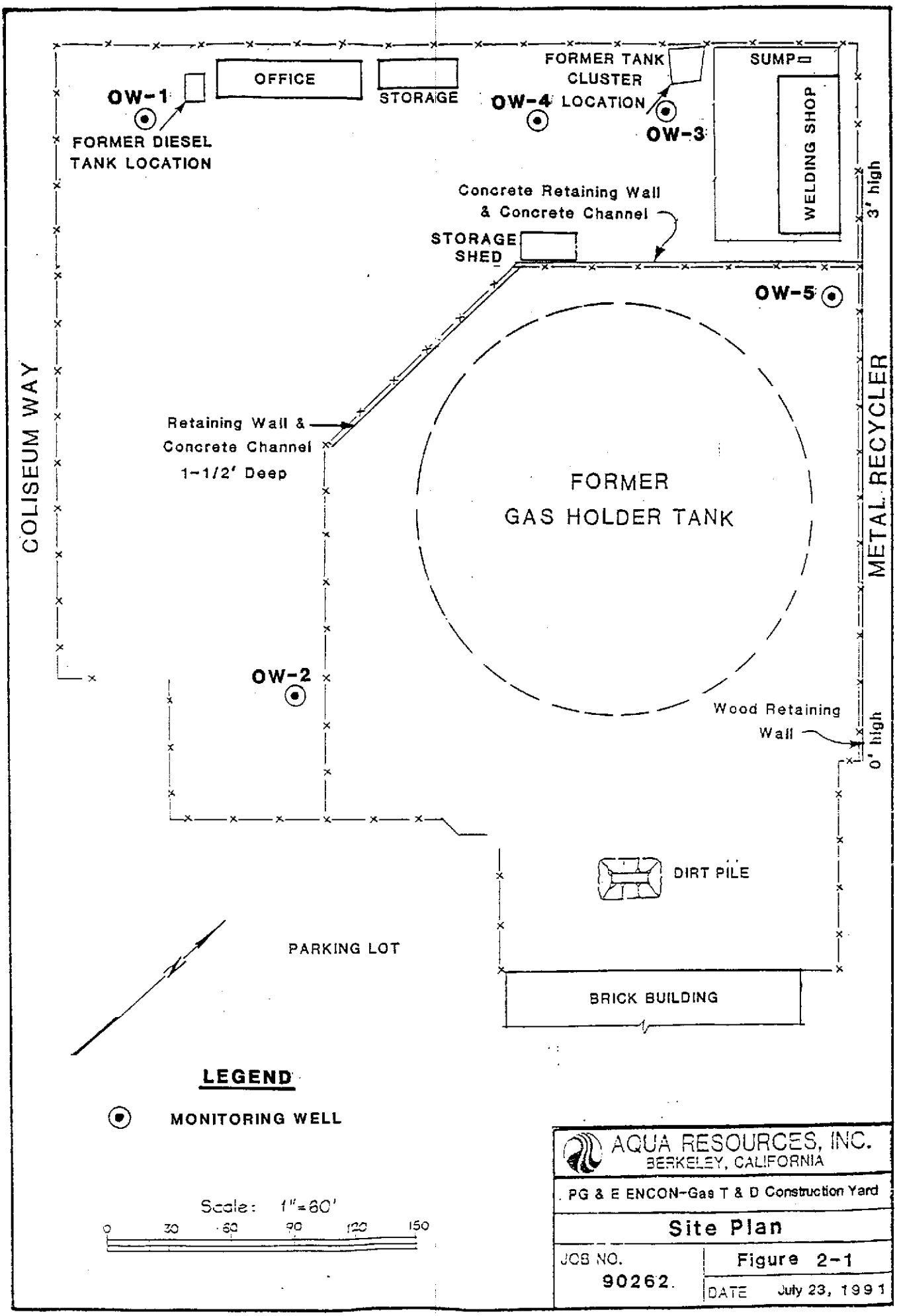
The ENCON-GAS T&D Construction Gas Yard is wholly owned by PG&E and is used as a vehicle, materials, and equipment storage and distribution facility. Historically, the site was also used as a vehicle service center and aboveground natural gas storage facility.

The site is surrounded by industrial properties. Immediately to the northeast of the site is AAA Equipment Co., a junkyard and metal recycling operation; to the northwest is the Metalcast Engineering shop (a plaster casting company), a pattern company and a metal foundry; to the west and southwest (across Coliseum Way) are two motels and a recreational vehicle sales facility; to the southeast (across 50th Street) is a trucking facility.

Figure 2-1 shows the site layout prior to remediation, including the former tank cluster, sump, welding shop and well OW-3 locations. The welding shop was previously used as a vehicle repair and maintenance garage. An office building, material storage warehouse, and a petroleum, oil and lubricant (POL) storage shed are located on-site. Except for an asphalt parking lot at the most southeastern end of the site and concrete pads underlying the onsite structures, most of the site was graveled prior to remediation.

Five underground tanks were formerly located on-site. Four of the tanks (three 500-gallon tanks and one 350 gallon tank) were located in a cluster near at the approximate location shown in Figure 2-1. These tanks were thought to be used to store waste oils. The bottoms of these tanks rested on a concrete pad buried approximately 7 feet below the ground surface.

On the north side of the welding shop, about 50 feet northeast of the former tank cluster location, was a cast iron grill indicating a possible buried sump. During excavation however, disturbed soils were uncovered at this location but no sump was found.

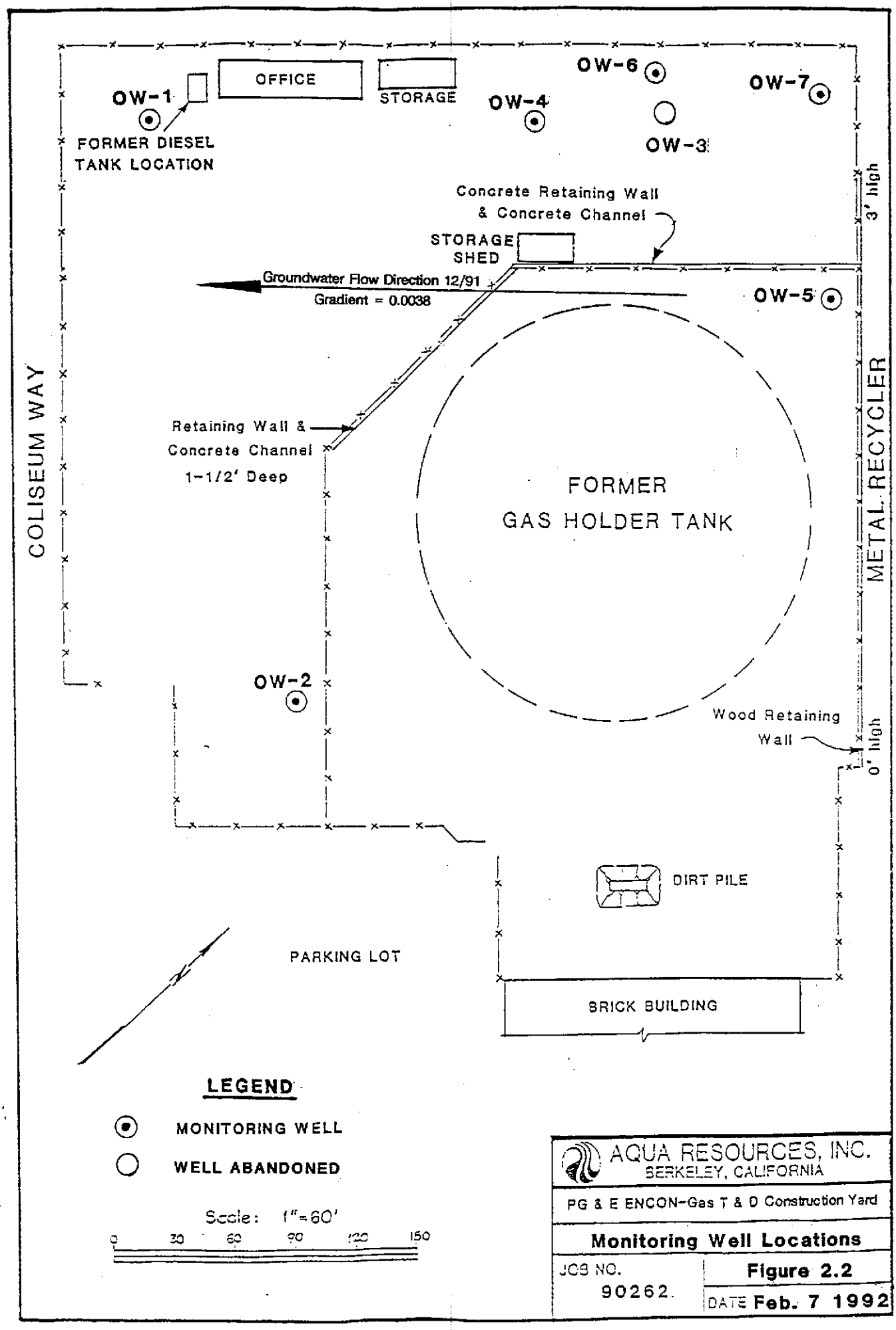

OW-1
OFFICE
STORAGE
FORMER TANK CLUSTER LOCATION
OW-4
OW-3
SUMP
WELDING SHOP
3' high
FORMER DIESEL TANK LOCATION
Concrete Retaining Wall & Concrete Channel
STORAGE SHED
OW-5
COLISEUM WAY
METAL RECYCLER
Retaining Wall & Concrete Channel 1-1/2' Deep
FORMER GAS HOLDER TANK
OW-2
Wood Retaining Wall
0' high
DIRT PILE
PARKING LOT
BRICK BUILDING
LEGEND
MONITORING WELL
Scale: 1"=60'
0 30 60 90 120 150
AQUA RESOURCES, INC.
BERKELEY, CALIFORNIA
PG & E ENCON-Gas T & D Construction Yard
Site Plan
JOB NO. 90262.
Figure 2-1
DATE July 23, 1991

2.2 PREVIOUS INVESTIGATIONS

Soil and groundwater conditions related to the removal of five underground storage tanks at the site were investigated by the Technical and Ecological Services Department of PG&E in 1987 and 1988. The activities performed, along with laboratory results, were presented in the July 1988, Underground Tank Investigation Report # 402.331-88.32 (internal PG&E document). In December 1987, the contents of the five tanks were analyzed by PG&E's Department of Engineering Research chemical laboratory. Two of the tanks in the cluster were found to contain mineral spirits (paint thinner and water) and three tanks contained heavy oil (diesel and/or hydraulic oil). PCBs were not detected in any of the tanks. The five tanks were removed and disposed of on January 13, 1988 by Universal Engineering, Inc.

In March and May 1988 four shallow monitoring wells (OW-1 through OW-4) were installed by PG&E to investigate the groundwater quality and to determine the groundwater flow direction and gradient. The locations of the monitoring wells are shown in Figure 2-2. Well OW-3 was located hydraulically downgradient of the former tank cluster location, and well OW-1 is located downgradient of the former diesel tank. From October 1989 to January 1991 quarterly groundwater samples were collected by PG&E's Technical and Ecological Services Department to monitor the distribution of waste oil, solvents, and fuel compounds in the uppermost aquifer beneath the northern part of the yard, near the former site of the five underground storage tanks. ARI has performed quarterly groundwater monitoring since that time and installed the fifth monitoring well, OW-5, in April of 1991. Well OW-3 was destroyed in October, 1991 and wells OW-6 and OW-7 were installed in December of 1991 following remediation activities. The results of the groundwater monitoring program have been presented in quarterly reports to the Alameda County Health Care Services Agency, Department of Environmental Health, Division of Hazardous Materials (Alameda Co. Health).

In November 1990, and April and May 1991, ARI investigated soil and groundwater conditions at the PG&E ENCON-GAS Transmission and Distribution Construction Yard. The main goal of the investigation activities was to determine the extent of elevated levels of petroleum hydrocarbons in soil and possibly in groundwater related to the former tank cluster



AQUA RESOURCES, INC.
BERKELEY, CALIFORNIA

PG & E ENCON-Gas T & D Construction Yard

Monitoring Well Locations

JOB NO. 90262.

Figure 2.2

DATE **Feb. 7 1992**

in the northern part of the yard. The former tank cluster, the concrete sump with possible connecting piping, the welding shop, and POL storage shed were considered as possible on-site sources for elevated levels of chemicals in soil and groundwater. The results of this investigation were reported to Alameda Co. Health on July 23, 1991 in a Remedial Investigation Report (RI).

Based upon the results of the previous investigations, ARI performed a Feasibility Study and prepared a Site Closure Plan (FS/SCP) which was also submitted to Alameda Co. Health on July 23, 1991. The FS/SCP outlined the remediation program performed and reported in this document and were approved by Alameda County Health.

2.3 SITE HISTORY

The earliest aerial photographs made available to ARI at the California Division of Mines and Geology (DMG) photo library that cover the site area were taken in August of 1939. These photos showed that the area was already heavily developed. Very large commercial/industrial buildings existed along both sides of San Leandro Street between High Street and 50th Avenue. A large round tank, a multistory former above ground gas holder tank (GHT), was in place on the PG&E site; however, the shadow of the tank prevented determining if any structures existed on the site of the present-day scrap metal business. There were large buildings east of the railroad track and west of San Leandro Street. There were no large buildings at 4700-4800 Coliseum Way. Some small buildings were in place around Coliseum Way and 46th Avenue. The East Creek Slough drainage penetrated farther inland to the south and east of the site than it does at present. The only other aerial photograph available for this area was taken in March of 1984. It showed the site in approximately the same condition as it is at present.

Historical topographic maps for the Oakland East Quadrangle were also reviewed at the DMG. These maps were dated 1949, 1959, and 1968 (photo revision of 1959 map). Each of these maps used a pink coloration to designate a developed area, rather than showing individual buildings. The only structure at the site shown on these maps was the GHT.

3.0 SITE GEOLOGY AND HYDROGEOLOGY

3.1 REGIONAL GEOLOGY

Geologic maps of the region prepared by the DMG (1961) and by Goldman (1969) show the site is underlain by Quaternary marine and marsh deposits. These sediments consist predominantly of highly plastic, blue-grey Bay Mud interbedded with grey, organic-rich silty sands and clayey marsh deposits.

3.2 SITE GEOLOGY

During excavation the following general lithology was observed in the shallow soils underlying the site. Black or brown gravelly sand backfill was observed from the ground surface to a depth of about 3 to 4 feet. In the vicinity of the former shop location scattered debris including sheet metal, metal buckets, tin cans, lumber, milk, medicine and beverage bottles were found within the fill. This amount of debris in the fill generally increased towards the northeast. Some of the lumber and sheet metal removed appeared visibly burned, indicating that perhaps a previous structure here had burned down and the resulting debris had been covered with backfill. Much of the debris contained oil or was oil stained. Underlying this unit was 3 to 4 feet of variously dark brown to blue green silts and clays with an occasional small percentage of sand and gravel. This unit extended to an approximate depth of 6 to 7 feet below grade. Below this to the base of the deepest excavation point at 9 1/2 feet a brown sand and gravel unit containing up to about 50% clay was observed.

The boring logs from the monitoring wells installed by ARI at the site (OW-5, OW-6 and OW-7) indicate that the clayey sand and gravel unit extends to an approximate depth of 14 to 15 feet. Below this to the bottom depth of the wells, about 18 1/2 feet, yellowish silty clays with trace sand were observed with occasional interbedded thin gravel lenses. Copies of the boring logs are presented in Appendix E.

3.3 SITE HYDROGEOLOGY

The topography of the area in the vicinity of the site is relatively flat. Regional surface water flow is to the southwest (toward San Leandro Bay). Surface water bodies nearest the site include San Leandro Bay (located approximately one third of a mile south of the site) and a canal that extends north from San Leandro Bay (located about one half of a mile west of the site). The potentiometric surface of the uppermost water bearing zone beneath the site was found in December, 1991 to be an average of about 7 1/2 feet below ground surface in monitoring wells OW-6 and OW-7.

Groundwater surface elevations in OW-1, OW-2, and OW-5 confirm the general regional groundwater flow direction to the southwest across the site at a December gradient of 0.0038 ft/ft, as was shown in Figure 2-2. However, groundwater elevations in OW-3, later replaced by OW-6, and OW-4 are anomalously high and may indicate the presence of an artificial water source, such as a leaking pipe, in this area. Water samples collected from four wells constructed on-site showed typical conductivity levels of 1,000 to 1,500 microsiemens per centimeter. Conductivity in microsiemens is generally about one-half the value of Total Dissolved Solids (TDS) in mg/L. A water sample collected from well OW-3 was found to have a TDS value of 780 mg/L.

4.0 REMEDIATION ACTIVITIES

The remediation activities at the site occurred during a period from mid-November to mid-December of 1991. During this time, an area, which had been determined in the project Feasibility Study and Site Closure Plan prepared by ARI in July 1991 and approved by Alameda County Health to require remediation due to the presence of petroleum hydrocarbons, was excavated and the removed material was offhauled to a soil recycling facility. During the excavation, confirmatory soil samples were taken along the sidewalls and bottom of the excavation to determine if the full extent of soils impacted by hydrocarbons above the regulatory limit had been removed. Once samples at the excavation boundaries demonstrated levels of petroleum hydrocarbons below those proposed and approved by Alameda County Health for the site in the project Feasibility Study and Site Closure Plan (FS/SCP) the excavation was backfilled with replacement soil and compacted to a level exceeding that of the surrounding native material. The soil cleanup levels used are presented in Table 4-1 below.

TABLE 4-1 WORKING SOIL CLEANUP LEVELS

Constituent	Concentration
TPH as gasoline	10 mg/kg
TPH as diesel	100 mg/kg
TPH as kerosene	100 mg/kg
Hydrocarbon Oil and Grease	1000 mg/kg
BTEX (cumulative)	5 ug/kg

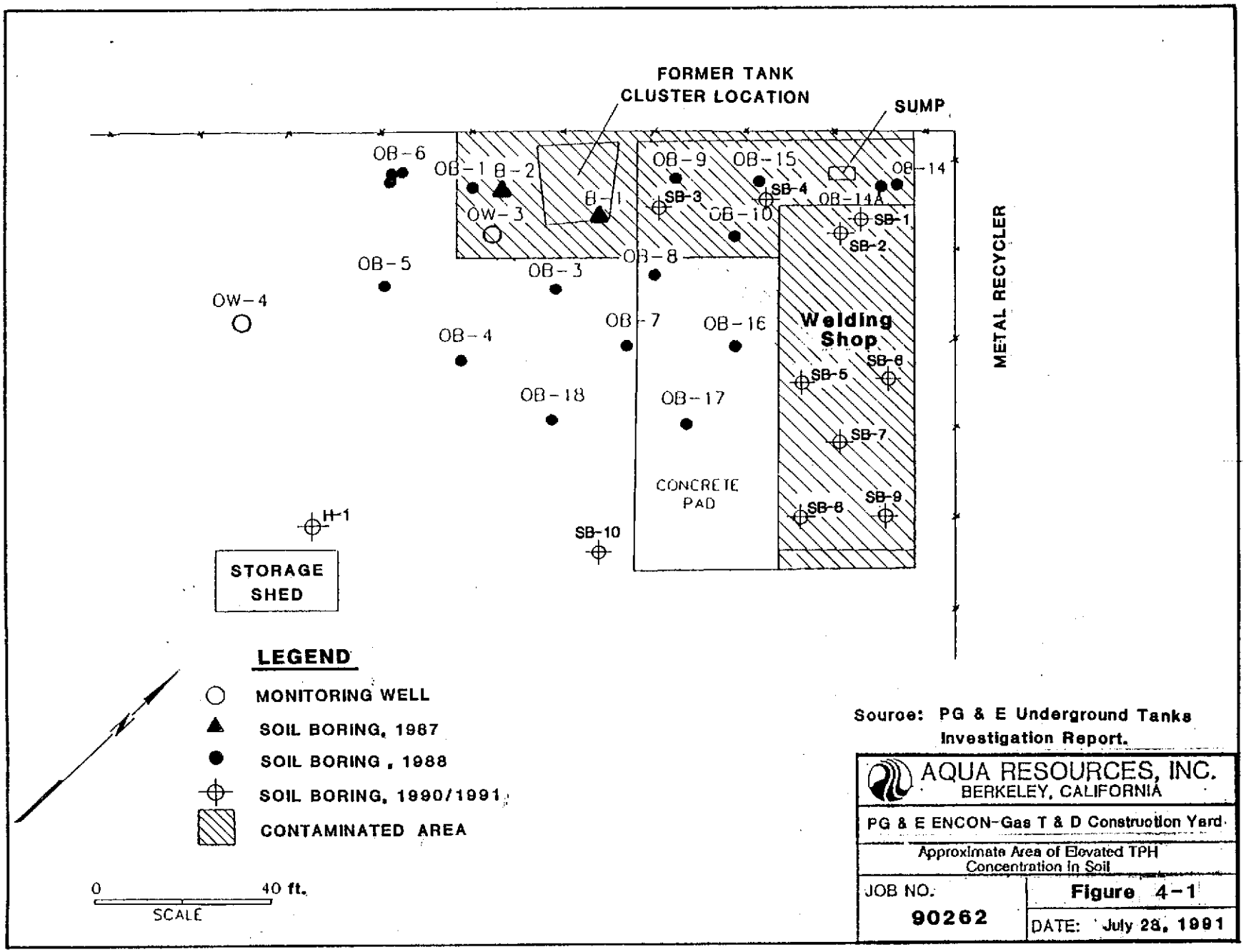
The excavation extent was taken approximately to the edge of the PG&E property line along two of the excavation boundaries. A number of confirmatory samples along these boundaries indicated levels of petroleum hydrocarbon contamination on the neighboring properties which exceeded the proposed cleanup levels and had to be left in place. Protective measures were taken to minimize the potential for future hydrocarbon migration along these boundaries into the clean backfill.

Once the remedial work was completed two monitoring wells, in addition to the four already on site, were installed to provide for future groundwater quality monitoring. Each of these remediation activities is described in detail in the sections which follow.

4.1 REMEDIAL EXCAVATION

Prior to the remedial excavation, PG&E retained a demolition contractor to remove existing structures from the remediation area, including a welding shop and its associated concrete pad. The initial remedial excavation limits were then staked out in the field by ARI personnel based upon the findings of the RI and the approximate area of elevated hydrocarbons presented in the FS/SCP. The location of the welding shop, concrete pad and expected initial excavation limits (based on the RI and FS/SCP) are shown in Figure 4-1. A bermed soil stockpile cell was constructed by spreading two layers of 6 mil plastic sheeting over a base of sand. The construction of this cell as well as the excavation, compaction and offhauling work was performed by STAMCO, Inc. under the supervision of PG&E ENCON Gas, Transmission and Distribution. ARI provided engineering oversight and consultation to PG&E and collected environmental samples during the conduct of the work.

Excavation began on November 18, 1991 using an excavator and loader tandem to remove soil from the ground and transport it to the nearby stockpile cell. An iterative approach was taken to determining excavation limits based upon confirmatory analytical soil samples, the results of which are described in Section 4.2. The initial excavation limits were those indicated in Figure 4-2, with the depth of initial excavation being either that of the underlying water table, found at about 8 to 8 1/2 feet, or some shallower depth in areas where sample results reported in the RI indicated that the vertical extent of hydrocarbon impacted soils did not reach the depth of the water table. Once the initial limit had been excavated, the sidewalls and bottom of the excavation were inspected for hydrocarbon contamination using visual indicators, organic vapor concentration readings and any detectable odors. Based on the inspection a decision was then made whether to continue excavation or to take a



Source: PG & E Underground Tanks Investigation Report.

AQUA RESOURCES, INC.
BERKELEY, CALIFORNIA

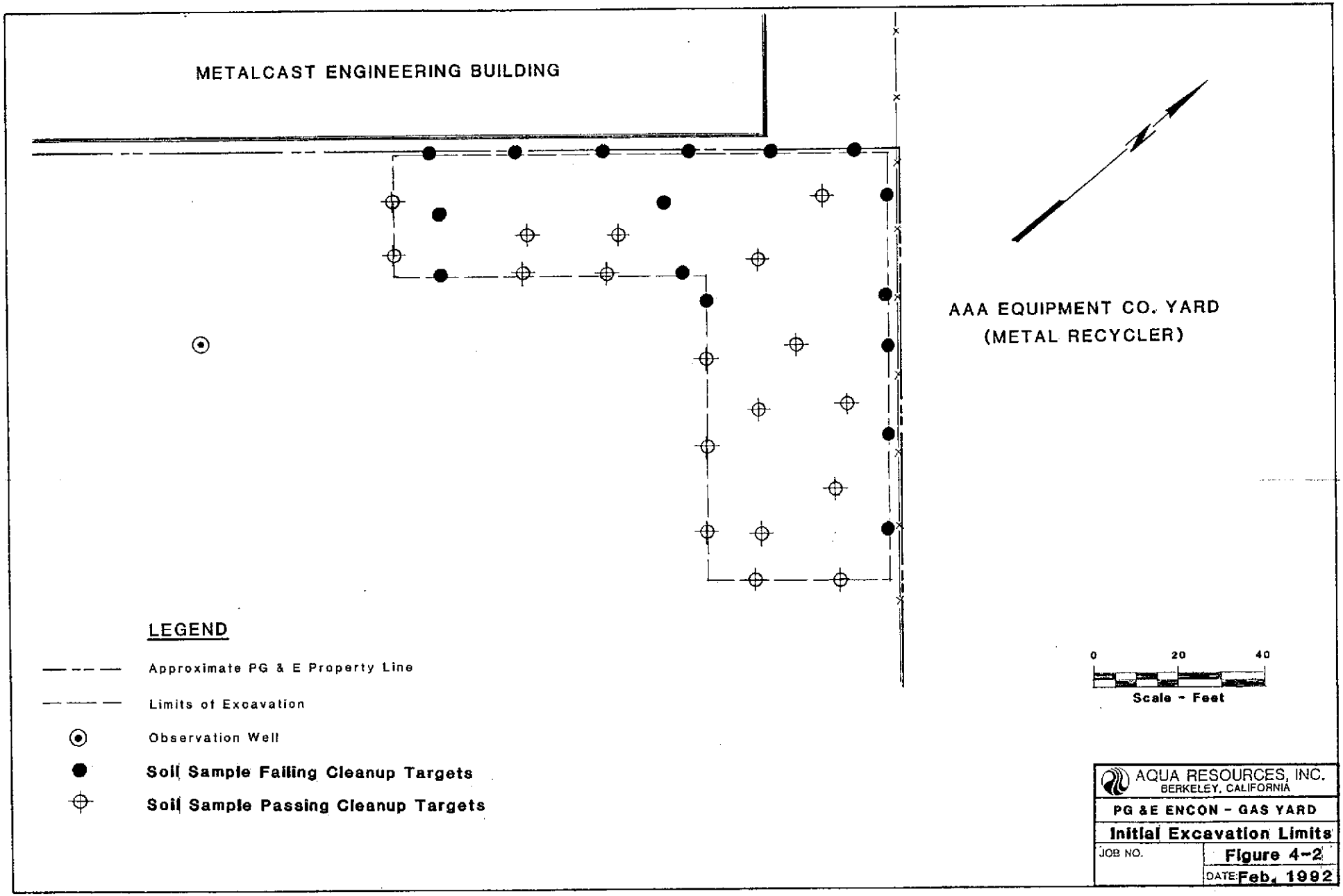
PG & E ENCON-Gas T & D Construction Yard

Approximate Area of Elevated TPH Concentration in Soil

JOB NO.: 90262

Figure 4-1

DATE: July 28, 1991



AQUA RESOURCES, INC.
BERKELEY, CALIFORNIA

PG &E ENCON - GAS YARD

Initial Excavation Limits

JOB NO.

Figure 4-2

DATE: **Feb. 1992**

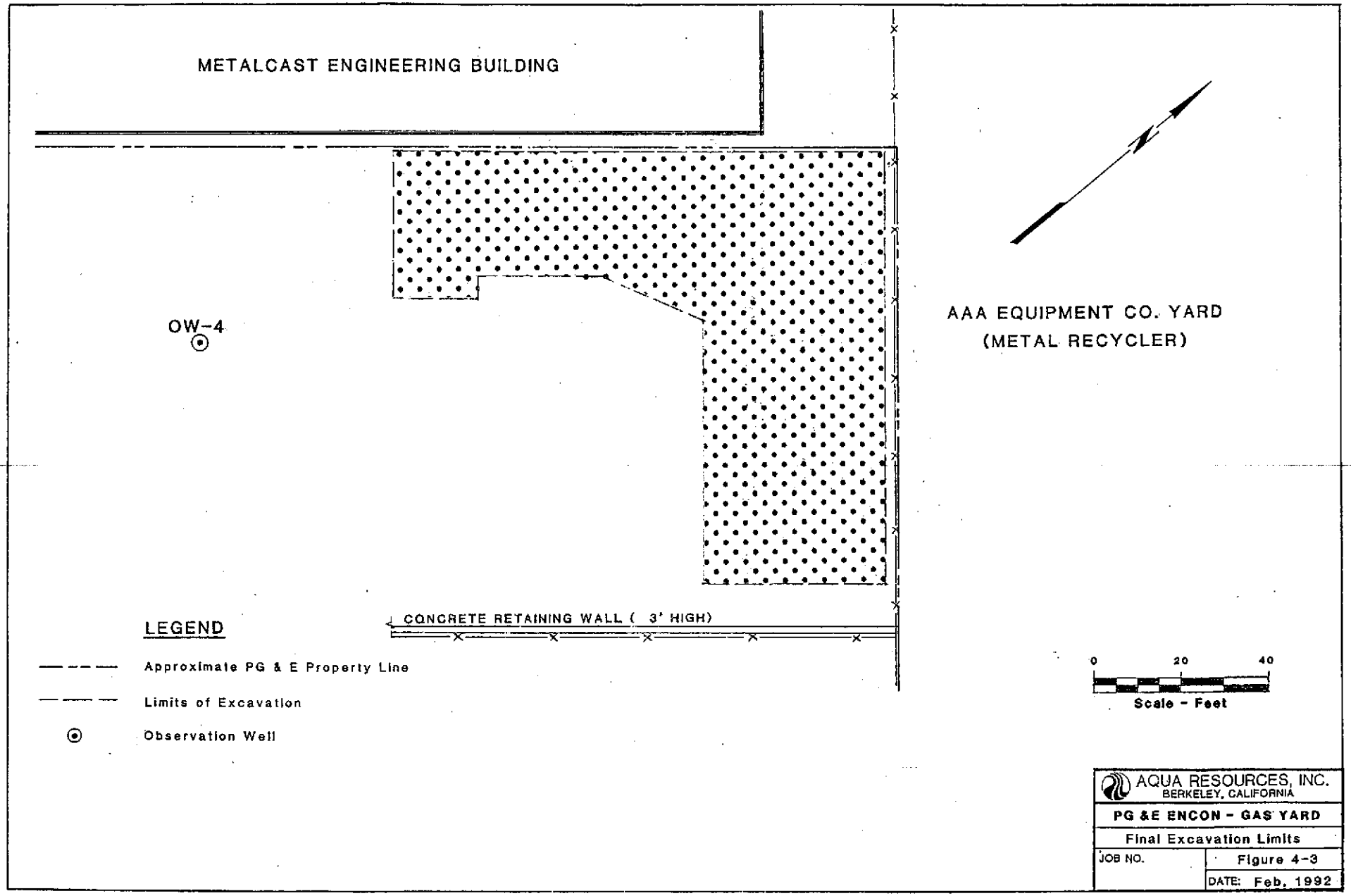
confirmatory sample. Confirmatory soil samples were analyzed, by and large, on a rush basis so that in the event that the sample results indicated petroleum hydrocarbon concentrations in excess of the cleanup levels, further excavation could then be performed without much delay.

Approximately 1,760 cubic (in-situ) yards of soil were removed in reaching the final excavation limits shown in Figure 4-3. The northwest excavation face was taken approximately to the neighboring property line as recommended in the FS/SCP. The northeast excavation face was extended beyond that recommended in the FS/SCP, to within about two feet of the assumed property line in this direction due to the presence of petroleum hydrocarbons. A two foot width of native material was left here to protect the integrity of a 10-foot high fence which lies between PG&E and the neighboring property. In some areas the total excavation depth was taken to about 1 foot below the water table due to the presence of petroleum hydrocarbons in initial confirmatory samples.

Two metal pipelines containing a heavy viscous oil or tar were uncovered during excavation along the northeast side of the PG&E property. Once exposed the tar began to slowly ooze from each pipeline. The two pipes, one 12 inches in diameter with a smaller 4 inch diameter inner pipe and the other an 8 inch diameter metal corrugated line, were found buried at depths of 2 and 2 1/2 feet below grade, respectively. The pipes were exposed to within approximately 2 feet of the property line and were found to continue some unknown distance below the AAA Equipment Co. yard. These two pipes were sealed at the excavation boundary as described in Section 4.6.1. The characterization of the oil which they contained is described in Section 5.0, Potential Sources of Upgradient Contamination.

4.2 FATE OF REMOVED MATERIALS

During the remedial excavation, the generated soil was stockpiled on-site in bermed, double 6 mil visqueen lined stockpiles until its disposal could be arranged. This soil was then transported under non-hazardous manifests to Gibson Oil & Refining Co. (GORC) in Bakersfield, California for recycling. Generated metal and concrete debris, as well as spent absorbent pads, was separately stockpiled. Because much of this debris contained heavy,



AQUA RESOURCES, INC.
BERKELEY, CALIFORNIA

PG &E ENCON - GAS YARD

Final Excavation Limits

JOB NO.	Figure 4-3
	DATE: Feb. 1992

oily product or was oil stained, it was not acceptable for Class III landfill disposal and was instead transported under manifest as a non-RCRA hazardous waste to the Class I Chemical Waste Management Inc. (CWMI) facility in Kettleman Hills, California. One small sub-section of the remediation area, centered on the former sump location, was separately excavated and stockpiled due to a concern for possible high concentrations of lead. Later stockpile sampling indicated that lead concentrations were below regulatory levels and this soil was also transported to Bakersfield for recycling.

4.2.1 Preliminary Bioassay Screening

Prior to initiating remedial activities, four soil samples and one water sample were collected from the subject area and submitted to Brown & Caldwell Analytical laboratory for a California hazardous waste assessment bioassay screening. The purpose of these samples was to determine if the soil and underlying groundwater met the aquatic toxicity requirements for non-hazardous waste. The soil samples were collected at a depth of 5 1/2 feet by boring to this depth. The samples were collected using a split-spoon sampler at 4 locations around the perimeter of the former tank cluster location. Each of these soil samples, identified as SB-23-1, SB-24-1, SB-25-1 and SB-26-1, were composited into a single sample for the purpose of analysis. The water sample, OW-4-1, was collected from well OW-4, immediately downgradient of the anticipated excavation limits. The results of the bioassay screening, shown in Table 4-2, indicated that the soil and groundwater did not exhibit the aquatic toxicity characteristic of a hazardous waste.

TABLE 4-2 RESULTS OF CALIFORNIA HAZARDOUS WASTE BIOASSAY SCREENING

Bioassay Conditions	Time (hrs)	Dilution in Water			
		250 mg/L	250 mg/L	750 mg/L	750 mg/L
		Composite of Soil Samples SB-23,24,25,& 26-1			
Percent of fathead minnows surviving	Start	100	100	100	100
	24	100	100	100	100
	48	100	100	100	100
	72	100	100	100	100
	96	100	100	100	100
		Water Sample OW-4-1			
Percent of fathead minnows surviving	Start	100	100	100	100
	24	100	100	100	100
	48	100	100	100	100
	72	100	100	100	100
	96	100	100	100	100

4.2.2 Fate of Removed Soil

The 32 boring samples collected during the RI in characterizing the area to be remediated indicated that concentrations of all of the compounds tested in the soil were below regulatory hazardous levels with only one exception: a sample collected near the former sump location (SB-1-1b) indicated that elevated concentrations of soluble lead may exist in its vicinity. During remediation this area and the balance of the excavated soil were separately excavated and discretely stockpiled.

The initial sump area excavation measured 16 1/2 feet (N-S) by 11 1/2 feet (E-W) by 5 1/2 feet deep approximately centered on the former sump location. This area lay interior to the balance of the remedial excavation area. In order to characterize the soluble lead in the 39 cubic yards of soil which were removed from this area, two samples, LSP-1 and LSP-2, were collected from the stockpile and composited for soluble lead analysis. Next, to verify that the full extent of potentially lead impacted soil had been removed, one sample was collected from each wall of the sump area excavation (LN-1, LS-2, LW-3 and LE-4) and these too were composited and analyzed for soluble lead. The laboratory results, shown in Table 4-3,

indicated that soluble lead concentration in both the stockpile and the sidewalls was below the CCR Title 26 Soluble Threshold Limit Concentration (STLC) of 5.0 mg/L.

TABLE 4-3 SOLUBLE LEAD CONCENTRATIONS IN SOIL FROM SUMP AREA

Sample ID	Sample Location	Sample Depth (ft)	Soluble Lead in Composite (mg/L)
LSP-1, LSP-2	Sump Area Stockpile	0.7 2.3	1.32
LN-1, LS-2, LW-3, LE-4	North, South, East, and West Walls of Sump Area Excavation	4.5 4.0 4.0 3.0	4.23

The soil from both the excavation area at large and the former sump sub-area was transported to GORC in Bakersfield, California for recycling. A total of 2,275 tons of excavated soil was offhauled and recycled. ~1000 Cubic yds

4.2.3 Fate of Removed Debris

Two truckloads, approximately 40 tons, of metal and concrete debris were removed from the subgrade of the remedial excavation area. The concrete was generated during the break up of a concrete tie-down pad underlying the former tank cluster at a depth of about 8 feet. The metal debris consisted primarily of lengths of various diameter metal pipes: some from an uncovered former natural gas line and others from the heavy oil-filled pipes described in Section 4.1. Other items contained in the debris included: sheet metal; two enameled metal signs reading "CYCO Motor Oil"; several crushed, oil-stained, metal buckets; small diameter PVC electrical conduit; tin cans; and a number of old milk, medicine and beverage bottles. Approximately 200 ERGON Inc. sorbent pads used to absorb floating oil droplets observed on uncovered groundwater and used 6 mil visqueen from stockpiles were also contained in this debris. Much of the debris showed visible hydrocarbon staining and was deemed unfit for disposal to a Class III landfill. This debris was taken in two truckloads under manifests to the CWMI Class I facility in Kettleman Hills, California under an existing PG&E non-RCRA hazardous waste profile for oil contaminated debris. A copies of these manifests can be found in Appendix B.

4.2.4 Fate of Removed Water

The groundwater exposed during excavation at the western end of the northern excavation strip was observed to have a dark oily sheen with visible floating oil droplets. An attempt was made to remove the floating oil using absorbent pads. While this removed many of the larger oil droplets, the sheen remained and it was determined that skimming the water with a vacuum truck would be more effective in removing any remaining product. Prior to skimming, samples of the water were collected and analyzed for petroleum hydrocarbons (TEH) as gasoline (EPA 5030/8015) and as diesel and kerosene (EPA 3510/8015), for total oil and grease (SMWW 17:5520 E&F), and for purgeable halocarbons (EPA 8010) and purgeable aromatics (EPA 8020). The results are shown in Tables 4-4 and 4-5. About 755 gallons of water were then removed from the excavation while skimming with a vacuum truck. Based on the analytical results, California constituent Maximum Contaminant Levels (MCLs) for drinking water were slightly exceeded for benzene, 1,1 dichloroethane, and 1,4 dichlorobenzene. However, no constituents were found at hazardous waste concentrations. The water was then taken to the GORC recycling facility in Redwood City, California under a non-hazardous waste manifest.

TABLE 4-4 SUMMARY OF DETECTED HYDROCARBON COMPOUNDS IN WATER REMOVED FROM EXCAVATION (SAMPLE WA-1)

Gasoline (mg/L)	Diesel (mg/L)	Kerosene (ug/L)	Oil & Grease (mg/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
21	23	< 50	42	0.7	2.8	20	220

TABLE 4-5 SUMMARY OF DETECTED VOLATILE (EPA 8010 AND 8020) COMPOUNDS IN WATER REMOVED FROM EXCAVATION (SAMPLE WA-1)

Detected Compound	Concentration (ug/L)
1,1 Dichloroethane	16
1,1,1 Trichloroethane	3.5
Trichloroethylene	1.2
1,4 Dichlorobenzene	14
Benzene	1.8
Toluene	18
Ethylbenzene	26
Total Xylenes	170

4.3 IN-SITU CONFIRMATORY SAMPLING

In order to confirm that the petroleum hydrocarbon concentrations in soil had been removed to below the target limits, soil samples were collected at the excavation limits. Each of these samples was analyzed for TEH-gasoline, BTEX compounds, TEH-diesel and kerosene, and total oil and grease. On average, samples were collected at a frequency of every twenty linear feet along sidewalls and every 625 square feet across the bottom of the excavation. In general, when selecting a sample location, the vicinity of the potential sample was screened for signs of hydrocarbon contamination visually, by odor, and for volatile compounds using a photoionization detector equipped organic vapor meter (OVM). The precise sample location was that where the screening methods indicated the highest possibility of hydrocarbon contamination.

Samples collected along the northwestern wall of the remediation area were collected using a slightly different procedure from that described in the previous paragraph. Along the length of this excavation boundary sheet pilings were driven into the ground in order to protect the integrity of the neighboring structure, as described in Section 4.5. Placement of the sheet pilings precluded collection of soil samples once the face of this wall was exposed during excavation. Instead samples along this wall were collected prior to sheet piling placement by potholing with a small backhoe every 20 feet along the boundary and collecting samples

directly from the backhoe bucket. Visual, odor, and OVM screening was then used on the soil in the backhoe bucket to select the sample location.

A two part sample reference (ID) of the form <L>ocation-<N>umber, e.g. N-2, was used to identify the collected confirmatory samples. The letters N, S, E, W and B were used in the ID prefix to denote the sample location as being from the north, south, east, west or bottom excavation boundary. The compass directions refer to site directions, e.g. site-north, with the true northwestern property line considered to lie due north in the site orientation. The ID suffix is simply the numerical order of the sample along a specific boundary. For example, sample S-2 was the second sample collected from the site-south excavation wall. A number of miscellaneous samples were taken in addition to the confirmatory wall and bottom samples. In general these samples follow the same ID pattern except that the location prefix used is longer, usually including a descriptive acronym. For example a sample taken from the *east* side of the *aggregate base* import material stockpile was given the ID: *ABE-1*.

A summary of analyses performed on each collected confirmatory wall and bottom sample is provided in Table 4-6. The analytical results are presented in Tables 4-7 and 4-8. A discussion of results is presented in the text which follows.

As described in Section 4.1, excavation and confirmatory sampling was performed iteratively: if an initial confirmatory sample indicated hydrocarbon concentrations exceeding the soil cleanup targets, further excavation, if possible, was performed in the vicinity of the offending sample. The locations and summary of results for samples which failed the cleanup targets in the preliminary round of excavation are shown as filled circles in Figure 4-4. The locations of samples which passed the cleanup targets are indicated with an overlying cross and circle.

All of the soil samples collected along both the site-north and east excavation boundaries were found to contain hydrocarbon concentrations in excess of the soil cleanup targets. Along the north wall, gasoline, BTEX compounds, diesel, kerosene, and oil and grease were each observed in elevated concentrations. Along the east wall diesel, xylenes and oil & grease were each observed in elevated concentrations. Because the excavation extended to within about 1 to 2 feet of the PG&E property line in these directions, further excavation was

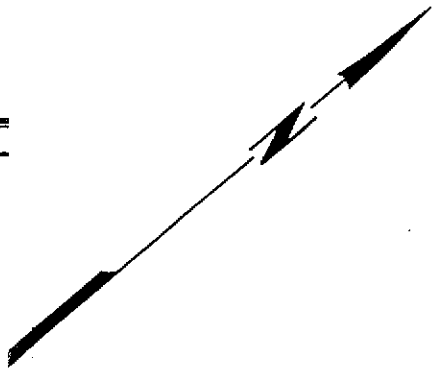
TABLE 4-6
SUMMARY OF CONFIRMATORY SOIL SAMPLE ANALYSES
RELATED TO THE EXCAVATION OF THE FORMER DIESEL TANK AREA

SAMPLE ID	SAMPLE Location	SAMPLE Depth	SAMPLE Date	TVHg	BTEX	TPHd	O&G	EPA 8010	EPA 8020
B-1	Exc. Bottom	4.5'	11/19/91	X		X	X	X	X
B-2	Exc. Bottom	7'	11/19/91	X	X	X	X		
B-3	Exc. Bottom	5.5'	11/20/91	X	X	X	X		
B-4	Exc. Bottom	8'	11/20/91	X	X	X	X		
B-5	Exc. Bottom	7.5'	11/21/91	X		X	X	X	X
B-6	Exc. Bottom	8'	11/22/91	X	X	X	X		
B-7	Exc. Bottom	8.5'	11/22/91	X	X	X	X		
B-8	Exc. Bottom	8.5'	11/23/91	X	X	X	X		
B-9	Exc. Bottom	6'	11/23/91	X	X	X	X		
B-10	Exc. Bottom	8.5'	11/23/91	X	X	X	X		
B-11	Exc. Bottom	8.5'	11/23/91	X	X	X	X		
B-13	Exc. Bottom	9.5'	12/02/91	X	X	X	X		
B-14	Exc. Bottom	9.5'	12/05/91	X	X	X	X		
E-1	East Wall	3.5'	11/20/91	X	X	X	X		
E-2	East Wall	1.5'	11/21/91	X	X	X	X		
E-3	East Wall	4.5'	11/22/91	X	X	X	X		
E-4	East Wall	8.5'	11/23/91	X	X	X	X		
E-5	East Wall	5'	11/23/91	X	X	X	X		
N-1	North Wall	4.5'	11/19/91	X	X	X	X		
N-2	North Wall	4.5'	11/19/91	X	X	X	X		
N-3	North Wall	5.5'	11/19/91	X	X	X	X		
N-4	North Wall	5.5'	11/19/91	X	X	X	X		
N-5	North Wall	5.5'	11/19/91	X	X	X	X		
N-6	North Wall	5'	11/19/91	X	X	X	X		
S-1	South Wall	3.5'	11/19/91	X	X	X	X		
S-2	South Wall	5'	11/19/91	X	X	X	X		
S-3	South Wall	4.5'	11/20/91	X	X	X	X		
S-4	South Wall	5'	11/22/91	X	X	X	X		
S-5	South Wall	4.5'	11/23/91	X	X	X	X		
S-6	South Wall	4.5'	11/23/91	X	X	X	X		
S-7	South Wall	4.5'	11/23/91	X	X	X	X		
S-8	South Wall	5'	12/02/91	X	X	X	X		
W-1	West Wall	4'	11/19/91	X	X	X	X		
W-2	West Wall	4'	11/20/91	X	X	X	X		
W-3	West Wall	5.5'	11/20/91	X	X	X	X		
W-4	West Wall	4'	11/20/91	X	X	X	X		
W-5	West Wall	5'	11/22/91	X	X	X	X		
W-6	West Wall	4'	11/23/91	X	X	X	X		

TABLE 4-7
PETROLEUM HYDROCARBONS DETECTED IN CONFIRMATORY SOIL SAMPLES
RELATED TO THE FORMER DIESEL TANK AREA

Sample I.D.	Sample Depth	TPH as Gasoline (mg/kd)	TPH as Kerosene (mg/kg)	TPH as Diesel (mg/kg)	Benzene (ug/kg)	Toluene (ug/kg)	Ethyl-Benzene (ug/kg)	Xylenes (ug/kg)	O&G (mg/kg)
B-1	4.5'	ND	ND	ND	N/R	N/R	N/R	N/R	ND
B-2	7'	ND	ND	ND	ND	ND	ND	ND	ND
B-3	5.5'	ND	ND	ND	ND	ND	ND	ND	ND
B-4	8'	290	ND	130	10	21	900	6900	3300
B-5	7.5'	ND	ND	ND	ND	ND	ND	ND	740
B-6	8'	ND	ND	ND	ND	ND	ND	ND	ND
B-7	8.5'	ND	ND	ND	ND	ND	ND	ND	ND
B-8	8.5'	ND	ND	ND	ND	ND	ND	ND	ND
B-9	6'	ND	ND	27	ND	ND	ND	ND	670
B-10	8.5'	1.6	ND	ND	ND	ND	ND	8.3	33
B-11	8.5'	ND	ND	130	ND	ND	ND	ND	1600
B-13	9.5'	ND	ND	ND	ND	ND	ND	ND	ND
B-14	9.5'	ND	ND	ND	ND	ND	ND	ND	ND
E-1	3.5'	ND	ND	ND	ND	ND	ND	ND	1600
E-2	1.5'	ND	ND	ND	ND	ND	ND	ND	1100
E-3	4.5'	ND	ND	1500	ND	ND	ND	ND	5600
E-4	8.5'	1.9	ND	51.7	ND	ND	ND	9	1200
E-5	5'	6.3	ND	5000	14	8	13	76	5300
N-1	4.5'	340	ND	340	ND	140	110	4500	8800
N-2	4.5'	ND	ND	410	ND	ND	ND	25	18000
N-3	5.5'	45	ND	1200	ND	77	160	410	5100
N-4	5.5'	73	ND	2500	ND	110	77	920	8300
N-5	5.5'	120	6500	ND	12	140	61	1200	34000
N-6	5'	65	6000	ND	19	65	170	690	13000
S-1	3.5'	ND	ND	ND	ND	ND	ND	ND	ND
S-2	5'	ND	ND	ND	ND	ND	ND	ND	100
S-3	4.5'	ND	ND	21	ND	ND	ND	8.5	240
S-4	5'	ND	ND	ND	ND	ND	ND	ND	16
S-5	4.5'	ND	ND	ND	ND	ND	ND	ND	ND
S-6	4.5'	ND	ND	ND	ND	ND	ND	ND	300
S-7	4.5'	15	ND	730	ND	9.5	30	68	4000
S-8	5'	ND	ND	ND	ND	ND	ND	ND	ND
W-1	4'	ND	ND	ND	ND	ND	ND	ND	ND
W-2	4'	ND	ND	ND	ND	ND	ND	ND	ND
W-3	5.5'	ND	ND	ND	ND	ND	ND	ND	ND
W-4	4'	ND	ND	15	ND	ND	ND	ND	72
W-5	5'	ND	ND	ND	ND	ND	ND	ND	ND
W-6	4'	17	ND	1100	5.3	11	33	79	4500

METALC



OW-4

QUIPMENT CO. YARD

TAL RECYCLER)

LEGEND

Approximate PG &

Limits of Excavat

Observation Well

Soil Sample Failin

Soil Sample Passir

G-10
D-100
O-1000
B-5, T-5
E-5, X-5

Constituents Exce
Gas, Diesel, Oil &
Benzene, Toluene,

0 20 40

Scale - Feet

AQUA RESOURCES, INC.
BERKELEY, CALIFORNIA

PG &E ENCON - GAS YARD

Initial Confirmatory Samples

JOB NO. 90262.2

Figure 4-4

DATE: February 1992

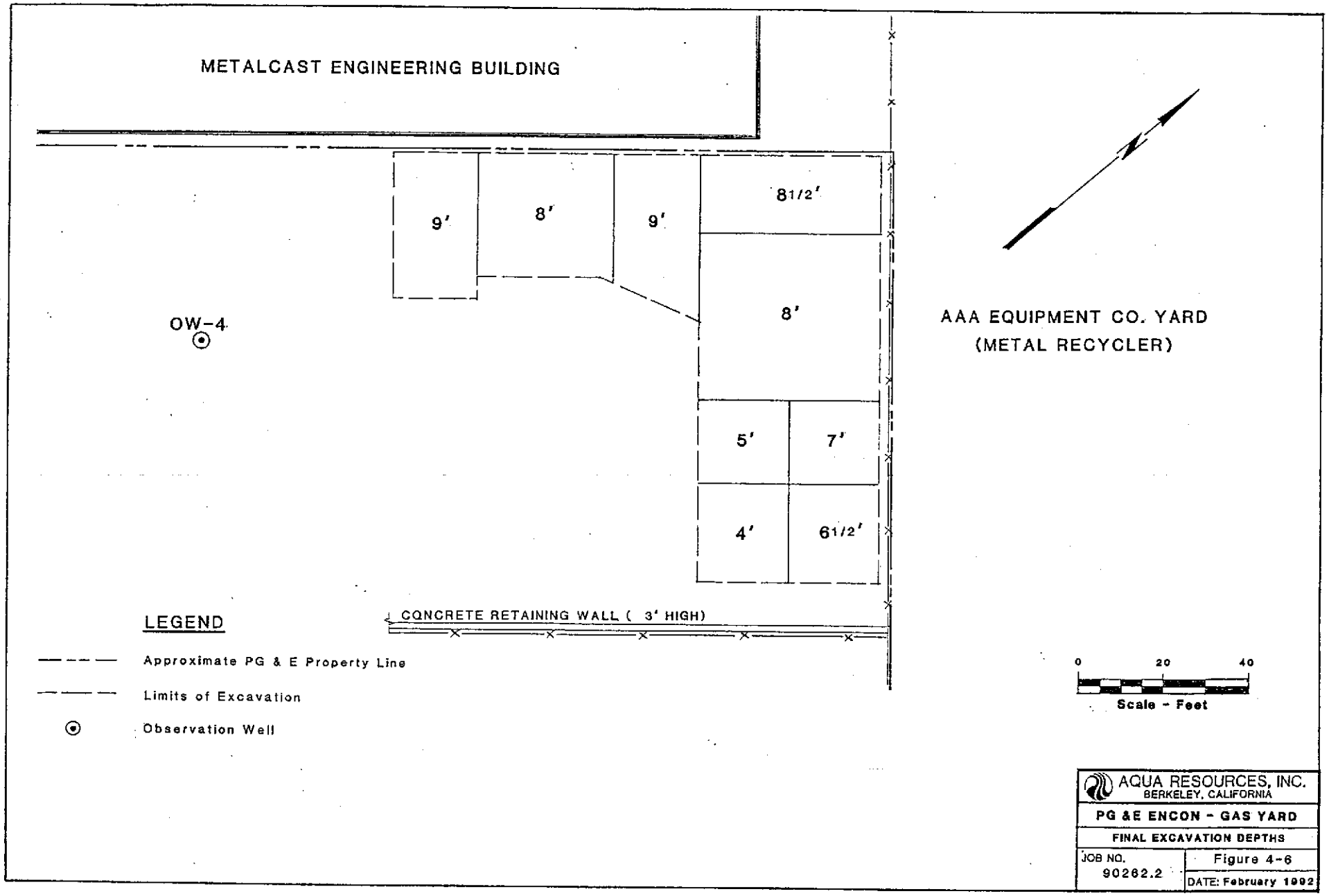
TABLE 4-8 SUMMARY OF VOLATILE (EPA 8010/8020) ORGANIC COMPOUNDS IN TWO CONFIRMATORY SOIL SAMPLES (IN UG/KG)

Detected Compound	B-1 (at 4.5 feet)	B-1 (Method Blank)	B-5 (at 7.5 feet)
methylene chloride	36	69	< 5.0
1,1-dichloroethane	< 5.0	< 5.0	< 5.0
1,1,1-trichloroethane	< 5.0	< 5.0	< 5.0
benzene	< 5.0	< 5.0	< 5.0
toluene	< 5.0	< 5.0	< 5.0
ethylbenzene	< 5.0	< 5.0	< 5.0
total xylenes	< 5.0	5.0	< 5.0

4.4 BACKFILL AND COMPACTION OF REPLACEMENT MATERIAL

Once remedial excavation was complete, the area shown in Figure 4-6 was backfilled and compacted from the indicated depth to the ground surface. Where excavations extended below the free groundwater level, gravel was placed to a level approximately 2 feet above the water level which was found at about 7 1/2 to 8 feet below ground surface. The gravel consisted of drain rock purchased from Gallagher & Burke that met the specifications of being similar to Type B Class 1 Permeable Material (Caltrans Standard Specification 68-1.025) having a maximum size of 2 inches in longest dimension. Class II aggregate base (AB) material was then used as backfill up to the finished grade.

To reduce the potential for the fine fraction in the AB to migrate into the permeable material, a filter fabric, Supac 4NP (Phillips Fibers Corporation), was used to separate the gravel and AB material. This fabric has an Equivalent Opening Size (EOS) of between 150 to 350 microns (50-100 sieve size), a minimum Mullen Burst Strength of 220 psi and minimum Puncture Resistance of 85 pounds. In addition, this geotextile is compatible with the organic contaminants found in the underlying groundwater.



AQUA RESOURCES, INC.
BERKELEY, CALIFORNIA

PG &E ENCON - GAS YARD

FINAL EXCAVATION DEPTHS

JOB NO. 90262.2

Figure 4-6

DATE: February 1992

Prior to backfilling, the exposed subgrade material was tested at two depths to determine the properties and in-situ relative compaction of the native materials at the site. All of the soils and compaction testing was performed by Construction Materials Testing Inc. The in-situ native soil test results are summarized in Table 4-9. Prior to backfilling the excavation areas, the native soil in areas of the excavation shallower than 7 feet was compacted to a measured relative compaction of 92%. In areas of the excavation originally 7 feet or deeper, no compaction could be performed due to the presence of groundwater and instead gravel was used to bring the bottom depth up to about 5 1/2 feet in total depth in order to form a solid base upon which to compact.

TABLE 4-9 SUMMARY OF NATIVE SOIL PROPERTIES AT TWO DEPTHS
(prior to compaction)

Sample Depth (feet)	Soil Description	Optimum Moisture Content (%)	Maximum Dry Density (lb/ft^3)	In-Situ Moisture Content (%)	In-Situ Relative Compaction (% of max)
4.5	Sandy Clay w/Gravel	9.6	123.7	19.3	86
7.0	Clayey Sand w/Gravel	8.9	129.1	15.7	87

A sample was also collected of the AB backfill material and tested to determine the properties necessary to monitor the degree of compaction achieved during backfill and compaction activities. These tests found that the maximum dry density of the AB used was 134.5 lb/ft^3 and its optimum moisture content was 6.7%. Because the supplied AB material was recycled, containing visible pieces of asphalt, representative samples were also collected to determine its petroleum hydrocarbon content. These results, shown in Table 4-10, indicated that although oil and grease was present in concentrations exceeding the established cleanup level of 1,000 mg/kg for this constituent, the chromatogram matched that of an asphalt standard. Because asphalt is not considered hazardous and does not contain constituents which are significantly soluble in groundwater, this material was approved for use as backfill.

TABLE 4-10 SUMMARY OF ORGANIC HYDROCARBON COMPOUND ANALYSES ON RECYCLED AB BACKFILL MATERIAL (COMPOSITE OF SAMPLES ABE-1, ABW-1, ABS-1 AND ABN-1)

G (/)	D (/)	K (/)	& G (/)	B (/)	(/)	E B (/)	(/)	C (/)	(E A 8270)
< 1.0	< 1.0	< 1.0	2900*	< 5.0	< 5.0	< 5.0	< 5.0	All < 0.25	

* Oil and Grease confirmed as asphaltic compound

Once the gravel and geotextile fabric were in place, lifts of AB approximately 9 to 12 inches in uncompacted height were spread in the excavation area, compacted to a thickness of about 6 to 9 inches, and then tested for relative compaction. In order to pass the compaction specifications each lift which lie at depths greater than 3 feet below grade was required to reach 90% relative compaction, and each lift at 3 feet or shallower was required to reach at least 95% relative compaction. If a lift failed to reach sufficient compaction when tested, that lift was reworked and then retested until it passed the compaction specification. The final compaction test results are listed below in Table 4-11. Copies of the original field compaction test results can be found in Appendix C.

TABLE 4-11 SUMMARY OF FINAL COMPACTION TEST RESULTS

CMT Test Number	Depth of Test (feet)	Relative AB Compaction (%)
12	5.0	95
5	4.5	95
13	4.0	97
14	4.0	96
32	4.0	92
6	3.5	98
10	3.5	95
26	3.5	91
7	3.0	95
16	3.0	98
22	3.0	95
29	3.0	95
21	2.0	95
23	2.0	95
33	2.0	99
24	1.5	97
35	1.5	97
25	1.0	95
28	1.0	95
31	1.0	95
27	0.5	95
34	0.5	97
30	0.0	98
36	0.0	96
37	0.0	99

4.5 PROTECTION OF NEIGHBORING PROPERTY DURING REMEDIATION

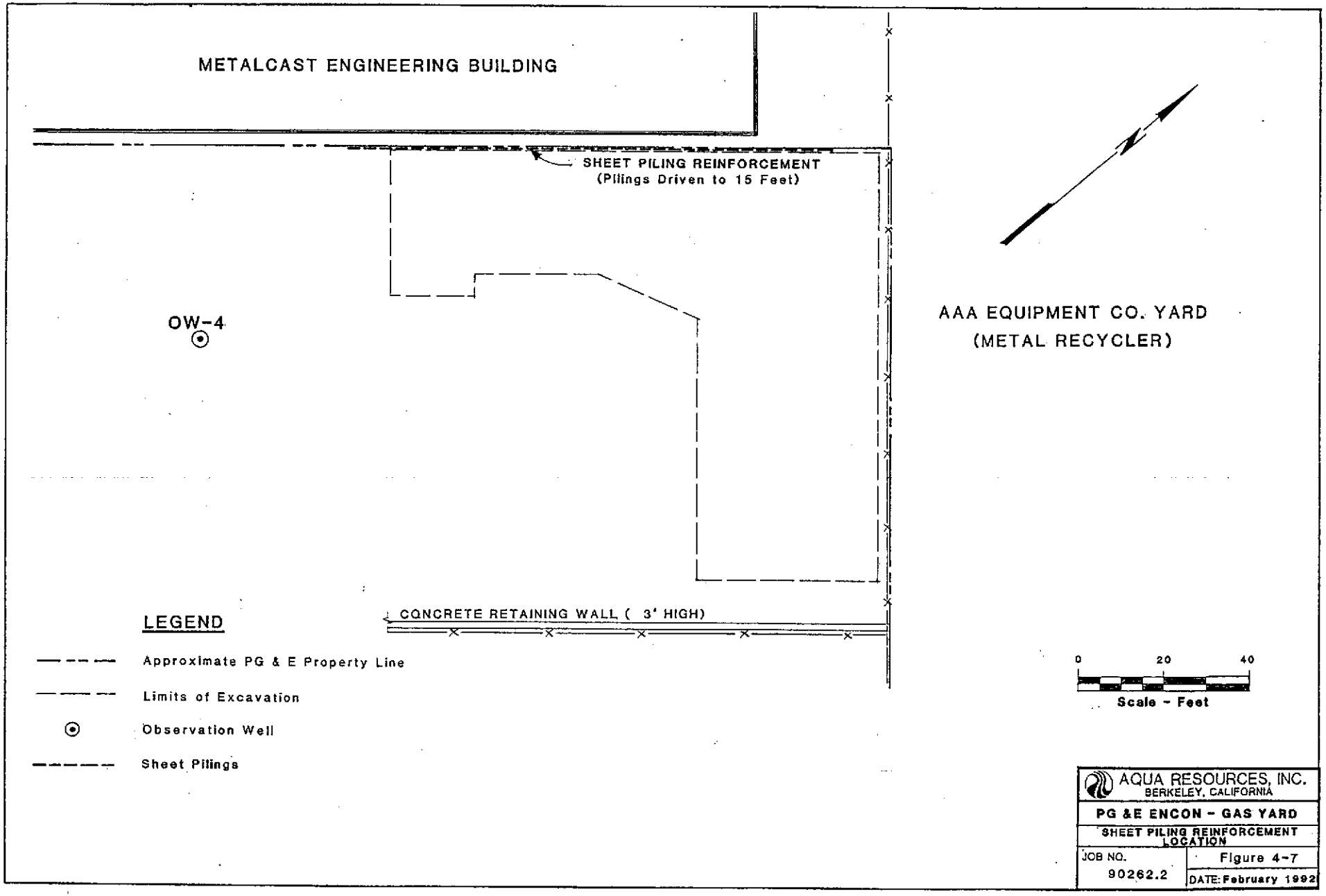
The remedial excavation design called for excavation of soils near two neighboring properties, one to the northwest occupied by Metalcast Engineering, and one to the north east occupied by AAA Equipment Co. No buildings stand near the AAA Equipment and PG&E property line except for fence separating the two properties. During excavation a

buffer of 2 feet was established between the excavation wall and this fence in order to protect the fence's integrity. Near the Metalcast and PG&E property line however stands the Metalcast Engineering Co. building, a tall single story concrete structure, separated from the PG&E property by a fence. The building's location relative to the remediation area is shown in plan view on Figure 4-7. Since the area targeted for remedial excavation extended to the northwest property line, just a few feet from the edge of the Metalcast building, protective measures were taken to minimize the possibility for settlement of soil beneath the foundation of this building.

First an effort was made to establish the proximity of the PG&E property line to the Metalcast building. Using assessor parcel maps and other record information obtainable from the Alameda County Records Department along with field measurements at the site, TETRAD Engineering Inc. determined that the property line lay approximately 1 ±1/2 feet outside of the fence separating the two properties. This fence, torn down and later replaced at the conclusion of the remediation effort, lay within 2 1/2 feet of the Metalcast building. This places the property line approximately 1 1/2 ±1/2 feet southeast of the building.

Then, the initial state of integrity of the Metalcast building was recorded on videotape and benchmarks were established on all of the building panels which stand near the remediation area. Altogether, six panels were marked. The elevations of these benchmarks were then surveyed by TETRAD in order to establish a baseline for the purposes of monitoring any settlement the wall experienced during the remediation effort.

Following this, steel sheet pilings were driven to a depth of about 15 feet in a line approximately 3 feet southeast of the Metalcast building in the area shown on Figure 4-7. The purpose of the pilings was to prevent the subgrade below the building from collapsing during the adjacent remedial excavation. The length of this line of sheeting extended from a point about 10 feet from the north PG&E property corner to a point about 125 feet southwest of this corner, running parallel to the building wall.



AQUA RESOURCES, INC.
BERKELEY, CALIFORNIA

PG &E ENCON - GAS YARD

SHEET PILING REINFORCEMENT LOCATION

JOB NO. 90262.2

Figure 4-7

DATE: February 1992

Finally, following excavation, backfill and compaction activities, the sheet pilings were removed and the wall panel benchmarks resurveyed to determine if any settlement had occurred. The survey results, shown in Table 4-12, indicated that there was no settlement. A copy of the original TETRAD settlement monitoring report can be found in Appendix D.

TABLE 4-12 RESULTS OF SETTLEMENT MONITORING ON METALCAST ENGINEERING BUILDING

Panel Benchmark Number	Elevation on 11/19/91 (feet)*	Elevation on 1/9/92 (feet)*	Apparent Settlement (feet)
1	103.73	103.73	0
2	103.73	103.73	0
3	103.74	103.74	0
4	103.74	103.74	0
5	103.75	103.75	0
6	103.75	103.75	0

* Elevations are based upon an assumed datum and are not absolute elevations.

4.6 PROTECTION OF CLEAN BACKFILL FROM RESIDUAL HYDROCARBONS

During excavation, soil samples indicated that hydrocarbon concentrations were below the target levels along all excavation boundaries interior to PG&E property, however, elevated concentrations of hydrocarbons were found in the final excavation walls adjacent to both the northwest and northeast property lines. Along the northeast property line, two buried pipes containing a heavy black tarry product were uncovered which appeared to continue in extent beyond the PG&E property line. In order to protect the clean backfill placed into the excavations, measures were taken to reduce the mobility of the contaminants from these two properties.

4.6.1 Northeast Excavation Boundary

Soil concentrations above the cleanup targets for oil and grease, diesel, and xylenes were observed along the northeastern excavation wall bordering the AAA Equipment Co. yard. Tar was observed in several locations to seep out of the old fill which extends to a depth of 3 to 4 feet along this boundary. In addition, the two tar filled pipes were exposed along this wall buried at a depths of approximately 2 and 2 1/2 feet below grade and protruding about 2

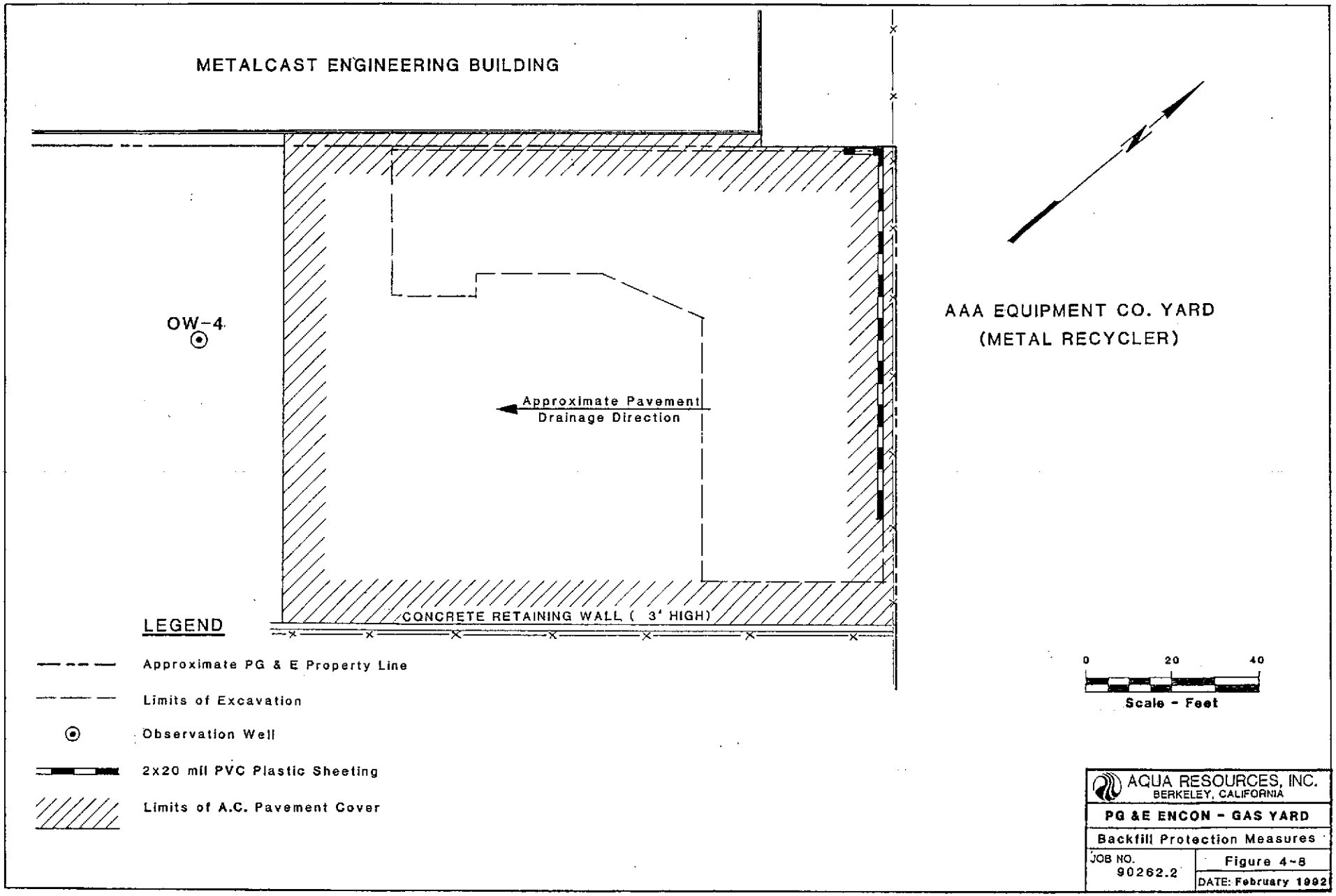
feet into the excavation. In order to protect the clean backfill from contamination from these sources, two measures were taken.

First, two 120 foot long layers of 20 mil PVC plastic sheeting was suspended along this excavation wall to separate the clean backfill from the contaminated soil in the area shown on Figure 4-8. This was accomplished by folding one 20 foot width of sheeting in half over a 140 foot length of heavy rope, then dangling the doubled sheet from the neighboring fence with suspension lines tied to the sheet's rope spine. The PVC sheeting covered the adjacent soil to a depth of about 6 feet along the excavation wall.

Finally, the ends of the two tar filled pipes were covered in several layers of 6 mil visqueen, which was wire wrapped to hold it in place. Then, once the new backfill was placed and compacted up to the level of the old backfill, about 1 1/2 feet below the pipes, a plastic form was placed around the protruding pipe ends and a cement slurry was poured to effectively seal the pipe ends from leaking.

4.6.2 Northwest Excavation Boundary

Soil concentrations above the cleanup targets for gasoline, BTEX, diesel, kerosene, and oil and grease were observed in soil samples collected along the northwest excavation boundary bordering the property occupied by Metalcast Engineering. Due to the sheet pilings in place along all but the most northeastern 10 feet of this boundary, a plastic liner could not be draped on the wall since removing the pilings after backfilling would likely tear out the liner. Instead, only the 10 foot unpiled section was draped with plastic (as part of the measures described in Section 4.6.1), and the remaining excavation length was backfilled normally. However, in order to reduce the mobility of the boundary soil contaminants from precipitative leaching through the soil left in place, the overlying soil was covered with approximately 5 inches of asphaltic concrete. The remainder of the remediation area was also paved and graded to drain to the southwest as indicated in Figure 4-8.



AQUA RESOURCES, INC.
BERKELEY, CALIFORNIA

PG &E ENCON - GAS YARD

Backfill Protection Measures

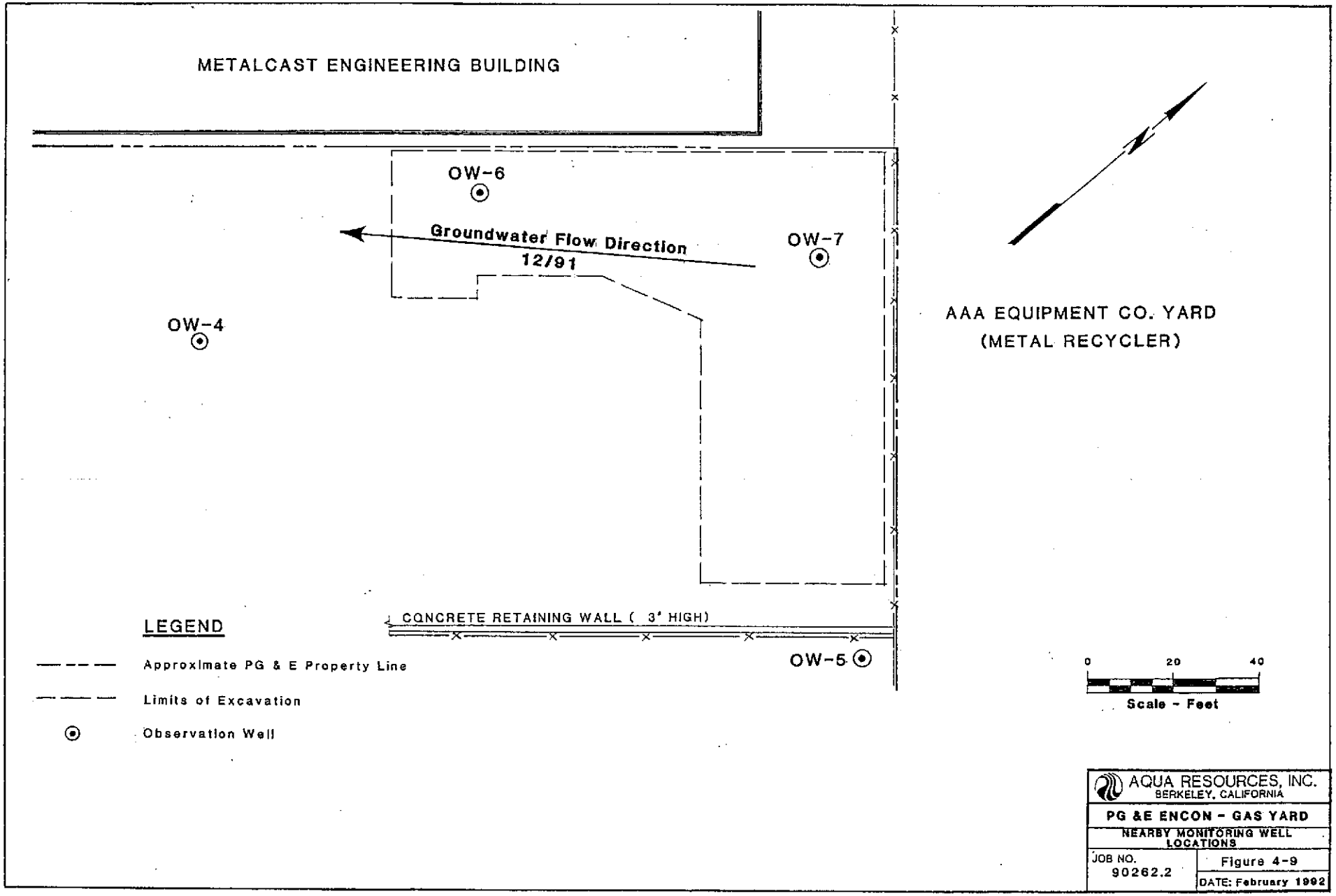
JOB NO. 90262.2

Figure 4-8

DATE: February 1992

4.7 MONITORING WELL INSTALLATION

Former monitoring well OW-3 was destroyed prior to excavation activities since it lay within the bounds of the remediation area. Following the remedial work, two new 2 inch diameter monitoring wells were installed. Well OW-6 was installed in the vicinity of the former tank cluster location to serve as well OW-3's replacement for monitoring the quality of groundwater underlying the subject area. The other new monitoring well, OW-7, was installed at the northeastern end of the remediation area, in the vicinity of the two tar-filled pipes, to gauge the likelihood of upgradient contamination in the shallow groundwater underlying the PG&E site. The locations of these new wells were approved by Alameda County Health. Figure 4-9 presents the locations of the present monitoring wells near the remediation area. Wells OW-1 and OW-2, not shown on this figure, lie nearer Coliseum Way on PG&E property and are shown in Figure 2-2.



AQUA RESOURCES, INC.
BERKELEY, CALIFORNIA

PG &E ENCON - GAS YARD

NEARBY MONITORING WELL LOCATIONS

JOB NO. 90262.2

Figure 4-9

DATE: February 1992

5.0 POTENTIAL SOURCES OF UPGRADIENT CONTAMINATION

ARI conducted a limited Phase I preliminary site assessment of the Coliseum Way facility in November and December 1990. The purpose of this assessment was to attempt to determine if potential sources of groundwater contamination may exist upgradient from the Coliseum facility. The site assessment consisted of the following activities:

1) field reconnaissance of the site and surrounding area,
2) a file search of selected regulatory agencies,
3) a review of available maps and aerial photographs.

During the remedial excavation, two tar or heavy oil filled pipes were uncovered which appeared to originate from beyond the PG&E property line to the northeast. The contents of these pipes were characterized and found to be similar in character to some of the contaminants observed in the remediated soils. A discussion of the pipes and their content as well as the results of the first two activities performed in the preliminary site assessment are described below. The results of the map and photograph review were described in Section 2.3, Site History.

5.1 DESCRIPTION AND CHARACTERIZATION OF TAR FILLED PIPES

Two metal pipelines containing a heavy viscous oil or tar were uncovered during excavation along the northeast side of the PG&E property. Each pipeline was oriented approximately perpendicular to the northeastern property line. Once exposed, the tar began to slowly ooze from each pipe. The two pipes, one 12 inches in diameter with a smaller 4 inch diameter inner pipe and the other an 8 inch diameter corrugated line, were found buried at depths of 2 and 2 1/2 feet below grade, respectively. They were separated horizontally by a distance of about 2 feet.

The 4 inch inner pipeline was the first uncovered. Its terminus was discovered about 20 feet from the AAA Equipment Co. property at a depth of about 2 1/2 feet. It is unknown whether this pipe was intact in-situ or if it lay in broken sections as several lengths came out of the ground easily during excavation. Each of these lengths contained viscous tar or heavy oil and the soil surrounding the pipe was contaminated with a tar similar in appearance down to

the depth of the water table in the vertical direction and at least 10 feet laterally in either direction away from the pipe.

The outer pipe was first discovered about 5 feet from the AAA property line. At this exposure it appeared that most of the tar lie in the annular space between the two pipes. By attaching a chain to the inner pipe of the 12 inch line and tie pulling with the excavator bucket a 12 foot length of the inner pipe was removed, meaning this pipe, and presumably the outer pipe extends at least 7 feet under the AAA yard. The appearance of the two pipes with product in their annulus seems to indicate that this was a process pipeline at one time. Commonly, viscous fluids are heated in order to induce flow through a pipeline and this is sometimes accomplished by passing steam or hot water through an inner line to heat the fluid in the annular space.

The 8 inch diameter corrugated (culvert-type) pipe terminus was uncovered about 3 feet from the AAA property line and it too contained the heavy oil or tar. Visual inspection indicated that this pipeline may continue some unknown distance beyond the property line. Each of the two pipes were sealed at the excavation boundary as described in Section 4.6.1.

Another technique used historically to induce flow of a viscous petroleum product is the addition of solvents to reduce viscosity. In order to determine if the product found in the pipe contained solvents a sample (E-PIPE-2) of the product was collected from the 12 inch diameter pipe and analyzed for halogenated volatile organics, semivolatile organics and BTEX compounds, by EPA methods 8010, 8270 and 8020 respectively. This sample was additionally analyzed for petroleum hydrocarbons as gasoline, kerosene, diesel and motor oil. The results of these analyses, shown in Table 5-1, indicate that xylene, at low concentration of 11 ug/kg, was the only volatile compound detected of those tested. There was however a significant concentration of diesel, 7000 mg/kg or 0.7%, contained in the product and a number of polynuclear aromatic hydrocarbons (PAHs) were also detected in the tens of parts per million range.

TABLE 5-1 COMPARISON OF DETECTED COMPOUNDS IN PRODUCT SAMPLE E-PIPE-2 AND SOIL SAMPLES E-6 AND B-11

Detected Compound	Analysis Method (EPA #)	Sample ID		
		E-PIPE-2	E-6	B-11
Xylene	[1]8240,[2]8020	11 ug/kg[2]	< 5 ug/kg[1]	< 5 ug/kg[1]
Chlorobenzene	[1]8240,[2]8010	< 5 ug/kg	< 5 ug/kg[1]	130 ug/kg[1]
1,3-Dichlorobenzene	[1]8240,[2]8010	< 5 ug/kg	< 5 ug/kg[1]	1100 ug/kg[1]
1,4-Dichlorobenzene	[1]8240,[2]8010	< 5 ug/kg	< 5 ug/kg[1]	1800 ug/kg[1]
1,2-Dichlorobenzene	[1]8240,[2]8010	< 5 ug/kg	< 5 ug/kg[1]	160 ug/kg[1]
Naphthalene	8270	< 5 mg/kg	0.5 mg/kg	< 1 mg/kg
Acenaphthene	8270	13 mg/kg	< 0.5 mg/kg	< 1 mg/kg
Fluorene	8270	52 mg/kg	0.9 mg/kg	< 1 mg/kg
Phenanthrene	8270	76 mg/kg	1.8 mg/kg	< 1 mg/kg
Anthracene	8270	13 mg/kg	< 0.5 mg/kg	< 1 mg/kg
Fluoranthene	8270	13 mg/kg	< 0.5 mg/kg	< 1 mg/kg
Pyrene	8270	72 mg/kg	3.0 mg/kg	1.9 mg/kg
Benzo(a)anthracene	8270	44 mg/kg	< 0.5 mg/kg	< 1 mg/kg
Chrysene	8270	30 mg/kg	< 0.5 mg/kg	< 1 mg/kg
Benzo(a)pyrene	8270	16 mg/kg	< 0.5 mg/kg	< 1 mg/kg
Gasoline	5030-8015	< 1 mg/kg	NA	< 1 mg/kg
Kerosene	3510-8015	< 1 mg/kg	< 1 mg/kg	< 1 mg/kg
Diesel	3510-8015	7000 mg/kg	3500 mg/kg	130 mg/kg
Motor Oil	3510-8015	< 10 mg/kg	6700 mg/kg	NA
Oil & Grease	5520 E&F	NA	NA	1600

Notes: NA = Not Analyzed

In order to determine whether or not the two pipelines were the source of contaminants found in neighboring soils, the EPA 8270 analysis for semivolatile organics was repeated on two soil samples obtained from the vicinity of the pipelines. Sample E-6 was collected approximately 2 1/2 feet below the 12 inch diameter pipe from the excavation sidewall. Sample B-11 was collected at a depth of 8 1/2 feet approximately 35 feet from the observed original terminus of the 12 inch diameter pipe. These samples were additionally analyzed for volatile organic compounds by EPA 8240 and TEH as diesel. Total oil and grease was also tested in sample

B-11. Both of these soil samples contained a visible tar product similar in appearance to that in the pipelines. A comparison of the results for samples E-PIPE-2, E-6 and B-11 is shown in Table 5-1. The soil in the vicinity of sample B-11 was later excavated due to the hydrocarbons present.

The results of the 8270 analysis for the product sample indicated that a number of PAHs are present in the pipeline product. Three of these PAHs were also detected in sample E-6 and one, Pyrene, was detected in all three of the samples. Diesel was also detected in all three samples. This may suggest that the heavier fraction of hydrocarbons present in the wall and bottom samples is of a similar nature to the pipeline product. Sample B-11 contained concentrations of chlorobenzene and the dichlorobenzenes which were not detected in the other two samples, indicating a probable volatile halocarbon source other than the pipelines.

5.2 RESULTS OF FIELD RECONNAISSANCE

The nearby area bounded by Coliseum Way and San Leandro Street, 45th Avenue and 54th Avenue, is presently occupied by industrial and commercial businesses, primarily concerned with metal processing and finishing, scrap metal sales, and auto service and body work.

The yard of the scrap metal dealer immediately adjacent to the site on the northeast contains various types of electrical equipment and machinery, hydraulic equipment, welding equipment, air conditioning equipment, transformers, drums marked battery fluid, paint cans, and oil soaked wood and a trailer. The metal finishing operations appear to include chrome plating, anodizing, and industrial plating. CIM Inc., a construction materials firm, is located at 833 47th Avenue. Chevron has a large facility on San Leandro Street between 45th and 46th Avenues which includes several large aboveground storage tanks.

5.3 AGENCY DATA

A city directory from 1969 at the Oakland Public Library shows that similar industries were in the area at that time. In addition, the Titanium Pigment Corporation, Division of the National Lead Co., a paint manufacturing company, was located at 4825 San Leandro Street in 1969. Superior Products Co., sealing compounds, occupied 833 47th Avenue in 1969.

The East Slough drainage is currently west and south of the PG&E property. The information provided by PG&E (Underground Tank Investigation Report, July 1988: Figure 9 — "Potentiometric Contour Map for July 21, 1988") indicates that the groundwater gradient at that time was toward the southwest. There are several sites which have been investigated by the Regional Water Quality Control Board (RWQCB) in the vicinity of the subject site, but none of them is located within 1000 feet of the site and upgradient (north to east). Figure 5-1 shows the locations of several sites with reported toxic or fuel spills in the vicinity of the PG&E site.

Learner Company at 768 46th Avenue is approximately 1100 feet from the site to the northwest. The soil under this site is contaminated with petroleum hydrocarbons and PCBs; however, it is unknown at the present time if the groundwater is contaminated. L&M Plating at 920 54th Avenue is approximately 1200 feet east of the property. The report at the RWQCB states that the groundwater under L&M has not been significantly impacted; however, the California Department of Toxic Substances Control is considering reopening the case.

Peterson Properties at 1066 47th Avenue is approximately 1500 feet north of the site. The Chevron Asphalt Terminal at 4525 San Leandro Street is approximately 1700 feet north of the site. The groundwater under both the Peterson site and the Chevron site has been reportedly contaminated with 560 ppb and 590 ppb total petroleum hydrocarbons respectively.

F&K Investment at 1259 48th Avenue is approximately 2000 feet northeast of the site. The groundwater under this site has been tested and had contamination levels of 46,000 ppb total petroleum hydrocarbons. It is unknown whether or not the contamination has migrated off site. AAA Equipment Co. at 765 50th Avenue is southeast of the site, across 50th Avenue; however, this site is so close to the property that if the groundwater has been affected by the diesel contamination on that site, and if there is any variation in the groundwater gradient, it may affect the PG&E property. The RWQCB has no information at this time regarding the status of the groundwater at this site.

The California Department of Toxic Substances Control makes available various sources of information to assist in site investigations. The following sources were reviewed:

CERCLIS — the Environmental Protection Agency's computerized database

ASPIS — the Abandoned Site Program Information System used to track potential historical and present day hazardous waste sites

Cortese List — data received from the State Water Resources Control Board, the California Integrated Waste Management Board, and the California Department of Toxic Substances Control

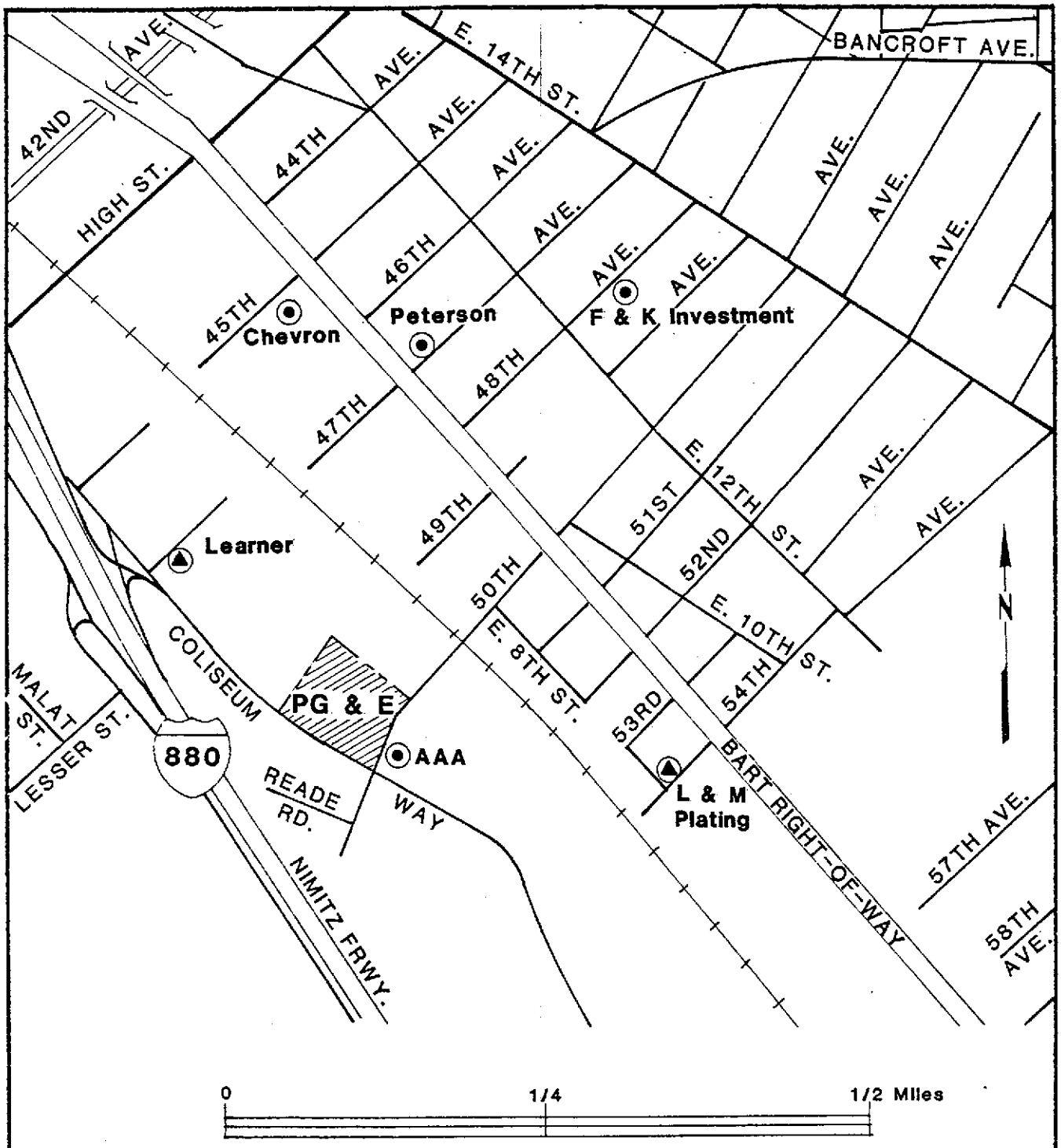
Bond Expenditure Plan — list of sites for which State bond funds will be spent for cleanup or oversight. These sites are also known as State "Superfund" sites.

The CERCLIS list included NL Industries Inc., Pigments and Chemical Division, at 4701 San Leandro Street. We have contacted the local office of the U.S. Environmental Protection Agency which has the CERCLIS files. The reply we received stated that the NL Industries Inc. site was put on the CERCLIS list by error and there does not appear to be an uncontrolled hazardous waste problem at the site.

The ASPIS list also included the NL Industries site, noting that the plant is inactive and that no file was found at California Department of Toxic Substances Control.

5.4 CONCLUSIONS

The information provided by agencies and agency personnel was used as reported. Although we have not found any agency file documentation that contaminated groundwater has migrated to the PG&E site, results of soil and groundwater samples indicate that an off-site, upgradient fuel leak may have occurred.



LEGEND

- TOXIC LEAK CASE
- FUEL LEAK CASE

Source: Regional Water Quality Control Board

AQUA RESOURCES, INC.
BERKELEY, CALIFORNIA

PG & E ENCON-Gas T & D Construction Yard

Known Toxic and Fuel Leak Cases

JOB NO. 90262

Figure 5-1

DATE: July 23, 1990

6.0 CONCLUSIONS

6.1 SOILS

Approximately 1,760 cubic yards of soil contaminated with petroleum hydrocarbons above the site specific cleanup levels have been removed from the subject property. Limits of excavation were determined by confirmatory in-situ sampling and by the property boundaries. Sampling of the northeastern and northwestern boundaries indicates that soil outside the PG&E property is contaminated with hydrocarbons. Northeastern boundaries is upgradient of the site. New backfill material at the site has been temporarily protected from possible contamination from the offsite sources by placing PVC lining along northeastern site to the depth of about 6 feet from the ground surface. Currently applied protection of the backfill material at the PG&E property is temporary only.

The type and extent of contamination at the offsite upgradient property needs to be investigated and further action can be determined based on the results of such investigation.

Input from the regulatory agency is required to initiate such investigation.

6.2 GROUNDWATER

It can be expected that the removal of contaminated soil will result in the improvement of the groundwater quality at the site. Consistent with the agreement with Alameda County Health it is recommended to monitor the groundwater for a period of one year. Sampling should be performed quarterly. Wells which are directly impacted by this remediation action are OW-1, OW-4, OW-6, and OW-7. These wells should be monitored for TVH as gasoline, BTXE, TPH as diesel, total oil and grease, and total lead. Well OW-7 is located near the upgradient end of the remediation area.

7.0 LIMITATIONS

The excavation limits were based on visual examination, vapor screening with an organic vapor detector, and detectable odor screening in the field. Soil samples obtained for chemical analyses represent conditions encountered at a specific point where taken. Chemical laboratory analyses were performed under the direction of others. Although a responsible effort has been made by ARI to test soil samples for likely contaminants in the areas that have been excavated, ARI cannot provide a guarantee either express or implied that other hazardous contaminants are not present at this site.

This report specifically does not address the issues associated with surface soil lead contamination from paint chip residues associated with the former gas holder tank. These issues are described separately in the ARI report "Preliminary Site Assessment and Workplan for Additional Investigation ... Former Gas Holder Tank Area".

BCA B C Analytical
1255 POWELL STREET • EMERYVILLE, CA 94608 • (415) 428-2300 • Fax (415) 547-3643

AQUA RESOURCES, INC
RECEIVED
DEC - 3 1991

JOB NO. 90262.2
FILE Anal Results / Report Backup

TOXICITY BIOASSAY

Log No.: E91-11-009-2

Report To:
Aqua Resources Inc.
2030 Addison Street, Suite 500
Berkeley, CA 94704

ATTN: Mr. Mark Milani

Date Sampled: 11/01/91
Date Received: 11/01/91
Date Mailed:

Laboratory Director

cc:

CALIFORNIA HAZARDOUS WASTE ASSESSMENT BIOASSAY: SCREEN

Sample Description DW-4-1
Test Organism Pimephales promelas, fathead minnow Source Thomas Fish Company
Dilution Water Fresh Source Emeryville Dechlorinated Tap Water with Matrix Modifiers Temperature Range 19.2 - 19.5 °C
Aeration: Air X Oxygen ___ None ___ Test initiated 11.08.91 Control initial hardness 43 mg/L

Bioassay Conditions	Time, Hrs	Control		Dilution: 250 mg/L		250 mg/L		750 mg/L		750 mg/L							
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Organisms Surviving	Start	10	100	10	100	10	100	10	100	10	100						
	24	10	100	10	100	10	100	10	100	10	100						
	48	10	100	10	100	10	100	10	100	10	100						
	72	10	100	10	100	10	100	10	100	10	100						
	96	10	100	10	100	10	100	10	100	10	100						
Dissolved Oxygen mg/L	Start	8.8		8.8		8.9		9.0		9.0							
	24	9.0		9.1		9.1		8.1		7.1							
	48	8.5		8.8		9.0		9.0		9.2							
	72	8.6		8.8		9.1		9.1		8.8							
	96	8.5		8.9		8.9		8.9		9.0							
pH	Start	7.9		7.8		7.8		7.8		7.8							
	24	7.3		7.3		7.2		7.1		7.2							
	48	7.3		7.9		8.3		8.2		8.2							
	72	7.6		7.6		7.7		7.7		7.6							
	96	7.7		7.7		7.7		7.7		7.7							
Temperature	Start	19.3		19.3		19.3		19.2		19.2							
	24	19.5		19.5		19.5		19.5		19.5							
	48	19.3		19.3		19.3		19.2		19.2							
	72	19.5		19.4		19.3		19.2		19.3							
	96	19.5		19.4		19.3		19.2		19.3							

RESULTS TL_m* >750 mg/L Toxicity Units Not Applicable 95% confidence limits of TL_m Not Established Percent survival in undiluted sample Not Applicable

	4.1	3.4	3.7
Length of fish, cm: Max.	Min.	Mean	
Weight of fish, g.: Max. 0.79	Min. 0.39	Mean 0.59	

* In cases where 96 hour mortality does not equal or exceed 50% in at least one dilution of the sample, no TL_m value is established.

Analyst D.L. Pulliam

KF

BCA B C Analytical
1255 POWELL STREET • EMERYVILLE, CA 94608 • (415) 428-2300 • Fax (415) 547-3643

AQUA RESOURCES, INC
RECEIVED
NOV 20 1991

JOB NO. 90262.02
FILE lab results

TOXICITY BIOASSAY

Log No.: E91-11-009-1
Date Sampled:
Date Received: 11/01/91
Date Mailed: 11/01/91
NOV 18 1991

Report To:
Aqua Resources Inc.
2030 Addison Street, Suite 500
Berkeley, CA 94704

ATTN: Mr. Mark Milani

Laboratory Director

cc:

CALIFORNIA HAZARDOUS WASTE ASSESSMENT BIOASSAY: SCREEN

Sample Description SB-23-1,SB-24-1,SB-25,SB-26-1
Test Organism Pimephales promelas, fathead minnow Source Thomas Fish Company
Dilution Water Fresh Source Emeryville Dechlorinated Tap Water with Matrix Modifiers Temperature Range 18.7 - 19.4 °C
Aeration: Air X Oxygen ___ None ___ Test initiated 11.11.91 Control initial hardness 43 mg/L

Bioassay Conditions	Time, Hrs	Control		Dilution 250 mg/L		250 mg/L		750 mg/L		750 mg/L							
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Organisms Surviving	Start	10	100	10	100	10	100	10	100	10	100						
	24	10	100	10	100	10	100	10	100	10	100						
	48	10	100	10	100	10	100	10	100	10	100						
	72	10	100	10	100	10	100	10	100	10	100						
	96	10	100	10	100	10	100	10	100	10	100						
Dissolved Oxygen mg/L	Start	8.9		8.9		8.7		8.6		9.1							
	24	8.6		9.6		8.5		8.2		8.7							
	48	8.4		8.6		8.5		8.5		9.6							
	72	10.9		11.6		11.8		10.8		10.9							
	96	10.8		11.3		11.3		10.8		11.1							
pH	Start	7.6		7.6		7.7		7.6		7.6							
	24	7.6		7.7		7.6		7.6		7.7							
	48	7.7		7.7		7.7		7.7		7.7							
	72	7.7		7.7		7.7		7.7		7.7							
	96	7.6		7.6		7.6		7.6		7.6							
Temperature	Start	19.3		19.3		19.2		19.3		19.2							
	24	19.2		19.3		19.3		19.4		19.4							
	48	19.1		19.2		19.3		19.3		19.3							
	72	19.3		19.3		19.3		19.4		19.4							
	96	18.7		18.8		18.8		18.9		18.8							

RESULTS TL_m* >750 mg/L Toxicity Units Not Applicable 95% confidence limits of TL_m Not Established Percent survival in undiluted sample Not Applicab

Length of fish, cm: Max. 4.1 Min. 3.4 Mean 3.7

Weight of fish, g.: Max. 0.79 Min. 0.39 Mean 0.59

* In cases where 96 hour mortality does not equal or exceed 50% in at least one dilution of the sample, no TL_m value is established.

Analyst D.L. Pulliam

KF

9/11009

AQUA RESOURCES, INC.

SHIPMENT NO.: 1

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

DATE 11/1/91

PROJECT NAME: PG+E - Coliseum Way

PROJECT NO.: 90262

Sample Number	Location (Depth)	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required
SB-23-1	5-5½'	Soil	Drive	Brass Tube	±4°C		Composite and run Bioassay for Haz. WASTE
SB-24-1	"	"	"	"	"		
SB-25-1	"	"	"	"	"		
SB-26-1	"	"	"	"	"		
2 DW-4-1	WELL ON-4	Water	Bailer	500ml Amber	±4°C		Bioassay

Total Number of Samples Shipped: 5

Sampler's Signature: Aaron N. Stessman

Relinquished By: Signature: Aaron N. Stessman; Printed Name: Aaron N. Stessman; Company: Aqua Resources Inc.; Reason: For Analysis	Received By: Signature: Kathy O'Brien; Printed Name: Kathy O'Brien; Company: BC Analytical	Date: 11/1/91; Time: 11:00
Relinquished By: Signature: ; Printed Name: ; Company: ; Reason:	Received By: Signature: ; Printed Name: ; Company:	Date: / /; Time:

REMARKS:

Normal 2 Week Turnaround

FAX copy of results to Voytek (510) 540-7496

BIOA-HAZ. SCREEN

Special Shipment / Handling / Storage Requirements:

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 11/19/91
DATE REPORTED: 11/22/91

AQUA RESOURCES, INC
RECEIVED
NOV 26 1991
JOB NO.
FILE

LABORATORY NUMBER: 105830

CLIENT: AQUA RESOURCES

PROJECT ID: 90262.2

LOCATION: PG&E: ENCON

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105830
CLIENT: AQUA RESOURCES
PROJECT ID: 90262.2
LOCATION: PG&E: ENCON

DATE RECEIVED: 11/19/91
DATE EXTRACTED: 11/20/91
DATE ANALYZED: 11/21/91
DATE REPORTED: 11/22/91

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT* (mg/Kg)
105830-1	S-1	ND	ND	10
105830-2	B-1	ND	ND	10
105830-3	S-2	ND	ND	10
105830-4	B-2	ND	ND	10
105830-5	W-1	ND	ND	10

ND = Not Detected at or above reporting limit.

*Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	10
RECOVERY, %	89

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105830
CLIENT: AQUA RESOURCES
PROJECT ID: 90262.2
LOCATION: PG&E: ENCON

DATE RECEIVED: 11/19/91
DATE ANALYZED: 11/21/91
DATE REPORTED: 11/21/91

ANALYSIS: HYDROCARBON OIL AND GREASE
METHOD: SMWW 17:5520 E&F

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
105830-1	S-1	ND	mg/Kg	50
105830-2	B-1	ND	mg/Kg	50
105830-3	S-2	100	mg/Kg	50
105830-4	B-2	ND	mg/Kg	50
105830-5	W-1	ND	mg/Kg	50

ND = Not detected at or above reporting limit

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	95

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105830
CLIENT: AQUA RESOURCES
PROJECT ID: 90262.2
LOCATION: PG&E:ENCON

DATE RECEIVED: 11/19/91
DATE ANALYZED: 11/20/91
DATE REPORTED: 11/21/91

Total Volatile Hydrocarbons with BTXE in Soils & Wastes
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
105830-1	S-1	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
105830-2	B-1	ND(1.0)	N/R	N/R	N/R	N/R
105830-3	S-2	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
105830-4	B-2	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
105830-5	W-1	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)

N/R = Not Requested

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	111

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105830-2
CLIENT: AQUA RESOURCES
PROJECT ID: 90262.2
LOCATION: PG&E: ENCON
SAMPLE ID: B-1

DATE RECEIVED: 11/19/91
DATE ANALYZED: 11/21/91
DATE REPORTED: 11/22/91

EPA 8010: Volatile Halocarbons in Soil & Wastes
Extraction Method: EPA 5030 - Purge & Trap

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	36	5.0
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethylene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Dibromochloromethane	ND	5.0
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5.0
Tetrachloroethylene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Chlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	104

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105830-2
CLIENT: AQUA RESOURCES
PROJECT ID: 90262.2
LOCATION: PG&E: ENCON
SAMPLE ID: B-1

DATE RECEIVED: 11/19/91
DATE ANALYZED: 11/21/91
DATE REPORTED: 11/22/91

EPA 8020: Volatile Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Resul ug/Kg	Reporting Limit ug/Kg
Benzene	ND	5.0
Toluene	ND	5.0
Ethyl Benzene	ND	5.0
Total Xylenes	ND	5.0
Chlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

% SURROGATE RECOVERY	100

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105830-METHOD BLANK
CLIENT: AQUA RESOURCES
PROJECT ID: 90262.2
LOCATION: PG&E: ENCON

DATE ANALYZED: 11/21/91
DATE REPORTED: 11/22/91

EPA 8010: Volatile Halocarbons in Soil & Wastes
Extraction Method: EPA 5030 - Purge & Trap

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	69	5.0
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethylene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Dibromochloromethane	ND	5.0
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5.0
Tetrachloroethylene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Chlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	104

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105830-METHOD BLANK
CLIENT: AQUA RESOURCES
PROJECT ID: 90262.2
LOCATION: PG&E: ENCON

DATE ANALYZED: 11/21/91
DATE REPORTED: 11/22/91

EPA 8020: Volatile Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Resul ug/Kg	Reporting Limit ug/Kg
Benzene	ND	5.0
Toluene	ND	5.0
Ethyl Benzene	ND	5.0
Total Xylenes	5.0	5.0
Chlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

% SURROGATE RECOVERY	100

Curtis & Tompkins, Ltd.

MS/MSD SUMMARY SHEET FOR EPA 8010\8020

Operator:	AV	Spike file:	324W/X002
Analysis date:	11/20/91	Spike dup file:	324W/X003
Sample type:	SOIL	Instrument:	GC12
Sample ID:	105802-26	Sequence Name:	NOV 20

8010 MS/MSD DATA (spiked at 20 ppb)

SPIKE COMPOUNDS	READING	RECOVERY	STATUS	LIMITS
1,1-Dichloroethene	21.53	108 %	OK	59 - 172
Trichloroethene	19.10	96 %	OK	62 - 137
Chlorobenzene	19.66	98 %	OK	60 - 133
SPIKE DUP COMPOUNDS				
1,1-Dichloroethene	20.12	101 %	OK	59 - 172
Trichloroethene	18.57	93 %	OK	62 - 137
Chlorobenzene	18.80	94 %	OK	60 - 133
SURROGATES				
BROMOBENZENE (MS)	106.00	106 %	OK	70 - 120
BROMOBENZENE (MSD)	105.00	105 %	OK	70 - 120

8020 MS/MSD DATA (spiked at 20 ppb)

SPIKE COMPOUNDS	READING	RECOVERY	STATUS	LIMITS
Benzene	19.66	98 %	OK	66 - 142
Toluene	19.13	96 %	OK	59 - 139
Chlorobenzene	19.08	95 %	OK	60 - 133
SPIKE DUP COMPOUNDS				
Benzene	18.90	95 %	OK	66 - 142
Toluene	22.01	110 %	OK	59 - 139
Chlorobenzene	18.20	91 %	OK	60 - 133
SURROGATES				
BROMOBENZENE (MS)	100.00	100 %	OK	70 - 120
BROMOBENZENE (MSD)	100.00	100 %	OK	70 - 120

RPD DATA

8010 COMPOUNDS	SPIKE	SPIKE DUP	RPD	STATUS	LIMITS
1,1-Dichloroethene	21.53	20.12	7 %	OK	<= 22
Trichloroethene	19.10	18.57	3 %	OK	<= 23
Chlorobenzene	19.66	18.80	4 %	OK	<= 21
8020 COMPOUNDS					
Benzene	19.66	18.90	4 %	OK	<= 21
Toluene	19.13	22.01	14 %	OK	<= 21
Chlorobenzene	19.08	18.20	5 %	OK	<= 21

AQUA RESOURCES, INC.

CHAIN OF CUSTODY RECORD

SHIPMENT NO.: 1

PAGE 1 OF 1

DATE 11/19/91

PROJECT NAME: PG&E: ENCON

PROJECT NO.: 90262.2

Sample Number	Location (Depth)	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required
N-1	4½'	Soil	Drive	Brass Tube	±4°C		1 +
N-2	4½'	"	"	"	"		1 +
N-3	5½'	"	"	"	"		1 +
N-4	5½'	"	"	"	"		1 +
N-5	5½'	"	"	"	"		1 +
N-6	5'	"	"	"	"		1 +
-1 S-1	3½'	"	S.Hammer	"	"		1 ★
-2 B-1	4½'	"	Drive	"	"		1 ★
-3 S-2	5'	"	S.Hammer	"	"		1 ★
-4 B-2	7'	"	Drive	"	"		1 ★
-5 W-1	4'	"	"	"	"		1 ★

Total Number of Samples Shipped: 11

Sampler's Signature: [signature]

Relinquished By:
Signature [signature]
Printed Name Aaron N. Stessman
Company Aqua Resources
Reason For Analysis

Received By:
Signature [signature]
Printed Name Lourinda Brower
Company C+T Berkeley

Date 11/19/91
Time 16:00

Relinquished By:
Signature
Printed Name
Company
Reason

Received By:
Signature
Printed Name
Company

Date / /
Time:

REMARKS:

1 = TVHG & BTEX, TEHD, O&G (TEH - 10ppm)

\+ = 2 Week Turnaround

★ = 48 Hour Turnaround $ — 105830

Special Shipment / Handling / Storage Requirements:

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 11/19/91
DATE REPORTED: 12/03/91

AQUA RESOURCES, INC
RECEIVED
DEC 1991
JOB NO:
SITE

LABORATORY NUMBER: 105833

CLIENT: AQUA RESOURCES, INC.

PROJECT ID: 90262.2

LOCATION: PG&E: ENCON

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105833
CLIENT: AQUA RESOURCES, INC.
PROJECT ID: 90262.2
LOCATION: PG&E: ENCON

DATE RECEIVED: 11/19/91
DATE ANALYZED: 11/29-12/01/91
DATE REPORTED: 12/03/91

Total Volatile Hydrocarbons with BTXE in Soils & Wastes
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
105833-1	N-1	340	ND(80)	140	110	4,500
105833-2	N-2	ND(2.0)	ND(10)	ND(10)	ND(10)	25
105833-3	N-3	45	ND(10)	77	160	410
105833-4	N-4	73	ND(10)	110	77	920
105833-5	N-5	120	12	140	61	1,200
105833-6	N-6	65	19	65	170	690

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	18
RECOVERY, %	102

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105833
CLIENT: AQUA RESOURCES, INC.
PROJECT ID: 90262.2
LOCATION: PG&E: ENCON

DATE RECEIVED: 11/19/91
DATE EXTRACTED: 11/27/91
DATE ANALYZED: 12/03/91
DATE REPORTED: 12/03/91

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT* (mg/Kg)
105833-1	N-1	ND	340	100
105833-2	N-2	ND	410	100
105833-3	N-3	ND	1,200	100
105833-4	N-4	ND	2,500	100
105833-5	N-5	6,500	ND	100
105833-6	N-6	6,000	ND	100

ND = Not Detected at or above reporting limit.

*Reporting limit applies to all analytes.

QA/QC SUMMARY	RECOVERY, %
LABORATORY CONTROL SAMPLE	85

Curtis & Tompkins, Ltd.

Client: Aqua Resources

Laboratory Login Number: 105833

Project Name: PG&E: ENCON
Project Number: 90262.2

Report Date: 03 December 91

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric) **METHOD: SMWW 17:5520EF**

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	RL	Analyst	QC Batch
105833-001	N-1	Soil	19-NOV-91	19-NOV-91	27-NOV-91	8800	mg/Kg	50	TR	3513
105833-002	N-2	Soil	19-NOV-91	19-NOV-91	27-NOV-91	18000	mg/Kg	50	TR	3513
105833-003	N-3	Soil	19-NOV-91	19-NOV-91	27-NOV-91	5100	mg/Kg	50	TR	3513
105833-004	N-4	Soil	19-NOV-91	19-NOV-91	27-NOV-91	8300	mg/Kg	50	TR	3513
105833-005	N-5	Soil	19-NOV-91	19-NOV-91	27-NOV-91	34000	mg/Kg	250	TR	3513
105833-006	N-6	Soil	19-NOV-91	19-NOV-91	27-NOV-91	13000	mg/Kg	50	TR	3513

ND = Not Detected at or above Reporting Limit (RL).

Curtis & Tompkins, Ltd.

Q C B a t c h R e p o r t

Client: Aqua Resources
Project Name: PG&E: ENCON
Project Number: 90262.2

Laboratory Login Number: 105833
Report Date: 03 December 91

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric) **QC Batch Number: 3513**

Blank Results

Sample ID	Result	MDL	Units	Method	Date Analyzed
BLANK	ND	30	mg/Kg	SMWW 17:5520EF	27-NOV-91

Spike/Duplicate Results

Sample ID	Recovery	Method	Date Analyzed
BS	85%	SMWW 17:5520EF	27-NOV-91
BSD	89%	SMWW 17:5520EF	27-NOV-91

		Control Limits
Average Spike Recovery	87%	80% - 120%
Relative Percent Difference	4.7%	< 20%

105833

AQUA RESOURCES, INC.

SHIPMENT NO.: 1

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

DATE 11/19/91

PROJECT NAME: PG&E : ENCON

PROJECT NO.: 90262.2

Sample Number	Location (Depth)	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required
N-1	4½'	Soil	Drive	Brass Tube	±4°C		1 +
N-2	4½'	"	"	"	"		1 +
N-3	5½'	"	"	"	"		1 +
N-4	5½'	"	"	"	"		1 +
N-5	5½'	"	"	"	"		1 +
N-6	5'	"	"	"	"		1 +
S-1	3½'	"	S. Hammer	"	"		1 ★
B-1	4½'	"	Drive	"	"		1 ★
S-2	5'	"	S. Hammer	"	"		1 ★
B-2	7'	"	Drive	"	"		1 ★
W-1	4'	"	"	"	"		1 ★

Total Number of Samples Shipped: 11

Sampler's Signature: [signature]

Relinquished By:
Signature: [signature]
Printed Name: Aaron M. Stessman
Company: Aqua Resources
Reason: For Analysis

Received By:
Signature: [signature]
Printed Name: Lourinda Brown
Company: C+T

Date: 11/19/91
Time: 16:00

Relinquished By:
Signature
Printed Name
Company
Reason

Received By:
Signature
Printed Name
Company

Date: / /
Time:

REMARKS:

1 = TVHG & BTEX, TEHD, O&G (TEH - 10ppm)

+ = 2 Week Turnaround - 105833

★ = 48 Hour Turnaround & — 105830

Special Shipment / Handling / Storage Requirements:

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 11/20/91
DATE REPORTED: 11/22/91

LABORATORY NUMBER: 105845

CLIENT: AQUA RESOURCES, INC.

PROJECT ID: 90262.2

LOCATION: PG&E: ENCON

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105845
CLIENT: AQUA RESOURCES, INC.
PROJECT ID: 90262.2
LOCATION: PG&E: ENCON

DATE RECEIVED: 11/20/91
DATE ANALYZED: 11/21,22/91
DATE REPORTED: 11/22/91

Total Volatile Hydrocarbons with BTXE in Soils & Wastes
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
105845-1	B-3	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
105845-2	W-2	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
105845-3	B-4	290	10	21	900	6,900
105845-4	S-3	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	8.5
105845-5	W-3	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
105845-6	W-4	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	108

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105845
CLIENT: AQUA RESOURCES, INC.
PROJECT ID: 90262.2
LOCATION: PG&E: ENCON

DATE RECEIVED: 11/20/91
DATE EXTRACTED: 11/21/91
DATE ANALYZED: 11/21,22/91
DATE REPORTED: 11/22/91

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT* (mg/Kg)
105845-1	B-3	ND	ND	10
105845-2	W-2	ND	ND	10
105845-3	B-4	ND	130	15
105845-4	S-3	ND	21	10
105845-5	W-3	ND	ND	10
105845-6	W-4	ND	15	10

ND = Not Detected at or above reporting limit.

*Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	94

Curtis & Tompkins, Ltd.

Client: Aqua Resources

Laboratory Login Number: 105845

Project Name: PG&E: ENCON
Project Number: 90262.2

Report Date: 22 November 91

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric) **METHOD: SMWW 17:5520EF**

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	RL	Analyst	QC Batch
105845-001	B-3	Soil	20-NOV-91	20-NOV-91	22-NOV-91	ND	mg/Kg	50	AY	3447
105845-002	W-2	Soil	20-NOV-91	20-NOV-91	22-NOV-91	ND	mg/Kg	50	AY	3447
105845-003	B-4	Soil	20-NOV-91	20-NOV-91	22-NOV-91	3300	mg/Kg	50	AY	3447
105845-004	S-3	Soil	20-NOV-91	20-NOV-91	22-NOV-91	240	mg/Kg	50	AY	3447
105845-005	W-3	Soil	20-NOV-91	20-NOV-91	22-NOV-91	ND	mg/Kg	50	AY	3447
105845-006	W-4	Soil	20-NOV-91	20-NOV-91	22-NOV-91	72.	mg/Kg	50	AY	3447

ND = Not Detected at or above Reporting Limit (RL).

Curtis & Tompkins, Ltd.

Q C B a t c h R e p o r t

Client: Aqua Resources
Project Name: PG&E: ENCON
Project Number: 90262.2

Laboratory Login Number: 105845
Report Date: 22 November 91

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric) **QC Batch Number: 3447**

Blank Results

Sample ID	Result	MDL	Units	Method	Date Analyzed
BLANK	ND	30	mg/Kg	SMWW 17:5520EF	22-NOV-91

Spike/Duplicate Results

Sample ID	Recovery	Method	Date Analyzed
BS	91%	SMWW 17:5520EF	22-NOV-91
BSD	90%	SMWW 17:5520EF	22-NOV-91

		Control Limits
Average Spike Recovery	91%	80% - 120%
Relative Percent Difference	1.1%	< 20%

AQUA RESOURCES, INC.

SHIPMENT NO.: 2

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NAME: PG&E : ENCON

DATE 11/20/91

PROJECT NO.: 90262.2

Sample Number	Location (Depth)	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required	
E-1	3½'	Soil	Drive	Brass Tube	±4°C		1+ 105844	-1
B-3	5½'	"	"	"	"		1★ 105845	-1
W-2	4'	"	"	"	"		1★	-2
B-4	8'	"	"	"	"		1★	-3
S-3	4½'	"	"	"	"		1★	-4
W-3	5½'	"	"	"	"		1★	-5
W-4	4'	"	"	"	"		1★	-6

Total Number of Samples Shipped: 7

Sampler's Signature: Aaron N. Stessman

Relinquished By:
Signature: Aaron N. Stessman
Printed Name: Aaron N. Stessman
Company: Aqua Resources
Reason: For Analysis

Received By:
Signature:
Printed Name:
Company:

Date: / /
Time:

Relinquished By:
Signature:
Printed Name:
Company:
Reason:

Received By:
Signature:
Printed Name: JOHN GOYETTE
Company: CURTIS & TOMPKINS

Date: 11/20/91
Time: 1715

REMARKS:

1 = TPHD (10 ppm), TVHC & BTEX, O&G

★ = ~~24 hr~~ turnaround 48 hour turnaround

+ = 2 week turnaround

Special Shipment / Handling / Storage Requirements:

Original c-o-c w/ 105845

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 11/20/91
DATE REPORTED: 12/02/91

AQUA RESOURCES, INC
RECEIVED
DEC - 3 1991
JOB NO.
FILE

LABORATORY NUMBER: 105844

CLIENT: AQUA RESOURCES, INC.

PROJECT ID: 90262.2

LOCATION: PG&E: ENCON

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105844
CLIENT: AQUA RESOURCES, INC.
PROJECT ID: 90262.2
LOCATION: PG&E: ENCON

DATE RECEIVED: 11/20/91
DATE ANALYZED: 11/29/91
DATE REPORTED: 12/02/91

Total Volatile Hydrocarbons with BTXE in Soils & Wastes
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
105844-1	E-1	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	18
RECOVERY, %	102

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105844
CLIENT: AQUA RESOURCES, INC.
PROJECT ID: 90262.2
LOCATION: PG&E: ECON

DATE RECEIVED: 11/20/91
DATE EXTRACTED: 11/27/91
DATE ANALYZED: 12/01/91
DATE REPORTED: 12/02/91

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT* (mg/Kg)
105844-1	E-1	ND	ND	10

ND = Not Detected at or above reporting limit.

*Reporting limit applies to all analytes.

QA/QC SUMMARY	RECOVERY, %
LABORATORY CONTROL SAMPLE	85

Curtis & Tompkins, Ltd.

Client: Aqua Resources

Laboratory Login Number: 105844

Project Name: PG&E: ENCON
Project Number: 90262.2

Report Date: 02 December 91

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric) **METHOD: SMWW 17:5520EF**

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	RL	Analyst	QC Batch
105844-001	E-1	Soil	20-NOV-91	20-NOV-91	27-NOV-91	1600	mg/Kg	50	TR	3513

ND = Not Detected at or above Reporting Limit (RL).

Curtis & Tompkins, Ltd.

Q C B a t c h R e p o r t

Client: Aqua Resources
Project Name: PG&E: ENCON
Project Number: 90262.2

Laboratory Login Number: 105844
Report Date: 02 December 91

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric) **QC Batch Number: 3513**

Blank Results

Sample ID	Result	MDL	Units	Method	Date Analyzed
BLANK	ND	30	mg/Kg	SMWW 17:5520EF	27-NOV-91

Spike/Duplicate Results

Sample ID	Recovery	Method	Date Analyzed
BS	85%	SMWW 17:5520EF	27-NOV-91
BSD	89%	SMWW 17:5520EF	27-NOV-91

		Control Limits
Average Spike Recovery	87%	80% - 120%
Relative Percent Difference	4.7%	< 20%

AQUA RESOURCES, INC.

SHIPMENT NO.: 2

PAGE 1 OF 1

CHAIN OF CUSTODY RECORD

DATE 11/20/91

PROJECT NAME: PG&E: ENCON

PROJECT NO.: 90262.2

Sample Number	Location (Depth)	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required	
E-1	3½'	Soil	Drive	Brass Tube	±4°C		1+ 105844	-1
B-3	5½'	"	"	"	"		1★ 105845	-1
W-2	4'	"	"	"	"		1★	-2
B-4	8'	"	"	"	"		1★	-3
S-3	4½'	"	"	"	"		1★	-4
W-3	5½'	"	"	"	"		1★	-5
W-4	4'	"	"	"	"		1★	-6

Total Number of Samples Shipped: 7

Sampler's Signature: Aaron N. Stessman

Relinquished By:
Signature: Aaron N. Stessman
Printed Name: Aaron N. Stessman
Company: Aqua Resources
Reason: For Analysis

Received By:
Signature:
Printed Name:
Company:

Date: / /

Time:

Relinquished By:
Signature:
Printed Name:
Company:
Reason:

Received By:
Signature:
Printed Name: JOHN GOSTIC
Company: CURTIS: TOMPKINS

Date: 11/20/91

Time: 1715

REMARKS:

1 = TPHD (10 ppm), TVHG & BTEX, O & G

★ = ~~24 hr~~ turnaround 48 hour turnaround

+ = 2 week turnaround

Special Shipment / Handling / Storage Requirements:

original c-o-c w/ 105845

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

November 22, 1991 ChromaLab File No.: 1191227

AQUA RESOURCES, INC.

Attn: Aaron N. Stessman

RE: Two rush soil samples for Gasoline/BTEX, TEPH, and Oil & Grease analyses

Project Name: PG&E ENCON
Project Number: 90262.2
Date Sampled: Nov. 21, 1991 Date Submitted: Nov. 21, 1991
Date Extracted: Nov. 22, 1991 Date Analyzed: Nov. 22, 1991

RESULTS:

Sample I.D.	Gasoline (mg/kg)	Diesel (mg/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Ethyl Benzene (µg/kg)	Total Xylenes (µg/kg)	Oil & Grease (mg/kg)	Kerosene (mg/kg)
B-5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	740	N.D.
E-2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1100	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE REC.	98.0%	92.6%	103.4%	106.4%	108.9%	107.9%	----	----
DET. LIMIT	1.0	1.0	5.0	5.0	5.0	5.0	10	1.0
METHOD OF ANALYSIS	5030/ 8015	3550/ 8015	8020	8020	8020	8020	5520 E&F	3550/ 8015

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam (by pp)
Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

November 22, 1991

ChromaLab File # 1191227 B

Client: Aqua Resources, Inc.
Date Sampled: Nov. 21, 1991
Date Analyzed: Nov. 22, 1991

Attn: Aaron Stessman
Date Submitted: Nov. 21, 1991

Project Number: 90262.2
Sample I.D.: B-5
Method of Analysis: 8010 & 8020

Project Name: PG&E Encon

Detection Limit: 5.0 µg/kg

COMPOUND NAME	µg/kg	Spike Recovery
CHLOROMETHANE	N.D.	---
VINYL CHLORIDE	N.D.	---
BROMOMETHANE	N.D.	---
CHLOROETHANE	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	---
1,1-DICHLOROETHENE	N.D.	90.5% 91.0%
METHYLENE CHLORIDE	N.D.	---
1,2-DICHLOROETHENE (TOTAL)	N.D.	---
1,1-DICHLOROETHANE	N.D.	---
CHLOROFORM	N.D.	---
1,1,1-TRICHLOROETHANE	N.D.	---
CARBON TETRACHLORIDE	N.D.	---
1,2-DICHLOROETHANE	N.D.	---
BENZENE	N.D.	92.3% 91.5%
TRICHLOROETHENE	N.D.	---
1,2-DICHLOROPROPANE	N.D.	---
BROMODICHLOROMETHANE	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	---
TOLUENE	N.D.	91.0% 95.5%
CIS-1,3-DICHLOROPROPENE	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	---
TETRACHLOROETHENE	N.D.	---
DIBROMOCHLOROMETHANE	N.D.	---
CHLOROBENZENE	N.D.	93.7% 94.2%
ETHYLBENZENE	N.D.	---
BROMOFORM	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	---
1,3-DICHLOROBENZENE	N.D.	---
1,4-DICHLOROBENZENE	N.D.	---
1,2-DICHLOROBENZENE	N.D.	---
TOTAL XYLENES	N.D.	---

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Lab Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB FILE # 191227

ORDER # 4278

AQUA RESOURCES, INC.

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

DATE 11/21/91

PROJECT NAME: PG&E ENCON

PROJECT NO.: 90262.2

Sample Number	Location (Depth)	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required
E-2	1½'	Soil	Drive	Brass Tube	±4°C		1 & 3, 2
B-5	7½'	"	"	"	"		

Total Number of Samples Shipped: 2

Sampler's Signature: [signature]

Relinquished By:	Received By:	Date / Time
Signature: [signature]	Signature: Gary Cook	Date: 11/21/91
Printed Name: Aaron N. Stessman	Printed Name: Gary Cook	Time: 15:00
Company: Aqua Resources	Company: Chromalab	
Reason: For Analysis		
Relinquished By:	Received By:	Date / Time
Signature:	Signature:	Date: / /
Printed Name:	Printed Name:	Time:
Company:	Company:	
Reason:		

REMARKS:

1 = TRHD (10 ppm det. limit OK), TVHG & BTEX, O&G
(TEPH) - Diesel & Kerosene

24 Hour turnaround on these samples

FAX results to VOYTEK (510) 540-7496

2 = 8010/8020, 3 TEPH-D&K, TVHG, O&G

Special Shipment / Handling / Storage Requirements:

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

November 25, 1991

ChromaLab File No.: 1191247
1191252
1191254

AQUA RESOURCES, INC.

Attn: Aaron N. Stessman

RE: Eleven rush soil samples for Gasoline/BTEX, TEPH, and Oil & Grease analyses

Project Name: PG&E - ENCON
Project Number: 90262.2
Date Sampled: N/A
Date Submitted: Nov. 22-23,1991
Date Extracted: Nov. 24-25,1991
Date Analyzed: Nov. 24-25,1991

RESULTS:

Sample I.D.	Gasoline (mg/kg)	Diesel (mg/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Ethyl Benzene (µg/kg)	Total Xylenes (µg/kg)	Oil & Grease (mg/kg)	Kerosene (mg/kg)
B-8	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
B-9	N.D.	27	N.D.	N.D.	N.D.	N.D.	670	N.D.
S-5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S-6	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	300	N.D.
B-11	N.D.	130	N.D.	N.D.	N.D.	N.D.	1600	N.D.
S-7	15	730	N.D.	9.5	30	68	4000	N.D.
W-5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
W-6	17	1100	5.3	11	33	79	4500	N.D.
B-6	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S-4	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	16	N.D.
B-7	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE REC.	93.8%	92.6%	103.4%	106.4%	108.9%	107.9%	----	----
DUP SPIKE REC	98.0%	88.0%	85.7%	98.9%	105.4%	106.9%	----	----
DET. LIMIT	1.0	1.0	5.0	5.0	5.0	5.0	10	1.0
METHOD OF ANALYSIS	5030/ 8015	3550/ 8015	8020	8020	8020	8020	5520 E&F	3550/ 8015

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam (by DD)
Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

December 3, 1991 ChromaLab File No.: 1191247

AQUA RESOURCES, INC.

Attn: Aaron Stessman

RE: One soil sample for Gasoline/BTEX, TEPH, and Oil & Grease analyses

Project Name: PG&E - ENCON
Project Number: 90262.2
Date Sampled: Nov. 22, 1991 Date Submitted: Nov. 22, 1991
Date Extracted: Nov. 29, 1991 Date Analyzed: Nov. 29, 1991

RESULTS:

Sample I.D.	Gasoline (mg/kg)	Diesel (mg/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Ethyl Benzene (µg/kg)	Total Xylenes (µg/kg)	Oil & Grease (mg/kg)	Kerosene (mg/kg)
E-3	N.D.	1500	N.D.	N.D.	N.D.	N.D.	5600	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE REC.	99.3%	92.6%	82.8%	94.2%	107.4%	106.7%	----	----
DET. LIMIT	1.0	1.0	5.0	5.0	5.0	5.0	10	1.0
METHOD OF ANALYSIS	5030/ 8015	3550/ 8015	8020	8020	8020	8020	5520 E&F	3550/ 8015

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam (by DD)
Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

December 2, 1991 ChromaLab File No.: 1191247

AQUA RESOURCES, INC.

Attn: Aaron N. Stessman

RE: Two composite soil samples for STLC Lead analysis

Project Name: PG&E - ENCON
Project Number: 90262.2
Date Sampled: Nov. 22, 1991 Date Submitted: Nov. 22, 1991
Date Extracted: Nov. 27, 1991 Date Analyzed: Nov. 27, 1991

RESULTS:

Sample I.D.	STLC Lead (mg/l)
LSP 1 & 2 Composite	1.32
LN-1, LS-2, LW-3, LE-4 Composite	4.23
BLANK	N.D.
SPIKED RECOVERY	111%
DUPLICATE SPIKED RECOVERY	110%
DETECTION LIMIT	0.05
METHOD OF ANALYSIS	6010

ChromaLab, Inc.

Refaat A. Mankarious
Inorganics Supervisor

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

December 3, 1991 ChromaLab File No.: 1191252

AQUA RESOURCES, INC.

Attn: Aaron Stessman

RE: One soil sample for Gasoline/BTEX, TEPH, and Oil&Grease analysis

Project Name: PGE-ENCON
Project Number: 90262.2
Date Sampled: Nov. 23, 1991 Date Submitted: Nov. 23, 1991
Date Extracted: Nov. 29, 1991 Date Analyzed: Nov. 29, 1991

RESULTS:

Sample I.D.	Gasoline (mg/kg)	Diesel (mg/kg)	Benzene (ug/kg)	Toluene (ug/kg)	Ethyl Benzene (ug/kg)	Total Xylenes (ug/kg)	Oil& Grease (mg/kg)	Kerosene (mg/kg)
E-4	1.9	51.7	N.D.	N.D.	N.D.	9.0	1200	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE REC.	99.3%	92.6%	82.8%	94.2%	107.4%	106.7%	----	----
DET. LIMIT	1.0	1.0	5.0	5.0	5.0	5.0	10	1.0
METHOD OF ANALYSIS	5030/ 8015	3550/ 8015	8020	8020	8020	8020	5520 E&F	3550/ 8015

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam (by DD)
Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

December 4, 1991 ChromaLab File No.: 1191254

AQUA RESOURCES, INC.

Attn: Aaron Stessman

RE: Two soil samples for Gasoline/BTEX, TEPH, and Oil & Grease analyses

Project Name: PG&E - ENCON
Project Number: 90262.2
Date Sampled: Nov. 23, 1991 Date Submitted: Nov. 23, 1991
Date Extracted: 11/29-12/2/91 Date Analyzed: 11/29-12/2/91

RESULTS:

Sample I.D.	Gasoline (mg/kg)	Diesel (mg/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Ethyl Benzene (µg/kg)	Total Xylenes (µg/kg)	Oil & Grease (mg/kg)	Kerosene (mg/kg)
B-10	1.6	N.D.	N.D.	N.D.	N.D.	8.3	33	N.D.
E-5	6.3	5000	14	8.0	13	76	5300	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE REC.	99.3%	93.2%	91.3%	91.9%	94.0%	93.5%	----	----
DET. LIMIT	1.0	1.0	5.0	5.0	5.0	5.0	10	1.0
METHOD OF ANALYSIS	5030/ 8015	3550/ 8015	8020	8020	8020	8020	5520 E&F	3550/ 8015

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB FILE # 119124T
ORDER # 430B

AQUA RESOURCES, INC.

NO.: 2

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

DATE 11/22/91

PROJECT NAME: PG&E - ENCON

PROJECT NO.: 90262.2

Sample Number	Location (Depth)	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required
LSP-1	9"	Soil/Tar	Drive	Brass Tube	±4°C		2*
LSP-2	28"	Soil	"	Brass Tube	"		
LN-1	4½'	Soil	"	Glass Jar	"		2*
LS-2	4'	"	"	"	"		
LW-3	4'	"	"	"	"		
LE-4	3'	"	"	Brass Tube	"		
B-6	8'	"	"	"	"		1*
S-4	5'	"	"	"	"		1*
W-5	5'	"	"	"	"		1*
B-7	8½'	"	"	"	"		1*
E-3	4½'	"	"	"	"		1+

Total Number of Samples Shipped: 11 | Sampler's Signature:

Relinquished By:
Signature
Printed Name Aaron Nicholson
Company Aqua Resources
Reason For Analysis

Received By:
Signature
Printed Name SEAN HALSEY
Company CHROMALAB
Date 11/22/91
Time 1405

Relinquished By:
Signature
Printed Name
Company
Reason

Received By:
Signature
Printed Name
Company
Date / /
Time

REMARKS:
SAMPLES with 1st letter L in ID sampled 11/22 4-5pm, Others sampled 11/22
1 = TEPH - Diesel & Kerosene, TVHG & BTEX, O&G
2 = Composite bracketted samples and run WET - Lead on Composite
* = 24 hour turnaround FAX results to Aaron (510) 540-7496 and phone (415) 293-3479
* = RUSH (3 Day Turnaround as possible)
+ = 1 week Turnaround

Special Shipment / Handling / Storage Requirements:

Chromalab # 1191252
Order# 4308

AQUA RESOURCES, INC.

SHIPMENT NO.: 3

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

DATE 11/23/91

PROJECT NAME: PGE-ENCON

PROJECT NO.: 90262.2

Sample Number	Location (Depth)	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required
S-5	4 1/2	Soil	Drive	Brass Tube	≈4°C		1 ★
B-8	3 1/2	"	"	"	"		1 ★
S-6	4 1/2	"	"	"	"		1 ★
B-9	6	"	"	"	"		1 ★
E-4	8 1/2	"	"	"	"		1 *

Total Number of Samples Shipped:

Sampler's Signature:

Relinquished By: Signature / Printed Name: Aaron N. Steckman / Company: Aqua Resources / Reason: For Analysis	Received By: Signature / Printed Name: Gary Cook / Company: Chromalab	Date: 11/23/91 Time: 9:25
Relinquished By: Signature / Printed Name / Company / Reason	Received By: Signature / Printed Name / Company	Date: / / Time:

REMARKS:
Samples S-5, B-8 taken 11/22 - kept on ice overnight w/ fresh ice added in am.
1 = TEPH - Diesel & Kerosene, TVH & BTEX, O&G

* = 1 Week turnaround
★ = 24 hour turnaround, FAX results Monday am. to Aaron (510) 540-7416

Special Shipment / Handling / Storage Requirements:
★ Analyze Immediately : Due at NOON MONDAY 11/25

CHROM_LAB FILE # 191254
ORDER # 4308

4

AQUA RESOURCES, INC.

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

DATE 11/23/91

PROJECT NAME: PGE - ENCON

PROJECT NO.: 90262.2

Sample Number	Location (Depth)	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required
E-5	5'	Soil	Drive	Brass Tube	±4°C		1*
W-6	4'	"	"	"	"		1☆
S-7	4½'	"	"	"	"		1☆
B-10	8½'	"	"	"	"		1*
B-11	8½'	"	"	"	"		1☆

Total Number of Samples Shipped: 5

Sampler's Signature: [signature]

Relinquished By:
Signature [signature]
Printed Name Aaron N. Stessman
Company Aqua Resources
Reason For Analysis

Received By:
Signature Gary Cook
Printed Name Gary Cook
Company Chromalab

Date 11/23/91
Time 16:50

Relinquished By:
Signature
Printed Name
Company
Reason

Received By:
Signature
Printed Name
Company

Date / /
Time

REMARKS:

1 = TEPH - Diesel, Kerosene, TVHG + BTEX, O&G

☆ = RUSH (Monday results ~~if~~ possible) Due Monday by NOON

* = 1 Week turnaround

FAX Results to Aaron (510) 540-7496 w/ copy of COC

Special Shipment / Handling / Storage Requirements:

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

December 11, 1991

ChromaLab File # 1191254 C

Client: Aqua Resources, Inc.
Attn: Aaron Stessman
Date Sampled: Nov. 23, 1991
Date Submitted: Nov. 23, 1991
Date of Analysis: Dec. 06, 1991

Project Number: 90262.2
Project Name: PG&E-ENCON
Sample I.D.: B-11 ^S
Method of Analysis: EPA 8240
Detection Limit: 5.0 µg/kg

COMPOUND NAME	µg/kg	Spike Recovery
CHLOROMETHANE	N.D.	---
VINYL CHLORIDE	N.D.	---
BROMOMETHANE	N.D.	---
CHLOROETHANE	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	---
1,1-DICHLOROETHENE	N.D.	91.6% 93.5%
METHYLENE CHLORIDE	N.D.	---
1,2-DICHLOROETHENE (TOTAL)	N.D.	---
1,1-DICHLOROETHANE	N.D.	---
CHLOROFORM	N.D.	---
1,1,1-TRICHLOROETHANE	N.D.	---
CARBON TETRACHLORIDE	N.D.	---
1,2-DICHLOROETHANE	N.D.	---
BENZENE	N.D.	---
TRICHLOROETHENE	N.D.	94.1% 93.7%
1,2-DICHLOROPROPANE	N.D.	---
BROMODICHLOROMETHANE	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	---
TOLUENE	N.D.	---
CIS-1,3-DICHLOROPROPENE	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	---
TETRACHLOROETHENE	N.D.	86.4% 89.1%
DIBROMOCHLOROMETHANE	N.D.	---
CHLOROBENZENE	130	---
ETHYL BENZENE	N.D.	---
BROMOFORM	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	87.6% 90.2%
1,3-DICHLOROBENZENE	1100	---
1,4-DICHLOROBENZENE	1800	---
1,2-DICHLOROBENZENE	160	---
TOTAL XYLENES	N.D.	---
ACETONE	N.D.	---
METHYL ETHYL KETONE	N.D.	---
METHYL ISOBUTYL KETONE	N.D.	---

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam
Lab Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

December 13, 1991 — ChromaLab File # 1291254 C

Aqua Resources, Inc. — Attn: Aaron Stessman

Re: One soil sample for PAH analysis

Project Number: 90262.2
Project Name: PG&E ENCON

Date Sampled: Nov. 23, 1991 — Date Submitted: Nov. 23, 1991
Date Extracted: Dec. 06, 1991 — Date Analyzed: Dec. 12, 1991

POLYNUCLEAR AROMATIC HYDROCARBONS by GC/MS

Method of Analysis: EPA 8270 — Matrix: soil

COMPOUND NAME	Sample mg/Kg	MDL mg/Kg	Spike Recovery
NAPHTHALENE	N.D.	1.0	-----
ACENAPHTHYLENE	N.D.	1.0	-----
ACENAPHTHENE	N.D.	1.0	89.1%
FLUORENE	N.D.	1.0	-----
PHENANTHRENE	N.D.	1.0	90.2%
ANTHRACENE	N.D.	1.0	-----
FLUORANTHENE	N.D.	1.0	-----
PYRENE	1.9	1.0	-----
BENZO(A)ANTHRACENE	N.D.	1.0	-----
CHRYSENE	N.D.	1.0	82.6%
BENZO(B)FLUORANTHENE	N.D.	1.0	-----
BENZO(K)FLUORANTHENE	N.D.	1.0	-----
BENZO(A)PYRENE	N.D.	1.0	-----
INDENO(1,2,3 C,D)PYRENE	N.D.	1.0	-----
DIBENZO(A,H)ANTHRACENE	N.D.	1.0	-----
BENZO(G,H,I)PERYLENE	N.D.	1.0	-----

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Lab Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

December 5, 1991 ChromaLab File No.: 1191274

AQUA RESOURCES, INC.

Attn: Aaron Stessman

RE: One soil sample for TEPH analysis

Project Name: PGE-ENCON
Project Number: 90262.2
Date Sampled: Nov. 26, 1991 Date Submitted: Nov. 26, 1991
Date Extracted: Dec. 3, 1991 Date Analyzed: Dec. 3, 1991

RESULTS:

Sample I.D.	Kerosene (mg/kg)	Diesel (mg/kg)	Motor Oil (mg/kg)
E-6	N.D.	3500	6700
BLANK	N.D.	N.D.	N.D.
SPIKE RECOVERY	----	93.2%	----
DETECTION LIMIT	1.0	1.0	10
METHOD OF ANALYSIS	3550/ 8015	3550/ 8015	3550/ 8015

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam (by DD)
Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

5 DAYS TURNAROUND

Analytical Laboratory (E694)

December 10, 1991

ChromaLab File # 1191274

Client: Aqua Resources, Inc.
Attn: Aaron Stessman
Date Sampled: Nov. 26, 1991
Date Submitted: Nov. 26, 1991
Date of Analysis: Dec. 08, 1991

Project Number: 90262.2
Project Name: PG&E-ENCON
Sample I.D.: E-6
Method of Analysis: EPA 8240

Detection Limit: 5.0 µg/kg

COMPOUND NAME	µg/kg	Spike Recovery
CHLOROMETHANE	N.D.	---
VINYL CHLORIDE	N.D.	---
BROMOMETHANE	N.D.	---
CHLOROETHANE	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	---
1,1-DICHLOROETHENE	N.D.	92.8% 95.6%
METHYLENE CHLORIDE	N.D.	---
1,2-DICHLOROETHENE (TOTAL)	N.D.	---
1,1-DICHLOROETHANE	N.D.	---
CHLOROFORM	N.D.	---
1,1,1-TRICHLOROETHANE	N.D.	---
CARBON TETRACHLORIDE	N.D.	---
1,2-DICHLOROETHANE	N.D.	---
BENZENE	N.D.	---
TRICHLOROETHENE	N.D.	93.2% 95.5%
1,2-DICHLOROPROPANE	N.D.	---
BROMODICHLOROMETHANE	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	---
TOLUENE	N.D.	---
CIS-1,3-DICHLOROPROPENE	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	---
TETRACHLOROETHENE	N.D.	93.7% 98.2%
DIBROMOCHLOROMETHANE	N.D.	---
CHLOROBENZENE	N.D.	---
ETHYL BENZENE	N.D.	---
BROMOFORM	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	96.0% 99.2%
1,3-DICHLOROBENZENE	N.D.	---
1,4-DICHLOROBENZENE	N.D.	---
1,2-DICHLOROBENZENE	N.D.	---
TOTAL XYLENES	N.D.	---
ACETONE	N.D.	---
METHYL ETHYL KETONE	N.D.	---
METHYL ISOBUTYL KETONE	N.D.	---

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam
Lab Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

December 10, 1991

ChromaLab File # 1191274

Client: Aqua Resources, Inc.
Attn: Aaron Stessman
Date Sampled: Nov. 26, 1991
Date Submitted: Nov. 26, 1991
Date of Analysis: Dec. 08, 1991

Project Number: 90262.2
Project Name: PG&E-ENCON
Sample I.D.: E-6
Method of Analysis: EPA 8270
Matrix: soil

COMPOUND NAME	Sample mg/Kg	MDL mg/Kg	Spike Recovery
PHENOL	N.D.	0.5	-----
BIS(2-CHLOROETHYL) ETHER	N.D.	0.5	103.6%
2-CHLOROPHENOL	N.D.	0.5	-----
1,3-DICHLOROBENZENE	N.D.	0.5	-----
1,4-DICHLOROBENZENE	N.D.	0.5	-----
BENZYL ALCOHOL	N.D.	1.0	-----
1,2-DICHLOROBENZENE	N.D.	0.5	-----
2-METHYLPHENOL	N.D.	0.5	-----
BIS(2-CHLOROISOPROPYL)ETHER	N.D.	0.5	-----
4-METHYLPHENOL	N.D.	0.5	-----
N-NITROSO-DI-N-PROPYLAMINE	N.D.	0.5	-----
HEXACHLOROETHANE	N.D.	0.5	-----
NITROBENZENE	N.D.	0.5	-----
ISOPHORONE	N.D.	0.5	-----
2-NITROPHENOL	N.D.	0.5	-----
2,4-DIMETHYLPHENOL	N.D.	0.5	-----
BENZOIC ACID	N.D.	2.5	-----
BIS(2-CHLOROETHOXY)METHANE	N.D.	0.5	101.5%
2,4-DICHLOROPHENOL	N.D.	0.5	-----
1,2,4-TRICHLOROBENZENE	N.D.	0.5	-----
NAPHTHALENE	0.5	0.5	-----
4-CHLOROANILINE	N.D.	1.0	-----
HEXACHLOROBUTADIENE	N.D.	0.5	-----
4-CHLORO-3-METHYLPHENOL	N.D.	1.0	-----
2-METHYLNAPHTHALENE	N.D.	0.5	-----
HEXACHLOROCYCLOPENTADIENE	N.D.	0.5	-----
2,4,6-TRICHLOROPHENOL	N.D.	0.5	-----
2,4,5-TRICHLOROPHENOL	N.D.	0.5	-----
2-CHLORONAPHTHALENE	N.D.	0.5	-----
2-NITROANILINE	N.D.	2.5	-----
DIMETHYL PHTHALATE	N.D.	0.5	-----
ACENAPHTHYLENE	N.D.	0.5	-----
3-NITROANILINE	N.D.	2.5	-----
ACENAPHTHENE	N.D.	0.5	100.8%
2,4-DINITROPHENOL	N.D.	2.5	-----
4-NITROPHENOL	N.D.	2.5	-----
DIBENZOFURAN	N.D.	0.5	-----

(continued on next page)

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

ChromaLab File # 1191274

Project Number: 90262.2
Project Name: PG&E-ENCON
Sample I.D.: E-6
Method of Analysis: EPA 8270 Matrix: soil

COMPOUND NAME	Sample mg/Kg	MDL mg/Kg	Spike Recovery
2,4-DINITROTOLUENE	N.D.	0.5	-----
2,6-DINITROTOLUENE	N.D.	0.5	93.0%
DIETHYL PHTHALATE	N.D.	0.5	-----
4-CHLORO-PHENYL PHENYL ETHER	N.D.	0.5	-----
FLUORENE	0.9	0.5	-----
4-NITROANILINE	N.D.	2.5	-----
4,6-DINITRO-2-METHYL PHENOL	N.D.	2.5	-----
N-NITROSODIPHENYLAMINE	N.D.	0.5	-----
4-BROMOPHENYL PHENYL ETHER	N.D.	0.5	-----
HEXACHLOROBENZENE	N.D.	0.5	-----
PENTACHLOROPHENOL	N.D.	2.5	114.9%
PHENANTHRENE	1.8	0.5	-----
ANTHRACENE	N.D.	0.5	-----
DI-N-BUTYL PHTHALATE	N.D.	0.5	-----
FLUORANTHENE	N.D.	0.5	-----
PYRENE	3.0	0.5	-----
BUTYLBENZYLPHTHALATE	N.D.	0.5	-----
3,3'-DICHLOROBENZIDINE	N.D.	1.0	-----
BENZO(A)ANTHRACENE	N.D.	0.5	-----
BIS(2-ETHYLHEXYL)PHTHALATE	N.D.	0.5	-----
CHRYSENE	N.D.	0.5	99.1%
DI-N-OCTYLPHTHALATE	N.D.	0.5	-----
BENZO(B)FLUORANTHENE	N.D.	0.5	-----
BENZO(K)FLUORANTHENE	N.D.	0.5	-----
BENZO(A)PYRENE	N.D.	0.5	-----
INDENO(1,2,3 C,D)PYRENE	N.D.	0.5	-----
DIBENZO(A,H)ANTHRACENE	N.D.	0.5	-----
BENZO(G,H,I)PERYLENE	N.D.	0.5	92.2%

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Lab Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

AQUA RESOURCES, INC.

SHIPMENT NO.: 6

PAGE 1 OF 1

CHAIN OF CUSTODY RECORD

DATE 11/26/91

PROJECT NAME: PGE - ENCON

PROJECT NO.: 90262.2

Sample Number	Location (Depth)	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required
E-PIPE	1 1/2'	Tar	Grab	Glass Jar			2
E-6	(Depth) 4'	Product/Soil	Drive	Brass Tube	±4°C		1

Total Number of Samples Shipped: 2

Sampler's Signature: [signature]

Relinquished By:
Signature: [signature]
Printed Name: Aaron N. Stessman
Company: Aqua Resources
Reason: For Analysis.

Received By:
Signature: [signature]
Printed Name: SEAN HACSEY
Company: CHROMALAB

Date: 11/26/91
Time: 1440

Relinquished By:
Signature
Printed Name
Company
Reason

Received By:
Signature
Printed Name
Company

Date: / /
Time:

REMARKS:

1 - PNAs (PAH's), TEPH (Diesel, Kerosene) (Measure Asphaultic Compounds), 8240,

2 - Use as asphaultic standard for TEPH asphault.

1 week turnaround.

Speek to Gary Cook if any confusion

Special Shipment / Handling / Storage Requirements:

CHROMALAB FILE # 1191274
ORDER # 4340

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

December 2, 1991 ChromaLab File No.: 1191265

AQUA RESOURCES, INC.

Attn: Aaron Stessman

RE: One rush composited soil sample for Gasoline/ BTEX, TEPH, and Oil & Grease analysis

Project Name: P G & E-ENCON
Project Number: 90262-2
Date Sampled: Nov. 25, 1991 Date Submitted: Nov. 26, 1991
Date Extracted: Nov. 27-28, 1991 Date Analyzed: Nov.27-28,1991

RESULTS:

Sample I.D.	Gasoline (mg/kg)	Diesel (mg/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Ethyl Benzene (µg/kg)	Total Xylenes (µg/kg)	Oil & Grease (mg/kg)	Kerosene (mg/kg)
ABE-1, ABW-1, ABS-1, ABN-1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	2900	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE REC.	98.0%	87.3%	85.7%	93.9%	100.8%	106.6%	----	----
DET. LIMIT	1.0	1.0	5.0	5.0	5.0	5.0	10	1.0
METHOD OF ANALYSIS	5030/ 8015	3550/ 8015	8020	8020	8020	8020	5520 E&F	3550/ 8015

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam (by ")
Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

December 2, 1991 — ChromaLab File # 1191265

Client: Aqua Resources, Inc. — Attn: Aaron Stessman
Date Sampled: Nov. 25, 1991 — Date Submitted: Nov. 26, 1991
Date Extracted: Nov. 27, 1991 — Date Analyzed: Nov. 27, 1991

Project No.: 90262.2 — Project Name: PG&E-ENCON
Sample I.D.: COMPOSITE OF ABE-1, ABW-1, ABS-1, & ABN-1
Method of Analysis: EPA 8270 — Matrix: soil

COMPOUND NAME	Sample mg/Kg	MDL mg/Kg	Spike Recovery
PHENOL	N.D.	0.05	-----
BIS(2-CHLOROETHYL) ETHER	N.D.	0.05	91.5% 89.2%
2-CHLOROPHENOL	N.D.	0.05	-----
1,3-DICHLOROBENZENE	N.D.	0.05	-----
1,4-DICHLOROBENZENE	N.D.	0.05	-----
BENZYL ALCOHOL	N.D.	0.10	-----
1,2-DICHLOROBENZENE	N.D.	0.05	-----
2-METHYLPHENOL	N.D.	0.05	-----
BIS(2-CHLOROISOPROPYL)ETHER	N.D.	0.05	-----
4-METHYLPHENOL	N.D.	0.05	-----
N-NITROSO-DI-N-PROPYLAMINE	N.D.	0.05	-----
HEXACHLOROETHANE	N.D.	0.05	-----
NITROBENZENE	N.D.	0.05	-----
ISOPHORONE	N.D.	0.05	-----
2-NITROPHENOL	N.D.	0.05	-----
2,4-DIMETHYLPHENOL	N.D.	0.05	-----
BENZOIC ACID	N.D.	0.25	-----
BIS(2-CHLOROETHOXY)METHANE	N.D.	0.05	91.5% 93.2%
2,4-DICHLOROPHENOL	N.D.	0.05	-----
1,2,4-TRICHLOROBENZENE	N.D.	0.05	-----
NAPHTHALENE	N.D.	0.05	-----
4-CHLOROANILINE	N.D.	0.10	-----
HEXACHLOROBUTADIENE	N.D.	0.05	-----
4-CHLORO-3-METHYLPHENOL	N.D.	0.10	-----
2-METHYLNAPHTHALENE	N.D.	0.05	-----
HEXACHLOROCYCLOPENTADIENE	N.D.	0.05	-----
2,4,6-TRICHLOROPHENOL	N.D.	0.05	-----
2,4,5-TRICHLOROPHENOL	N.D.	0.05	-----
2-CHLORONAPHTHALENE	N.D.	0.05	-----
2-NITROANILINE	N.D.	0.25	-----
DIMETHYL PHTHALATE	N.D.	0.05	-----
ACENAPHTHYLENE	N.D.	0.05	-----
3-NITROANILINE	N.D.	0.25	-----
ACENAPHTHENE	N.D.	0.05	87.5% 88.2%
2,4-DINITROPHENOL	N.D.	0.25	-----
4-NITROPHENOL	N.D.	0.25	-----
DIBENZOFURAN	N.D.	0.05	-----

(continued on next page)

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

ChromaLab File # 1191265

Project No.: 90262.2 Project Name: PG&E-ENCON
Sample I.D.: COMPOSITE OF ABE-1, ABW-1, ABS-1, & ABN-1
Method of Analysis: EPA 8270 Matrix: soil

COMPOUND NAME	Sample mg/Kg	MDL mg/Kg	Spike Recovery
2,4-DINITROTOLUENE	N.D.	0.05	-----
2,6-DINITROTOLUENE	N.D.	0.05	89.1% 87.1%
DIETHYL PHTHALATE	N.D.	0.05	-----
4-CHLORO-PHENYL PHENYL ETHER	N.D.	0.05	-----
FLUORENE	N.D.	0.05	-----
4-NITROANILINE	N.D.	0.25	-----
4,6-DINITRO-2-METHYL PHENOL	N.D.	0.25	-----
N-NITROSODIPHENYLAMINE	N.D.	0.05	-----
4-BROMOPHENYL PHENYL ETHER	N.D.	0.05	-----
HEXACHLOROBENZENE	N.D.	0.05	-----
PENTACHLOROPHENOL	N.D.	0.25	-----
PHENANTHRENE	N.D.	0.05	-----
ANTHRACENE	N.D.	0.05	-----
DI-N-BUTYL PHTHALATE	N.D.	0.05	-----
FLUORANTHENE	N.D.	0.05	-----
PYRENE	N.D.	0.05	-----
BUTYLBENZYLPHTHALATE	N.D.	0.05	-----
3,3'-DICHLOROBENZIDINE	N.D.	0.10	-----
BENZO(A)ANTHRACENE	N.D.	0.05	-----
BIS(2-ETHYLHEXYL)PHTHALATE	N.D.	0.05	-----
CHRYSENE	N.D.	0.05	86.1% 85.1%
DI-N-OCTYLPHTHALATE	N.D.	0.05	-----
BENZO(B)FLUORANTHENE	N.D.	0.05	-----
BENZO(K)FLUORANTHENE	N.D.	0.05	-----
BENZO(A)PYRENE	N.D.	0.05	-----
INDENO(1,2,3 C,D)PYRENE	N.D.	0.05	-----
DIBENZO(A,H)ANTHRACENE	N.D.	0.05	-----
BENZO(G,H,I)PERYLENE	N.D.	0.05	-----

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Lab Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

AQUA RESOURCES, INC.

SHIPMENT NO.: 5

PAGE 1 OF 1

DATE 11/25/91

CHAIN OF CUSTODY RECORD

PROJECT NAME: PG&E - ENCON

PROJECT NO.: 90262.2

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required
		Material	Method		Temp	Chemical	
ABE-1	Class	Soil	Drive	Brass Tube	±4°C	Composite (1)	HOLD
ABW-1	III	"	"	"	"		"
ABS-1	Import	"	"	"	"		"
ABN-1	P.ic	"	"	"	"		"
	(Depth)						" (HOLD)
B-12	9½'	"	"	"	"		

Total Number of Samples Shipped: 5

Sampler's Signature:

Relinquished By:
Signature
Printed Name: Aaron N. Stessman
Company: Aqua Resources
Reason: For Analysis

Received By:
Signature
Printed Name: SEAN HALSEY
Company: CHROMALAB

Date: 11/25/91
Time: 3:00

Relinquished By:
Signature
Printed Name
Company
Reason

Received By:
Signature
Printed Name
Company

Date: / /
Time:

REMARKS:

1 = TEPH (Diesel & Kerosene), TVHG & BTEX, O&G, 8270

FAX Results to Aaron (510) 540-7496

1 Week Turnaround

Special Shipment / Handling / Storage Requirements: 24 hr TAT, due Wed per Aaron 11/26/91 ET

CHROMALAB FILE # 1191265
ORDER # 43323

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

December 3, 1991 ChromaLab File No.: 1291007

AQUA RESOURCES, INC.

Attn: Aaron Stessman

RE: One rush soil sample for Gasoline/BTEX, TEPH, and Oil & Grease analyses

Project Name: PG&E - ENCON
Project Number: 90262.2
Date Sampled: Dec. 2, 1991 Date Submitted: Dec. 2, 1991
Date Extracted: Dec. 2-3, 1991 Date Analyzed: Dec. 2-3, 1991

RESULTS:

Sample I.D.	Gasoline (mg/kg)	Diesel (mg/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Ethyl Benzene (µg/kg)	Total Xylenes (µg/kg)	Oil & Grease (mg/kg)	Kerosene (mg/kg)
S-8	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE REC.	99.3%	92.6%	82.8%	94.2%	107.4%	106.7%	----	----
DET. LIMIT	1.0	1.0	5.0	5.0	5.0	5.0	10	1.0
METHOD OF ANALYSIS	5030/ 8015	3550/ 8015	8020	8020	8020	8020	5520 E&F	3550/ 8015

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

December 9, 1991 ChromaLab File No.: 1291007

AQUA RESOURCES, INC.

Attn: Aaron Stessman

RE: One soil sample for Gasoline/BTEX, TEPH, and Oil & Grease analyses

Project Name: PG&E - ENCON
Project Number: 90262.2
Date Sampled: Dec. 2, 1991 Date Submitted: Dec. 2, 1991
Date Extracted: Dec. 6, 1991 Date Analyzed: Dec. 6, 1991

RESULTS:

Sample I.D.	Gasoline (mg/kg)	Diesel (mg/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Ethyl Benzene (µg/kg)	Total Xylenes (µg/kg)	Oil & Grease (mg/kg)	Kerosene (mg/kg)
B-13	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE REC.	98.6%	85.2%	99.0%	93.5%	84.7%	81.0%	----	----
DUP SPIKE REC	95.3%	86.2%	87.0%	79.8%	81.4%	81.4%	----	----
DET. LIMIT	1.0	1.0	5.0	5.0	5.0	5.0	10	5.0
METHOD OF ANALYSIS	5030/ 8015	3550/ 8015	8020	8020	8020	8020	5520 E&F	3550/ 8015

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB FILE # 1291007
ORDER # 4382

AQUA RESOURCES, INC.

O.: 7

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

DATE 12/2/91

PROJECT NAME: PG&E - ENCON

PROJECT NO.: 90262.2

Sample Number	Location (Depth)	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required
S-8	5'	Soil	Drive	Brass Tube	±4°C		1★
B-13	9½'	Soil	"	"	"		1★

Total Number of Samples Shipped:

Sampler's Signature:

Relinquished By: Signature / Printed Name: Aaron N. Stessman / Company: Aqua-Resources / Reason: For Analysis	Received By: Signature / Printed Name: Gary Cook / Company: Chromalab	Date: 12/2/91 / Time: 15:10
Relinquished By: Signature / Printed Name / Company / Reason	Received By: Signature / Printed Name / Company	Date: / / Time:

REMARKS:

1 = TEPH (Diesel & Kerosene), TVH & BTEX, O&G

★ = 24 hour turnaround, FAX results to Aaron (510)540-7496

· ★ = 1 Week Turnaround, "

Special Shipment / Handling / Storage Requirements:

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

December 6, 1991 ChromaLab File No.: 1291041

AQUA RESOURCES, INC.

Attn: Aaron Stessman

RE: One rush water sample for Gasoline/BTEX, TEPH, and Oil & Grease analyses

Project Name: PG&E - ENCON
Project Number: 90262.2
Date Sampled: Dec. 5, 1991 Date Submitted: Dec. 5, 1991
Date Extracted: Dec. 5-6, 1991 Date Analyzed: Dec. 5-6, 1991

RESULTS:

Sample I.D.	Gasoline (mg/l)	Diesel (mg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl Benzene (µg/l)	Total Xylenes (µg/l)	Oil & Grease (mg/l)	Kerosene (µg/l)
WA-1	21	23	0.7	2.8	20	220	42	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE REC.	94.4%	86.2%	102.5%	94.7%	101.7%	95.2%	----	----
DET. LIMIT	1.0	1.0	0.5	0.5	0.5	0.5	0.5	50
METHOD OF ANALYSIS	5030/ 8015	3510/ 8015	602	602	602	602	5520 B&F	3510/ 8015

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

December 12, 1991 ChromaLab File No.: 1291041

AQUA RESOURCES, INC.

Attn: Aaron Stessman

RE: One soil sample for Gasoline/BTEX, TEPH, and Oil & Grease analyses

Project Name: PG&E - ENCON
Project Number: 90262.2
Date Sampled: Dec. 5, 1991 Date Submitted: Dec. 5, 1991
Date Extracted: Dec. 10, 1001 Date Analyzed: Dec. 12, 1991

RESULTS:

Sample I.D.	Gasoline (mg/Kg)	Diesel (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Oil & Grease (mg/Kg)	Kerosene (µg/Kg)
B-14	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE REC.	97.0%	88.6%	98.0%	97.0%	94.7%	93.6%	----	91.3%
DUP SPIKE REC.	97.7%	87.5%	95.1%	102.5%	94.2%	93.3%	----	85.7%
DET. LIMIT	1.0	1.0	5.0	5.0	5.0	5.0	10	1.0
METHOD OF ANALYSIS	5030/ 8015	3550/ 8015	8020	8020	8020	8020	5520 D&F	3550/ 8015

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

December 6, 1991

ChromaLab File # 1291041 B

Client: Aqua Resources, Inc.
Date Sampled: Dec. 05, 1991
Date Analyzed: Dec. 06, 1991

Attn: Aaron Stessman
Date Submitted: Dec. 05, 1991

Project Number: 90262.2
Sample I.D.: WA-1
Method of Analysis: 601 & 602

Project Name: PG&E-ENCON
Detection Limit: 0.5 µg/l

COMPOUND NAME	µg/l	Spike Recovery
CHLOROMETHANE	N.D.	---
VINYL CHLORIDE	N.D.	---
BROMOMETHANE	N.D.	---
CHLOROETHANE	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	---
1,1-DICHLOROETHENE	N.D.	91.8% 93.5%
METHYLENE CHLORIDE	N.D.	---
1,2-DICHLOROETHENE (TOTAL)	N.D.	---
1,1-DICHLOROETHANE	16	---
CHLOROFORM	N.D.	---
1,1,1-TRICHLOROETHANE	3.5	---
CARBON TETRACHLORIDE	N.D.	---
1,2-DICHLOROETHANE	N.D.	---
BENZENE	1.8	94.7% 96.0%
TRICHLOROETHENE	1.2	---
1,2-DICHLOROPROPANE	N.D.	---
BROMODICHLOROMETHANE	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	---
TOLUENE	18	92.5% 93.6%
CIS-1,3-DICHLOROPROPENE	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	---
TETRACHLOROETHENE	N.D.	---
DIBROMOCHLOROMETHANE	N.D.	---
CHLOROBENZENE	N.D.	91.0% 91.8%
ETHYLBENZENE	26	---
BROMOFORM	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	---
1,3-DICHLOROBENZENE	N.D.	---
1,4-DICHLOROBENZENE	14	---
1,2-DICHLOROBENZENE	N.D.	---
TOTAL XYLENES	170	---

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Lab Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB FILE # 1291041
ORDER # 4421

8

AQUA RESOURCES, INC.

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

DATE 12-5-91

PROJECT NAME: P G & E - ENCON

PROJECT NO.: 90262.2

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required
B-14	9 1/2'	Soil	Drive	Brass Tube	±4°C		1 +
WA-1	West	Water	Grab	1 l Amber	"		2 *
WA-1	Exc.	"	"	"	"		
WA-1	Stand.	"	"	"	"		3 *
WA-1	Water	"	"	"	"		
WA-1	With	"	"	VOA	"		4 *
WA-1	Oily	"	"	"	"		
WA-1	Sheen	"	"	"	"		5 *
WA-1		"	"	"	"		

Total Number of Samples Shipped: 9

Sampler's Signature: A. N. Stessman

Relinquished By:
Signature: A. N. Stessman
Printed Name: Aaron N. Stessman
Company: Aqua Resources
Reason: For Analysis

Received By:
Signature: Gary Cook
Printed Name: Gary Cook
Company: Chromalab

Date: 12/5/91
Time: 1500

Relinquished By:
Signature:
Printed Name:
Company:
Reason:

Received By:
Signature:
Printed Name:
Company:

Date: / /
Time:

REMARKS:

1 = TEPH (D&K), TVHG & BTEX, O&G

2 = TEPH (D&K)

3 = O&G

4 = TVHG

5 = 601/602

* = 24 hr RUSH (FAX)

+ = 1 week turnaround

Special Shipment / Handling / Storage Requirements:

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

December 30, 1991 ChromaLab File No.: 1291164

AQUA RESOURCES, INC.

Attn: Aaron Stessman

RE: One soil sample for Gasoline/BTEX analysis

Project Name: PG&E - ENCON
Project Number: 90262.2
Date Sampled: Dec. 18, 1991 Date Submitted: Dec. 19, 1991
Date Extracted: Dec. 26, 1991 Date Analyzed: Dec. 26, 1991

RESULTS:

Sample I.D.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)
E-PIPE-2	N.D.	N.D.	N.D.	N.D.	11
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	93%	98%	97%	99%	98%
DETECTION LIMIT	1.0	5.0	5.0	5.0	5.0
METHOD OF ANALYSIS	5030/8015	8020	8020	8020	8020

ChromaLab, Inc.

Charles Woolley
Analytical Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

December 27, 1991 ChromaLab File # 1291164

Client: Aqua Resources, Inc. Attn: Aaron Stessman
Date Sampled: Dec. 18, 1991 Date Submitted: Dec. 19, 1991
Date of Analysis: Dec. 26, 1991

Project Name: PG&E-ENCON
Project Number: 90262.2
Sample I.D.: E-PIPE-2
Method of Analysis: EPA 8010 Detection Limit: 5.0 µg/kg

COMPOUND NAME	µg/kg	Spike Recovery
CHLOROMETHANE	N.D.	---
VINYL CHLORIDE	N.D.	---
BROMOMETHANE	N.D.	---
CHLOROETHANE	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	---
1,1-DICHLOROETHENE	N.D.	92.5% 90.8%
METHYLENE CHLORIDE	N.D.	---
1,2-DICHLOROETHENE (TRANS)	N.D.	---
1,1-DICHLOROETHANE	N.D.	---
CHLOROFORM	N.D.	---
1,1,1-TRICHLOROETHANE	N.D.	---
CARBON TETRACHLORIDE	N.D.	---
1,2-DICHLOROETHANE	N.D.	---
TRICHLOROETHENE	N.D.	94.2% 91.7%
1,2-DICHLOROPROPANE	N.D.	---
BROMODICHLOROMETHANE	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	---
CIS-1,3-DICHLOROPROPENE	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	---
TETRACHLOROETHENE	N.D.	88.6% 85.4%
DIBROMOCHLOROMETHANE	N.D.	---
CHLOROBENZENE	N.D.	---
BROMOFORM	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	92.3% 91.0%
1,3-DICHLOROBENZENE	N.D.	---
1,4-DICHLOROBENZENE	N.D.	---
1,2-DICHLOROBENZENE	N.D.	---

ChromaLab, Inc.

Yiu Tam
Analytical Chemist

Eric Tam
Lab Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

AQUA RESOURCES, INC.

SHIPMENT NO.: _____

PAGE 1 OF 1

CHAIN OF CUSTODY RECORD

DATE 12/18/91

PROJECT NAME: PGE - ENCON

PROJECT NO.: 90262.2

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required
		Material	Method		Temp	Chemical	
E-PIPE-2	12" Pipe	Product/Soil	Grab	Glass Jar	±4°C		1

Total Number of Samples Shipped: _____ Sampler's Signature: _____

Relinquished By:
Signature _____
Printed Name Aaron N. Stessman
Company Aqua Resources
Reason For Analysis

Received By:
Signature _____
Printed Name SEAN HALSEY
Company CHROMALAB
Date 12/19/91
Time 1000

Relinquished By:
Signature _____
Printed Name _____
Company _____
Reason _____

Received By:
Signature _____
Printed Name _____
Company _____
Date / /
Time: _____

REMARKS:

1 = Sample and analyze product for-
TVHG + BTEX, 8010
Normal Turnaround

Special Shipment / Handling / Storage Requirements:

CHROMALAB FILE # 1291164
ORDER # 4564

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

January 13, 19921 ChromaLab File No.: 1291164

AQUA RESOURCES, INC.

Attn: Aaron Stessman

RE: One soil sample for TEPH analysis

Project Name: PG&E - ENCON
Project Number: 90262.2
Date Sampled: Dec. 18, 1991 Date Submitted: Dec. 19, 1991
Date Extracted: Jan. 2, 1992 Date Analyzed: Jan. 7, 1992

RESULTS:

Sample I.D.	Kerosene (mg/Kg)	Diesel (mg/Kg)	Motor Oil (mg/Kg)
E-PIPE-2	N.D.	7000	N.D.
BLANK	N.D.	N.D.	N.D.
SPIKE RECOVERY	----	91%	----
DUP SPIKE RECOVERY	----	89%	----
DETECTION LIMIT	1.0	1.0	10
METHOD OF ANALYSIS	3550/ 8015	3550/ 8015	3550/ 8015

ChromaLab, Inc.

Yiu Tam
Analytical Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

January 13, 1992

ChromaLab File # 1291164

Client: Aqua Resources, Inc.
Date Sampled: Dec. 18, 1991
Date Extracted: Dec. 31, 1991

Attn: Aaron Stessman
Date Submitted: Dec. 18, 1991
Date Analyzed: Jan. 10, 1992

Project Name: PG&E-ENCON
Sample I.D.: E-PIPE-2
Method of Analysis: EPA 8270

Project Number: 90262.2
Matrix: soil

COMPOUND NAME	Sample mg/Kg	MDL mg/Kg	Spike Recovery
PHENOL	N.D.	5.0	-----
BIS(2-CHLOROETHYL) ETHER	N.D.	5.0	103.6%
2-CHLOROPHENOL	N.D.	5.0	-----
1,3-DICHLOROBENZENE	N.D.	5.0	-----
1,4-DICHLOROBENZENE	N.D.	5.0	-----
BENZYL ALCOHOL	N.D.	10	-----
1,2-DICHLOROBENZENE	N.D.	5.0	-----
2-METHYLPHENOL	N.D.	5.0	-----
BIS(2-CHLOROISOPROPYL)ETHER	N.D.	5.0	-----
4-METHYLPHENOL	N.D.	5.0	-----
N-NITROSO-DI-N-PROPYLAMINE	N.D.	5.0	-----
HEXACHLOROETHANE	N.D.	5.0	-----
NITROBENZENE	N.D.	5.0	-----
ISOPHORONE	N.D.	5.0	-----
2-NITROPHENOL	N.D.	5.0	-----
2,4-DIMETHYLPHENOL	N.D.	5.0	-----
BENZOIC ACID	N.D.	25	-----
BIS(2-CHLOROETHOXY)METHANE	N.D.	5.0	101.5%
2,4-DICHLOROPHENOL	N.D.	5.0	-----
1,2,4-TRICHLOROBENZENE	N.D.	5.0	-----
NAPHTHALENE	N.D.	5.0	-----
4-CHLOROANILINE	N.D.	10	-----
HEXACHLOROBUTADIENE	N.D.	5.0	-----
4-CHLORO-3-METHYLPHENOL	N.D.	10	-----
2-METHYLNAPHTHALENE	N.D.	5.0	-----
HEXACHLOROCYCLOPENTADIENE	N.D.	5.0	-----
2,4,6-TRICHLOROPHENOL	N.D.	5.0	-----
2,4,5-TRICHLOROPHENOL	N.D.	5.0	-----
2-CHLORONAPHTHALENE	N.D.	5.0	-----
2-NITROANILINE	N.D.	25	-----
DIMETHYL PHTHALATE	N.D.	5.0	-----
ACENAPHTHYLENE	N.D.	5.0	-----
3-NITROANILINE	N.D.	25	-----
ACENAPHTHENE	13	5.0	100.8%
2,4-DINITROPHENOL	N.D.	25	-----
4-NITROPHENOL	N.D.	25	-----
DIBENZOFURAN	N.D.	5.0	-----

(continued on next page)

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

ChromaLab File # 1291164

Project Name: PG&E-ENCON Project Number: 90262.2
Sample I.D.: E-PIPE-2
Method of Analysis: EPA 8270 Matrix: soil

COMPOUND NAME	Sample mg/Kg	MDL mg/Kg	Spike Recovery
2,4-DINITROTOLUENE	N.D.	5.0	-----
2,6-DINITROTOLUENE	N.D.	5.0	93.0%
DIETHYL PHTHALATE	N.D.	5.0	-----
4-CHLORO-PHENYL PHENYL ETHER	N.D.	5.0	-----
FLUORENE	52	5.0	-----
4-NITROANILINE	N.D.	25	-----
4,6-DINITRO-2-METHYL PHENOL	N.D.	25	-----
N-NITROSODIPHENYLAMINE	N.D.	5.0	-----
4-BROMOPHENYL PHENYL ETHER	N.D.	5.0	-----
HEXACHLOROBENZENE	N.D.	5.0	-----
PENTACHLOROPHENOL	N.D.	25	114.9%
PHENANTHRENE	76	5.0	-----
ANTHRACENE	13	5.0	-----
DI-N-BUTYL PHTHALATE	N.D.	5.0	-----
FLUORANTHENE	13	5.0	-----
PYRENE	72	5.0	-----
BUTYLBENZYLPHTHALATE	N.D.	5.0	-----
3,3'-DICHLOROBENZIDINE	N.D.	10	-----
BENZO(A)ANTHRACENE	44	5.0	-----
BIS(2-ETHYLHEXYL)PHTHALATE	N.D.	5.0	-----
CHRYSENE	30	5.0	99.1%
DI-N-OCTYLPHTHALATE	N.D.	5.0	-----
BENZO(B)FLUORANTHENE	N.D.	5.0	-----
BENZO(K)FLUORANTHENE	N.D.	5.0	-----
BENZO(A)PYRENE	16	5.0	-----
INDENO(1,2,3 C,D)PYRENE	N.D.	5.0	-----
DIBENZO(A,H)ANTHRACENE	N.D.	5.0	-----
BENZO(G,H,I)PERYLENE	N.D.	5.0	92.2%

ChromaLab, Inc.

Yiu Tam
Analytical Chemist

Eric Tam
Lab Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

AQUA RESOURCES, INC.

SHIPMENT NO.: _____

PAGE 1 OF 1

DATE 12/31/91

CHAIN OF CUSTODY RECORD

PROJECT NAME: PG&E - ENCON

PROJECT NO.: 90262.2

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required
		Material	Method		Temp	Chemical	
E-PIPE-2		Soil		Brass Tube			1

Total Number of Samples Shipped:

Sampler's Signature:

Relinquished By:	Received By:
Signature	Signature
Printed Name	Printed Name
Company	Company
Reason	
Date: / /	
Time:	
Relinquished By:	Received By:
Signature	Signature
Printed Name	Printed Name
Company	Company
Reason	
Date: / /	
Time:	

REMARKS: This is a sample currently held by Chromalab, submitted 12/18/91

1 - Please add 8270 and TEPH (D,K+Motor oil)

This analysis request given over the phone 12/31/91

Special Shipment / Handling / Storage Requirements:

TO BE USED FOR NON-HAZARDOUS WASTES ONLY NO. 1

Release # 12854

GENERATOR

(1)

PG&E ENCON Gas Yard
4930 Coliseum Way
Oakland, CA
TEL: (415) 973-5615
Order placed by:
Wally Pierce / Troy Finger

(2)

WASTE TO BE DISPOSED
Description of Waste .....
Soil Contaminated with Petroleum Hydrocarbons.
QTY. 384 Net Bbls ___ Gal ___ Cu/Yd ~20 cy

Wear gloves, goggles and protective clothing.

This is to certify that the above named materials are properly classified.

Troy Finger 12/3/91
Signature of Authorized Agent (Date)

(3)

DESIGNATED FACILITY

Gibson Oil
3300 Truxtun Ave.
Bakersfield, CA 93301
TEL: (805) 327-0413
EPA # CAD 980883177
Release # 12854

TRANSPORTER

STAMCO, INCORPORATED
P.O. Box 150
12475-A Llagas Avenue
San Martin, CA 95046
TEL: (408) 268-1196

Signature of Authorized Agent

12/3/91
(Date)

JOB NO. 12261 UNIT NO. 2569

Pick-Up Date 12/3/91 Time ___

NOTE: This form is to be used in lieu of the California Department of Health Services Hazardous Waste Manifest for NON-HAZARDOUS WASTES only.

DISPOSAL FACILITY

Qty. Received: ___ Bbls ___ Gal ___ Cu/Yd ___ Tons ___
Date: ___
Time: ___

DISPOSAL METHOD
Surface Impoundment ___
Injection ___
Landfill ___
Other ___

Signature of Authorized Agent (Date)

RETURN COPY TO:

STAMCO, INC.
P.O. BOX 150
SAN MARTIN, CA 95046

Soil Disposal Manifest 1 of 128 (Typical)

TO BE USED FOR NON-HAZARDOUS WASTES ONLY NO. 1

GENERATOR

(1)
PG&E ENCON: Gas Yard
4930 Coliseum Way
Oakland, CA 94601
TEL: (510) 535-0600
Order placed by:
Troy Finger

(2)
WASTE TO BE DISPOSED
Description of Waste .....
Groundwater contaminated with petroleum hydrocarbons.
QTY. 755 gal Bbls ___ Gal ___ Cu/Yd ___

Wear gloves, goggles and protective clothing.

This is to certify that the above named materials are properly classified.

Troy Finger 12/6/91
Signature of Authorized Agent (Date)

(3)
DESIGNATED FACILITY
Gibson Oil
475 Seaport Blvd.
[redacted], CA 94604
TEL: (415) 368-5511
EPA # CAD 043260702
Release # 12878

TRANSPORTER

STAMCO, INCORPORATED
P.O. Box 150
12475-A Llagas Avenue
San Martin, CA 95046
TEL: (408) 268-1196

Santa Clara Valley Oil
2140 O'Toole Ave
San Jose, CA 95131
(408) 988-2323

Truck #
JOB NO. ___ UNIT NO. 200915
Pick-Up Date 12/6/91 Time 9:00 am

NOTE: This form is to be used in lieu of the California Department of Health Services Hazardous Waste Manifest for NON-HAZARDOUS WASTES only.

Signature of Authorized Agent
12/6/91
(Date)

DISPOSAL FACILITY

Qty. Received: ___ Bbls ___ Gal ___ Cu/Yd ___ Tons ___
Date: ___
Time: ___

DISPOSAL METHOD:
Surface Impoundment ___
Injection ___
Landfill ___
Other ___

Signature of Authorized Agent (Date)

RETURN COPY TO:

STAMCO, INC.
P.O. BOX 150
SAN MARTIN, CA 95046

State of California—Health and Welfare Agency

See Instructions on back of page 6.

Department of Health Services
Toxic Substances Control Program
Sacramento, California

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

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: CAD981411245 | Manifest Document No.: 42061 | 2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

A. State Manifest Document Number: 91512290

3. Generator's Name and Mailing Address: Pacific Gas + Electric, P.O. Box 7033, Oakland Ca 94601

B. State Generator's ID: H 4HQ3600 8798

4. Generator's Phone (510) 535-0600

5. Transporter 1 Company Name: Stamco Inc. | 6. US EPA ID Number: CAD063547996

C. State Transporter's ID: 21324-2

D. Transporter's Phone: 408-268-1196

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: Chemical Waste Management, Kettleman Hills Site, PO Box 471, Kettleman City, Ca 93239 | 10. US EPA ID Number: CAT000646117

G. State Facility's ID:

H. Facility's Phone: 1-800-222-2964

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 Number
a. Non-RCRA Hazardous Waste Solid	001	DT	0002 0	Y	State: 223 EPA/Other: Non RCRA
b.					State: EPA/Other:
c.					State: EPA/Other:
d.					State: EPA/Other:

J. Additional Descriptions for Materials Listed Above: Oil Contaminated Debris

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

15. Special Handling Instructions and Additional Information:
Chem Waste Profile # F92746
In Case of Emergency Call Aaron (510) 540-6954 ERG # 31

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	Signature	Month	Day	Year
Troy E. Finger	T. Finger	12	18	91

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Michael Walsh	M. O. Walsh	2	1	89 1

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

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	Signature	Month	Day	Year

GENERATOR / TRANSPORTER / FACILITY

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

91512290

DO NOT WRITE BELOW THIS LINE.

DHS 8022A (12/90)
EPA 8700—22

Blue: GENERATOR SENDS THIS COPY TO DHS WITHIN 30 DAYS.
To: P.O. Box 400, Sacramento, CA 95812-0400

State of California—Health and Welfare Agency

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

See Instructions on back of page 6.

Department of Health Services
Toxic Substances Control Program
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: CAD981412745
Manifest Document No.: 42060
2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

A. State Manifest Document Number: 91512291

3. Generator's Name and Mailing Address: Pacific Gas & Electric, P.O. Box 7033, Oakland, CA 94601

B. State Generator's ID: H 44103600 2798

4. Generator's Phone (510) 535-0600

5. Transporter 1 Company Name: Stamco INC.
6. US EPA ID Number: CAD063547996
C. State Transporter's ID: 213243
D. Transporter's Phone: 408 268-1196

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: Chemical Waste Management, Kettleman City Hills Site, PO Box 471, Kettleman City, CA 93239
10. US EPA ID Number: CAT000646117
G. State Facility's ID:
H. Facility's Phone: 1-800-222-2964

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 Number
a. Non-RCRA HAZARDOUS WASTE Solid	001	DT	00020	Y	State: 223 EPA/Other: Non RCRA
b.					State: EPA/Other:
c.					State: EPA/Other:
d.					State: EPA/Other:

J. Additional Descriptions for Materials Listed Above: oil Contaminated Debris

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

15. Special Handling Instructions and Additional Information: Chem WASTE Profile # F92746
In CASE of Emergency CALL Aaron (510) 540-6954 ERG # 31

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	Signature	Month	Day	Year
Troy E. Finger	[signature]	1	21	89

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Richard Dalton	[signature]	1	21	89

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

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	Signature	Month	Day	Year

DO NOT WRITE BELOW THIS LINE.

DHS 8022A (12/90)
EPA 8700—22

Blue: GENERATOR SENDS THIS COPY TO DHS WITHIN 30 DAYS.
To: P.O. Box 400, Sacramento, CA 95812-0400

91512291

CMT
(510) 825-2840

DAILY FIELD REPORT

JOB NO. or P O NO. 905-53

PAGE 1 OF 1

North of

PROJECT NAME: PG&E Yard	CLIENT OR OWNER: Voytek	DAILY FIELD REPORT SEQUENCE NO.: 1
GENERAL LOCATION OF WORK: Oakland	OWNER OR CLIENT'S REPRESENTATIVE: Aqua Resources - Arron	DATE: 1-21-91 / DAY OF WEEK: Thurs
GENERAL CONTRACTOR:	GRADING CONTRACTOR: Cole Stoneo	PROJECT ENGINEER:
TYPE OF WORK: Test & sample	GRADING CONTRACTOR'S SUPERINTENDENT OR FOREMAN:	SUPERVISOR: Arron
SOURCE AND DESCRIPTION OF ~~Fill~~ MATERIAL (IMPORT OR SITE)	WEATHER: clear	TECHNICIAN: John Oliveira

DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, AND COMPACTING

TEST NUMBER	TEST LOCATION	ELEV (feet)	FIELD TESTING: DRY DENSITY lbs/cu. ft.	FIELD TESTING: MOISTURE CONTENT %	FIELD TESTING: % OF MAXIMUM DRY DENSITY	REFERENCE CURVE: COMP CURVE NO.	REFERENCE CURVE: MAXIMUM DRY DENSITY lbs/cu. ft.	REFERENCE CURVE: OPTIMUM MOISURE CONTENT %	COMMENTS
1	west side of east strip-06-4.5'		106.4	19.3	86	1	123.7	9.6	
2	East side of east strip-06-7'		112	15.7	87	2	129.1	8.9	

NOTES (Describe work completed during the day, any problems and their solutions)

I took two tests in the excavated area at the east (rear) side of the lot, north of the PG&E yard. I took 2 samples representing the two different soils & areas I tested.

fax results to ~~Ford Ethes~~

TIME BILLED 2 HRS., 1 NO. OF VISITS CONTINUED ☐

RECEIVED BY COPY GIVEN TO

CMT-1

Aqua Reg. Fax 540-7496 Voytek

CONSTRUCTION MATERIALS TESTING, INC.

Job Name: PG&E OAKLAND
Sample Description: VY DK GR SD CLAY W/GRAVEL
Source: -4.5'
Client No: AQUA RESOURCES

Job No. 90553
Sample No: 1
Date: 11-22-91
Sampled: JS Tested: GL

COMPACTION CURVE

% Retained on 3/4": _____ ASTM D1557 (A) (4" mold) ASTM D1557 B C or D (6" mold)

Trial No.	-100	-50	0	+50
Wet Weight	1879	2005	2057	2044
Wet Den.				
Dry Weight	1766	1856	1868	1828
Moisture				
% Moisture	6.4	8.0	10.1	11.8
Dry Den.				

Group Symbol:

4" MOLD

Wet Den. = .06614 x Wet Wt.

Dry Den. = Wt Den. / 100 + % H_2O

6" MOLD

Wet Den. = .02939 x Wet Wt.

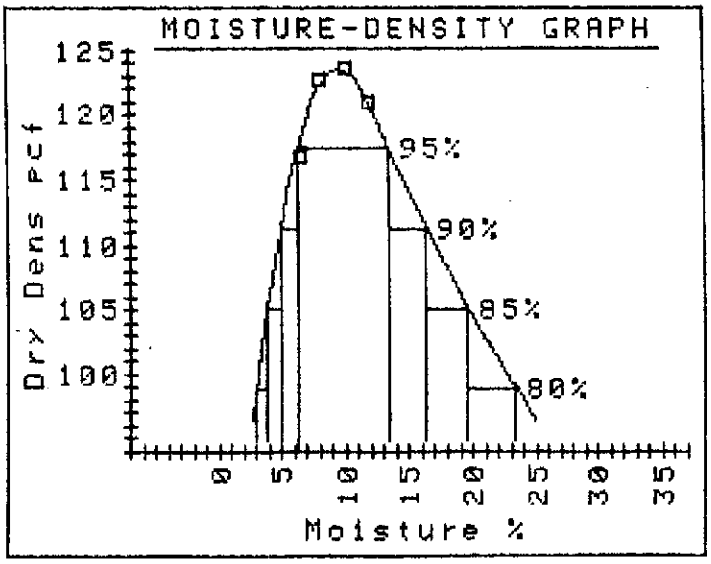
Dry Den. = Wt Den. / 100 + % H_2O

Sample

Maximum Dens.: 123.7 pcf
Optimum Mois.: 9.6 %

MOISTURE RANGE	low	high
95%	6.3	13.3
90%	4.9	16.3
85%	3.9	19.6
80%	3.0	23.3

LAB DATA	dens	mois
1.	116.8	6.4
2.	122.8	8.0
3.	123.5	10.1
4.	120.9	11.8



1000-U Detroit Avenue . Concord, California 94518 . Telephone (415) 825-2840

CONSTRUCTION MATERIALS TESTING, INC.

Job Name: PG&E
Sample Description: DK YL BR CL SAND W/GRAVEL
Source: -7'
Client No:

Job No. 90553
Sample No: 2
Date: 11-22-91
Sampled: _____ Tested: SA

COMPACTION CURVE

% Retained on 3/4": _____ ASTM D1557 A (4" mold) ASTM D1557 B (O) or D (6" mold)

Trial No.	0	+100	+200	+300
Wet Weight	4430	4657	4798	4614
Wet Den.				
Dry Weight	4156	4307	4361	4109
Moisture				
% Moisture				
Dry Den.				

Group Symbol:

4" MOLD

Wet Den. = .06614 x Wet Wt.

Dry Den. = Wt Den. / 100 + % H_2O

6" MOLD

Wet Den. = .02939 x Wet Wt.

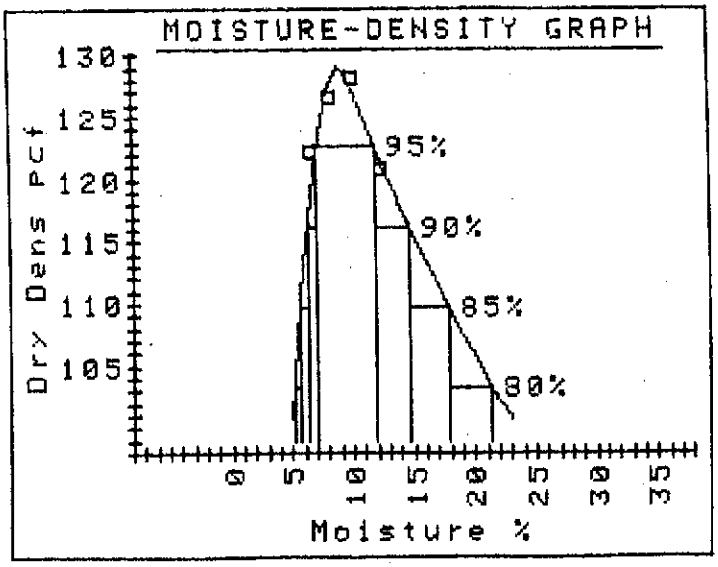
Dry Den. = Wt Den. / 100 + % H_2O

Sample

Maximum Dens.: 129.1 pcf
Optimum Mois.: 8.9 %

MOISTURE RANGE	low	high
95%	7.0	11.8
90%	6.3	14.7
85%	5.7	17.8
80%	5.2	21.4

LAB DATA	dens	mois
1.	122.1	6.6
2.	126.6	8.1
3.	128.2	10.0
4.	120.8	12.3



1000-U Detroit Avenue . Concord, California 94518 . Telephone (415) 825-2840

DAILY FIELD REPORT

JOB NO. or P O NO. 90553

PAGE 1 OF 1

PROJECT NAME: PG+E Yard	CLIENT OR OWNER: Voytek	DAILY FIELD REPORT SEQUENCE NO.: 2
GENERAL LOCATION OF WORK: Oakland	OWNER OR CLIENT'S REPRESENTATIVE: Aqua Resources	DATE: 11-22-91 / DAY OF WEEK: FRI
GENERAL CONTRACTOR	GRADING CONTRACTOR: Pete Stamco	PROJECT ENGINEER
TYPE OF WORK: Sampling	GRADING CONTRACTOR'S SUPERINTENDENT OR FOREMAN	SUPERVISOR
SOURCE AND DESCRIPTION OF FILL MATERIAL (IMPORT OR SITE)	WEATHER: Fair	TECHNICIAN: J. Musser

DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, AND COMPACTING

TEST NUMBER	TEST LOCATION	ELEV (feet)	FIELD TESTING: DRY DENSITY lbs /cu. ft.	FIELD TESTING: MOISTURE CONTENT %	FIELD TESTING: % OF MAXIMUM DRY DENSITY	REFERENCE CURVE: COMP CURVE NO.	REFERENCE CURVE: MAXIMUM DRY DENSITY lbs /cu. ft.	REFERENCE CURVE: OPTIMUM MOISURE CONTENT %	COMMENTS

NOTES (Describe work completed during the day, any problems and their solutions)

Picked up sample of Recycled AB for a curve. I sampled from various piles. This will be curve #3

TIME BILLED 2 HRS., 1 NO. OF VISITS J. Musser CONTINUED ☐

RECEIVED BY COPY GIVEN TO

CMT-1

CMT CONSTRUCTION MATERIALS TESTING, INC.

Job Name: P G & E
Sample Description: DK gr BRN Recycled
Source:
Client No:

Job No. 90553
Sample No: J
Date: 11-22-91
Sampled: JM Tested: JM

COMPACTION CURVE

% Retained on 3/4": _____ ASTM D1557 A (4" mold) ASTM D1557 B (C) or D (6" mold)

Trial No.	-100	0	+100	+200
Wet Weight	4464	4699	4893	4794
Wet Den.				
Dry Weight	4331	4447	4553	4382
Moisture				
% Moisture				
Dry Den.				

AQUA RESOURCES, INC
RECEIVED
DEC 10 1992
JOB NO.
FILE

Group Symbol:

4" MOLD

Wet Den. = .06614 x Wet Wt.

Dry Den. = Wt Den. / 100 + % H_2O

6" MOLD

Wet Den. = .02939 x Wet Wt.

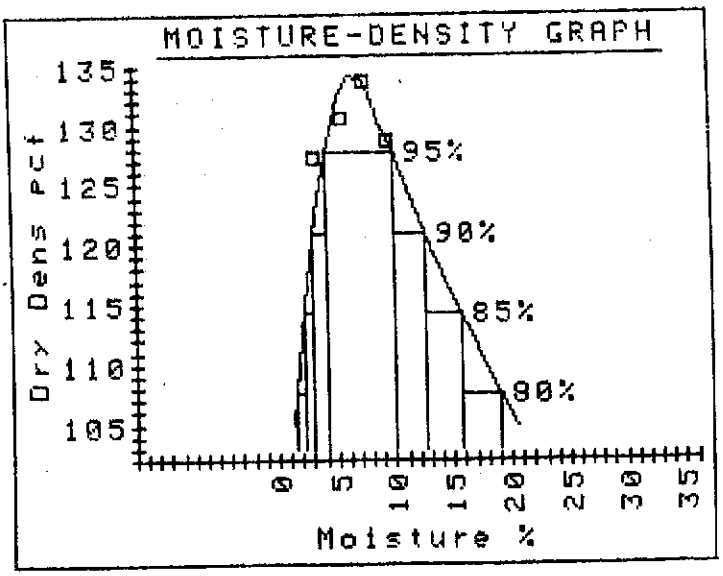
Dry Den. = Wt Den. / 100 + % H_2O

Sample

Maximum Dens.: 134.5 pcf
Optimum Mois.: 6.7 %

MOISTURE RANGE	low	high
95%	4.1	9.8
90%	3.0	12.5
85%	2.2	15.5
80%	1.5	19.0

LAB DATA	dens	mois
1.	127.3	3.1
2.	130.7	5.7
3.	133.8	7.5
4.	128.8	9.4



Mobile
510 415
298-3479
12-12:30

DAILY FIELD REPORT

JOB NO. or P O NO. 90553
PAGE 1 OF 1

PROJECT NAME: PG&E Yard	CLIENT OR OWNER: Voytek	DAILY FIELD REPORT SEQUENCE NO.: 3
GENERAL LOCATION OF WORK: Oakland	OWNER OR CLIENT'S REPRESENTATIVE: Aqua Resources Arron	DATE: 11-23-91 / DAY OF WEEK: Sat
GENERAL CONTRACTOR:	GRADING CONTRACTOR: ~~Pete~~ Stamco	PROJECT ENGINEER:
TYPE OF WORK: Testing of Backfill	GRADING CONTRACTOR'S SUPERINTENDENT OR FOREMAN:	SUPERVISOR:
SOURCE AND DESCRIPTION OF FILL MATERIAL: (IMPORT OR SITE)	WEATHER: fair	TECHNICIAN: John Oliveira

DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, AND COMPACTING

TEST NUMBER	TEST LOCATION	ELEV (feet)	FIELD TESTING: DRY DENSITY lbs/cu. ft.	FIELD TESTING: MOISTURE CONTENT %	FIELD TESTING: % OF MAXIMUM DRY DENSITY	REFERENCE CURVE: COMP CURVE NO.	REFERENCE CURVE: MAXIMUM DRY DENSITY lbs/cu. ft.	REFERENCE CURVE: OPTIMUM MOISURE CONTENT %	COMMENTS
	none taken								

NOTES (Describe work completed during the day, any problems and their solutions)

Contractor started ~~Brad~~ compacting the native soil on the southern side of the excavated area. The Compactor ~~Brake~~ had mechanical problems so not much was accomplished as far as backfilling.
I was informed that drain rock will be used in the areas that are excavated to -7' then filter fabric will be laid over the top prior to placing class II AB ~~on~~ on top

TIME BILLED .4 HRS. 1 NO. OF VISITS CONTINUED ☐

RECEIVED BY COPY GIVEN TO

CMT-1

DAILY FIELD REPORT

JOB NO. or P O NO. 9055-3
PAGE 1 OF 1

PROJECT NAME	CLIENT OR OWNER	DAILY FIELD REPORT SEQUENCE NO.
PG&E yard	Voytek	4
GENERAL LOCATION OF WORK	**OWNER OR CLIENT'S REPRESENTATIVE**	**DATE** / **DAY OF WEEK**
Oakland	Arron - Aqua Resources	11-24-91 / Sun
GENERAL CONTRACTOR	**GRADING CONTRACTOR**	**PROJECT ENGINEER**
	Stemco	
TYPE OF WORK	**GRADING CONTRACTOR'S SUPERINTENDENT OR FOREMAN**	**SUPERVISOR**
T+O		
SOURCE AND DESCRIPTION OF FILL MATERIAL (IMPORT) OR SITE)	**WEATHER**	**TECHNICIAN**
Drain Rock, Class III recycled AB	overcast	J Oliveira

DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, AND COMPACTING
excavator, loader, sheepfoot water tnk

TEST NUMBER	TEST LOCATION	ELEV (feet)	FIELD TESTING: DRY DENSITY lbs/cu. ft.	FIELD TESTING: MOISTURE CONTENT %	FIELD TESTING: % OF MAXIMUM DRY DENSITY	REFERENCE CURVE: COMP CURVE NO.	REFERENCE CURVE: MAXIMUM DRY DENSITY lbs/cu. ft.	REFERENCE CURVE: OPTIMUM MOISURE CONTENT %	COMMENTS
3	native soil →	-5'	118.6	14.9	92	2	129.1	8.9	
3.1	South 1400, West 0+25								
4	S 1+00, W 0+20	-4½'	120.3	6.9	96	3	134.5	6.7	Failed
5	Retest #4		127.2	6.7	95	3	"	"	RT ok
6	S 0+95, W 0+30	-3½'	131.6	7.7	98	3			
7	S 0+80, W 0+15	-3'	128.3	9.1	95	3			

NOTES (Describe work completed during the day, any problems and their solutions)

Contractor compacted the native soil at -5' elevation on the south end of the hole. Loose native soil was taken out in the mid part of the hole to a approximate depth of -7'. This is where the drain rock is placed to a of approximately 2' thick. Fabric will be placed above thof. Arron informed me that the recyled material imported was not class II; it was said to be class III. Arron called Voytek and got approval to use it up to within 3' of finish grade. Class II AB is manditory above that.

Work is expected to resume monday when they get fabric on site. Arron will call

TIME BILLED 4 HRS., 1 NO. OF VISITS CONTINUED ☐

RECEIVED BY COPY GIVEN TO

CMT-1

DAILY FIELD REPORT

JOB NO. or P O NO. 90553
PAGE 1 OF 1

PROJECT NAME: P.G. & E. YARD	CLIENT OR OWNER: VOYTECH	DAILY FIELD REPORT SEQUENCE NO.: 5	
GENERAL LOCATION OF WORK: OAKLAND	OWNER OR CLIENT'S REPRESENTATIVE: ARROW - AQUA RESOURCES	DATE: 11/25/91	DAY OF WEEK: Mo
GENERAL CONTRACTOR	GRADING CONTRACTOR: STEMCO	PROJECT ENGINEER	
TYPE OF WORK: T&D	GRADING CONTRACTOR'S SUPERINTENDENT OR FOREMAN	SUPERVISOR	
SOURCE AND DESCRIPTION OF FILL MATERIAL (IMPORT OR SITE)	WEATHER: FAIR	TECHNICIAN: B. CLEETON	

DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, AND COMPACTING
BOMAG LOADER H2O Truck EXCAVATOR

TEST NUMBER	TEST LOCATION	ELEV (feet)	FIELD TESTING: DRY DENSITY lbs/cu. ft.	FIELD TESTING: MOISTURE CONTENT %	FIELD TESTING: % OF MAXIMUM DRY DENSITY	REFERENCE CURVE: COMP CURVE NO.	REFERENCE CURVE: MAXIMUM DRY DENSITY lbs/cu. ft.	REFERENCE CURVE: OPTIMUM MOISURE CONTENT %	COMMENTS
(F) 9	S1+20 W 0+25	-3½'	125.5	12.8	93	134.7	6.5		measurments fro-
10	RT#9		127.2	11.3	95	3		ok	NW corner of
(E) 11	S0+50 W 0+40	-5'	124.5	5.1	93	3		(E)	SUBEX.
12	RT#11		127.2	5.5	95	3		ok	

NOTES (Describe work completed during the day, any problems and their solutions)

Contractor continuing to fill subexp'd area of former welding shop. They are having some difficulty getting proper moisture for compaction but after reworking tests were ok.

AQUA RESOURCES, INC
RECEIVED
DEC 2 1991
JOB NO.
FILE

TIME BILLED 4.75 +1.75 OT HRS. continuous NO. OF VISITS CONTINUED ☐

RECEIVED BY COPY GIVEN TO

CMT-1

DAILY FIELD REPORT

JOB NO. or P O NO. 90553

PAGE 1 OF 1

PROJECT NAME	CLIENT OR OWNER	DAILY FIELD REPORT SEQUENCE NO.
P.G&E Yard	Voytech - Aqua Resources	6
GENERAL LOCATION OF WORK	**OWNER OR CLIENT'S REPRESENTATIVE**	**DATE / DAY OF WEEK**
Oakland	Acton	11/26/91 Tue
GENERAL CONTRACTOR	**GRADING CONTRACTOR**	**PROJECT ENGINEER**
	Stemco	
TYPE OF WORK	**GRADING CONTRACTOR'S SUPERINTENDENT OR FOREMAN**	**SUPERVISOR**
Tgo		
SOURCE AND DESCRIPTION OF FILL MATERIAL (IMPORT OR SITE)	**WEATHER**	**TECHNICIAN**
	Fair	B. Cleeton

DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, AND COMPACTING

TEST NUMBER	TEST LOCATION	ELEV (feet)	FIELD TESTING			REFERENCE CURVE			COMMENTS
			DRY DENSITY lbs /cu. ft.	MOISTURE CONTENT %	% OF MAXIMUM DRY DENSITY	COMP CURVE NO.	MAXIMUM DRY DENSITY lbs /cu. ft.	OPTIMUM MOISURE CONTENT %	
13	S 0+35 W 0+20	-4	130.9	6.7	97	3	134.5	6.7	
14	S 0+15 W 0+25	-4	128.7	6.9	96	3			
15	S 0+50 W 0+10	-3	125.0	9.3	93	3			(E)
16	RT # 15		132.0	6.0	98	3			OK

NOTES (Describe work completed during the day, any problems and their solutions)

Contractor continuing to backfill subgr'd area w/class II recycled A.B. Tests ok. Will continue operations on Monday.

TIME BILLED 8 HRS. Continuous NO. OF VISITS CONTINUED ☐

RECEIVED BY COPY GIVEN TO

CMT-1

DAILY FIELD REPORT

JOB NO. or P O NO. 90553
PAGE 1 OF 1

PROJECT NAME: P.G.E Hazard	CLIENT OR OWNER: Voytech - Aqua Resources	DAILY FIELD REPORT SEQUENCE NO.: 7	
GENERAL LOCATION OF WORK: Oakland	OWNER OR CLIENT'S REPRESENTATIVE: Aaron	DATE: 12/2/91	DAY OF WEEK: Mo.
GENERAL CONTRACTOR	GRADING CONTRACTOR: Stemco	PROJECT ENGINEER	
TYPE OF WORK: T & O	GRADING CONTRACTOR'S SUPERINTENDENT OR FOREMAN	SUPERVISOR	
SOURCE AND DESCRIPTION OF FILL MATERIAL (IMPORT OR SITE)		WEATHER: clear	TECHNICIAN: B. Cleeton

DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, AND COMPACTING
Loader - H_2O truck - pactor - excavator - hoe

TEST NUMBER	TEST LOCATION	ELEV (feet)	FIELD TESTING: DRY DENSITY lbs/cu. ft.	FIELD TESTING: MOISTURE CONTENT %	FIELD TESTING: % OF MAXIMUM DRY DENSITY	REFERENCE CURVE: COMP CURVE NO.	REFERENCE CURVE: MAXIMUM DRY DENSITY lbs/cu. ft.	REFERENCE CURVE: OPTIMUM MOISURE CONTENT %	COMMENTS
17	S 0+75 W 0+15	-2	122.8	5.5	91	3	134.5	6.7	(E)
18	S 0+20 W 0+20	-3	122.8	5.3	91	3			(E)
19	RT # 17		129.6	6.5	93	3			(E)
20	RT # 18		120.9	7.7	90	3			(E)
21	RT # 19		128.3	6.7	95	3			ok
22	RT # 20		128.1	7.6	95	3			ok
23	S 0+57 W 0+21	-2	127.2	7.7	95	3			

NOTES (Describe work completed during the day, any problems and their solutions)

1.11 Contractor continuing to backfill subex'd area of welding shop w/ clean fill recycled A.C. Contractor having difficulty w/ compaction due to poor moisture control.

1.11 Continuing Some.

AQUA RESOURCES, INC
RECEIVED
DEC - 5 1991
JOB NO. 90262.2
FILE subcontractors

TIME BILLED 9 HRS. continuous NO. OF VISITS CONTINUED ☐

RECEIVED BY COPY GIVEN TO

CMT-1

DAILY FIELD REPORT

JOB NO. or P O NO. 90553

PAGE 1 OF 1

PROJECT NAME: P.G.E. YARD	CLIENT OR OWNER: AQUA RESOURCES	DAILY FIELD REPORT SEQUENCE NO.: 8
GENERAL LOCATION OF WORK: OAKLAND	OWNER OR CLIENT'S REPRESENTATIVE: AARON	DATE: 12/5/91 DAY OF WEEK: TH.
GENERAL CONTRACTOR:	GRADING CONTRACTOR: STEMCO	PROJECT ENGINEER:
TYPE OF WORK: T & O	GRADING CONTRACTOR'S SUPERINTENDENT OR FOREMAN:	SUPERVISOR:
SOURCE AND DESCRIPTION OF FILL MATERIAL (IMPORT OR SITE):	WEATHER: FAIR	TECHNICIAN: B. CLEEDON

DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, AND COMPACTING

TEST NUMBER	TEST LOCATION	ELEV (feet)	FIELD TESTING: DRY DENSITY lbs /cu. ft.	FIELD TESTING: MOISTURE CONTENT %	FIELD TESTING: % OF MAXIMUM DRY DENSITY	REFERENCE CURVE: COMP CURVE NO.	REFERENCE CURVE: MAXIMUM DRY DENSITY lbs /cu. ft.	REFERENCE CURVE: OPTIMUM MOISURE CONTENT %	COMMENTS
24	S 0+42 W 0+20	-1 E	130.3	10.0	97	3	1345	6.7	
25	S 0+96 W 0+21	-1	127.8	9.9	95	3			
26	S 0+15 W 0+54	-3 S	122.2	10.3	91	3			ok.
27	S 1+00 W 0+15	0 S	128.6	9.4	95	3			
28	S 0+50 W 0+10	-1	127.6	11.9	95	3			
29	S 0+10 W 0+60	-3	127.4	9.5	95	3			

NOTES (Describe work completed during the day, any problems and their solutions)

A.M. Contractor continuing to backfill subsid area w/ class II A.B. Tests were ok this morning

P.M. Tested lift placed this morning, tests were ok.

AQUA RESOURCES, INC
RECEIVED
DEC - 9 1991
JOB NO.
FILE

TIME BILLED 4 HRS., 2 NO. OF VISITS CONTINUED ☐

RECEIVED BY COPY GIVEN TO

CMT-1

DAILY FIELD REPORT

JOB NO. or P O NO. 90553

PAGE 1 OF 1

PROJECT NAME: P.G.E. YORD	CLIENT OR OWNER: AQUA RESOURCES	DAILY FIELD REPORT SEQUENCE NO.: 9	
GENERAL LOCATION OF WORK: OAKLAND	OWNER OR CLIENT'S REPRESENTATIVE: AARON	DATE: 12/6/91	DAY OF WEEK: FRI
GENERAL CONTRACTOR	GRADING CONTRACTOR: STEMCO	PROJECT ENGINEER	
TYPE OF WORK: T & D	GRADING CONTRACTOR'S SUPERINTENDENT OR FOREMAN	SUPERVISOR	
SOURCE AND DESCRIPTION OF FILL MATERIAL (IMPORT OR SITE)	WEATHER: FAIR	TECHNICIAN: BA CLEETON	
DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, AND COMPACTING			

TEST NUMBER	TEST LOCATION	ELEV (feet)	FIELD TESTING: DRY DENSITY lbs/cu. ft.	FIELD TESTING: MOISTURE CONTENT %	FIELD TESTING: % OF MAXIMUM DRY DENSITY	REFERENCE CURVE: COMP CURVE NO.	REFERENCE CURVE: MAXIMUM DRY DENSITY lbs/cu. ft.	REFERENCE CURVE: OPTIMUM MOISURE CONTENT %	COMMENTS
30	S 1+10 W 0+25	F.G.	131.1	6.5	98	3	134.5	6.7	
31	S 0+15 W 0+60	-1	127.2	6.5	95	3			
32	S 0+20 W 1+10	-4	123.1	4.7	92	3			ok.

NOTES (Describe work completed during the day, any problems and their solutions)

Tested fill placed yesterday evening & this morning. Tests indicate that compaction is sufficient

BAC

AQUA RESOURCES, INC
RECEIVED
DEC 11 1991

JOB NO. _____
FILE _____

TIME BILLED 2 HRS., 1 NO. OF VISITS CONTINUED ☐

RECEIVED BY COPY GIVEN TO

CMT-1

DAILY FIELD REPORT

JOB NO. or P O NO. 90553

PAGE 1 OF 1

PROJECT NAME: PG.E YARD	CLIENT OR OWNER: AQUA RESOURCES	DAILY FIELD REPORT SEQUENCE NO.: 10	
GENERAL LOCATION OF WORK: OAKLAND.	OWNER OR CLIENT'S REPRESENTATIVE: AARON	DATE: 12/9/91	DAY OF WEEK: MO.
GENERAL CONTRACTOR:	GRADING CONTRACTOR: STEMCO	PROJECT ENGINEER:	
TYPE OF WORK: T&O	GRADING CONTRACTOR'S SUPERINTENDENT OR FOREMAN:	SUPERVISOR:	
SOURCE AND DESCRIPTION OF FILL MATERIAL: (IMPORT OR SITE)	WEATHER: CLEAR	TECHNICIAN: B. CREEDON/OLIVEIRA	

DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, AND COMPACTING

TEST NUMBER	TEST LOCATION	ELEV (feet)	FIELD TESTING: DRY DENSITY lbs/cu. ft.	FIELD TESTING: MOISTURE CONTENT %	FIELD TESTING: % OF MAXIMUM DRY DENSITY	REFERENCE CURVE: COMP CURVE NO.	REFERENCE CURVE: MAXIMUM DRY DENSITY lbs/cu. ft.	REFERENCE CURVE: OPTIMUM MOISURE CONTENT %	COMMENTS
33	S 0+25 W 1+05	-2	133.1	6.1	99	3	134.5	6.7	
34	S 0+25, W 0+75	-1½'	130.8	5.5	97				
35	S 0+20, W 0+95	-1½'	130.0	5.1	97				

NOTES (Describe work completed during the day, any problems and their solutions)

A.M. Tested lift placed @ west end of subject. Test was OK

PM I took a couple of tests results looked good
They didn't finish today

AQUA RESOURCES, INC
RECEIVED
DEC 12 1991
JOB NO.
FILE

TIME BILLED 3/2 HRS., 2 NO. OF VISITS CONTINUED ☐

RECEIVED BY COPY GIVEN TO

CMT-1

DAILY FIELD REPORT

JOB NO. or P O NO. 90553

PAGE 1 OF 1

PROJECT NAME	CLIENT OR OWNER	DAILY FIELD REPORT SEQUENCE NO.
P.G.E. Yard	Aqua Resources	11
GENERAL LOCATION OF WORK	**OWNER OR CLIENT'S REPRESENTATIVE**	**DATE** / **DAY OF WEEK**
Oakland	Aaron	12/10/91 / Tue
GENERAL CONTRACTOR	**GRADING CONTRACTOR**	**PROJECT ENGINEER**
	Stemco	
TYPE OF WORK	**GRADING CONTRACTOR'S SUPERINTENDENT OR FOREMAN**	**SUPERVISOR**
Testing		

SOURCE AND DESCRIPTION OF FILL MATERIAL (IMPORT OR SITE)	WEATHER	TECHNICIAN
	Clear	BA Cleeper

DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, AND COMPACTING

TEST NUMBER	TEST LOCATION	ELEV (feet)	FIELD TESTING: DRY DENSITY lbs /cu. ft.	FIELD TESTING: MOISTURE CONTENT %	FIELD TESTING: % OF MAXIMUM DRY DENSITY	REFERENCE CURVE: COMP CURVE NO.	REFERENCE CURVE: MAXIMUM DRY DENSITY lbs /cu. ft.	REFERENCE CURVE: OPTIMUM MOISURE CONTENT %	COMMENTS
~~1~~									

NOTES (Describe work completed during the day, any problems and their solutions)

A.M. Arrived @ site as scheduled but contractor was not ready for tests. Aaron ask me to observe part of the excavation of sheet piling - there will be no effect on fill.

P.M. Contractor still not ready for tests.

TIME BILLED 5 HRS. 2 NO. OF VISITS CONTINUED ☐

RECEIVED BY COPY GIVEN TO

CMT-1

DAILY FIELD REPORT

JOB NO. or P O NO. 90553

PAGE 1 OF 1

PROJECT NAME: P.G. & E YARD	CLIENT OR OWNER: AQUA RESOURCES	DAILY FIELD REPORT SEQUENCE NO.: 12	
GENERAL LOCATION OF WORK: OAKLAND	OWNER OR CLIENT'S REPRESENTATIVE: AARON	DATE: 12-11-91	DAY OF WEEK: WED
GENERAL CONTRACTOR:	GRADING CONTRACTOR: STAMCO	PROJECT ENGINEER:	
TYPE OF WORK: TEST	GRADING CONTRACTOR'S SUPERINTENDENT OR FOREMAN:	SUPERVISOR:	
SOURCE AND DESCRIPTION OF FILL MATERIAL (IMPORT OR SITE):	WEATHER: SUNNY MILD	TECHNICIAN: NICHOLS	

DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, AND COMPACTING

TEST NUMBER	TEST LOCATION	ELEV (feet)	FIELD TESTING: DRY DENSITY lbs /cu. ft.	FIELD TESTING: MOISTURE CONTENT %	FIELD TESTING: % OF MAXIMUM DRY DENSITY	REFERENCE CURVE: COMP CURVE NO.	REFERENCE CURVE: MAXIMUM DRY DENSITY lbs /cu. ft.	REFERENCE CURVE: OPTIMUM MOISURE CONTENT %	COMMENTS
36	S. 0+20 W. 1+00	F.G.	129.1	5.7	96	3	134.5	6.7	
37	S. 0+20 W. 0+20	F.G.	132.8	5.8	99	"	"	"	

NOTES (Describe work completed during the day, any problems and their solutions)

Arrived Mid A.M. and contractor said he wasn't ready and that no one was supposed to show up until mid P.M. However, J Clayton wrote on schedule A.M. Returned P.M. and tested finish grade this is the last of testing.

AQUA RESOURCES, INC
RECEIVED
DEC 13 1991

JOB NO. _____
FILE _____

TIME BILLED 4 HRS., NO. OF VISITS 2 CONTINUED ☐

RECEIVED BY COPY GIVEN TO

GMT-1

TETRAD
engineering, inc.
Engineers Planners Surveyors

AQUA RESOURCES, INC
RECEIVED
NOV 20 1991
JOB NO. 90262.2
FILE reports

NOVEMBER 19, 1991

VOYTEK BAYSAROWICZ
AQUA RESOURCES
2030 ADDISON STREET, SUITE 500
BERKELEY, CALIFORNIA 94704

RE: ARI JOB# 90262.2-OAKLAND PG&E PROPERTY

DEAR VOYTEK,

PURSUANT TO YOUR REQUEST OUR OFFICE HAS CONDUCTED A PRELIMINARY BOUNDARY SITE ASSESSMENT FOR THE SUBJECT PROPERTY FRONTING COLISEUM WAY IN OAKLAND, CALIFORNIA. OUR SCOPE OF SERVICES WAS LIMITED TO EVALUATING THE POSITION OF THE EXISTING FENCE LINE RELATIVE TO THE ASSESSOR PARCEL MAP LINE. DUE TO TIMING CONSTRAINTS BEYOND OUR CONTROL OUR PRELIMINARY EVALUATION RELIED UPON ASSESSOR PARCEL MAPS AND OTHER RECORD INFORMATION THAT WAS OBTAINABLE FROM THE ALAMEDA COUNTY RECORDS DEPARTMENT AND A THREE HOUR ONE MAN SITE VISIT. NO PRELIMINARY TITLE REPORT WAS PROVIDED BY YOUR OFFICE. BASED UPON THIS LIMITED AMOUNT OF BACKGROUND RESEARCH AND FIELD RECON IT IS THIS OFFICES CONCLUSION THAT THE EXISTING FENCE LINE IS APPROXIMATELY 1' INSIDE THE "ANTICIPATED" PROPERTY LINE. THE TOLERANCE OF OUR SURVEY IS APPROXIMATELY 0.5'. IT IS OUR UNDERSTANDING THAT THIS TOLERANCE LEVEL IS ACCEPTABLE TO YOUR OFFICE. IF A MORE RESTRICTIVE TOLERANCE IS REQUIRED ADDITIONAL FIELD WORK AND RELATED EXPENSES WILL BE REQUIRED.

I TRUST THAT THIS PROVIDES YOU WITH THE INFORMATION THAT YOU REQUIRE.

YOURS TRULY,

MICHAEL E. MILANI
GENERAL MANAGER
TETRAD ENGINEERING, INC.

287AQUA.LTR

SETTLEMENT MONITORING
4930 COLISEUM WAY, OAKLAND
Panels on Building

ELEVATIONS (Assumed Datum)

PANEL	11-19-91	11/19/91 △	1/09/92				
1	~~103.73~~	103.73	103.73				
2	~~103.73~~	103.73	103.73				
3	~~103.73~~	103.74	103.74				
4	~~103.73~~	103.74	103.74				
5	~~103.73~~	103.75	103.75				
6	~~103.73~~	103.75	103.75				

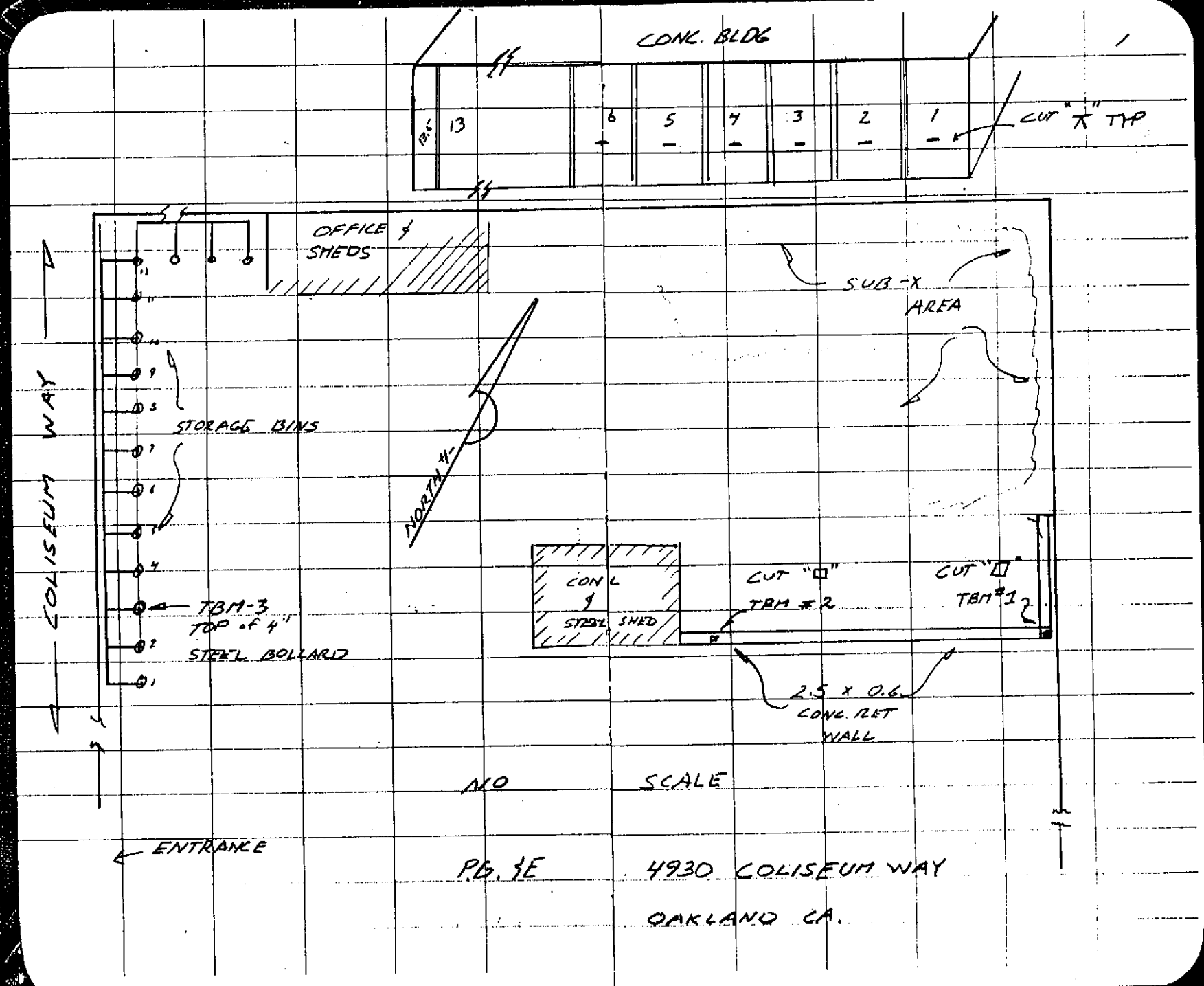
APPARENT MOVEMENT

PANEL	11-19-91	11-19-91 △	1/09/92				
1	~~N.A.~~	N.A.	~~0~~				
2	—	"	~~0~~				
3	—	"	~~0~~				
4	—	"	~~0~~				
5	—	"	~~0~~				
6	—	"	~~0~~				

△ Level Not in Adjustment on 11/19/91, so this column gives adjusted elevs

TETRAD ENGINEERING, INC.
5528 PACHECO BLVD.
PACHECO, CA 94553
PH (510) 674-0218
FAX (510) 674-0243

Job 287


CONC. BLDG
13
6
5
4
3
2
1
CUT "X" TYP
OFFICE & SHEDS
SUB-X AREA
STORAGE BINS
NORTH 4°
COLISEUM WAY
TBM-3
TOP of 4" STEEL BOLLARD
CONC & STEEL SHED
CUT "□" TBM #2
CUT "□" TBM #1
2.5 x 0.6 CONC. RET WALL
NO SCALE
ENTRANCE
P.G. & E
4930 COLISEUM WAY
OAKLAND CA.

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94588 • (510) 484-2600

25 October 1991

AQUA RESOURCES, INC
RECEIVED
OCT 28 1991
JOB NO. 90262.1
FILE permits

Aqua Resources, Inc.
2030 Addison Street, Ste. 500
Berkeley, CA 94704

Gentlemen:

Enclosed is Drilling permit 91619 for the destruction of well 2S/3W 17B80 at 4930 Coliseum Way in Oakland for Pacific Gas and Electric Company.

Please note that permit condition A-2 requires that a well destruction report be submitted after completion of the work. The report should include a description of methods and materials used to destroy the well, location sketch, date of destruction, and permit number.

If you have any questions, please contact Craig Mayfield or me at 484-2600.

Very truly yours,

Wyman Hong

Wyman Hong
Water Resources Technician

WH:mm
Enc.

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 4930 Coliseum Way, Oakland, CA

CLIENT
Name PG&E
Address 4930 Coliseum Way Phone 973-5615
City Oakland Zip

APPLICANT
Name Aqua Resources Inc. (Mr. Voytek Bajsarowicz)
The Earth Technology Corp.
Address 2030 Addison, #500 Phone 540-6954
City Berkeley, CA Zip 94704

DESCRIPTION OF PROJECT
Water Well Construction ___ Geotechnical Investigation
Cathodic Protection ___ General ___
Well Destruction X Contamination ___

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

PROPOSED CONSTRUCTION
Drilling Method:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. C 604 987

WELL PROJECTS
Drill Hole Diameter ___ in. Maximum
Casing Diameter 2 in. Depth 20 ft.
Surface Seal Depth ___ ft. Number 1

GEOTECHNICAL PROJECTS
Number of Borings ___ Maximum
Hole Diameter ___ in. Depth ___ ft.

ESTIMATED STARTING DATE 10/31/91
ESTIMATED COMPLETION DATE 10/31/91

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

APPLICANT'S SIGNATURE Voytek Bajsarowicz Date 10/24/91

FOR OFFICE USE

PERMIT NUMBER 91619
LOCATION NUMBER 2S/3W 17B80

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, irrigation, and monitoring wells unless a lesser depth is specially approved.

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 24 Oct 91
Wyman Hong

21989

25 October 1991

ZONE 7
WATER RESOURCES ENGINEERING
DRILLING ORDINANCE

PACIFIC GAS AND ELECTRIC
4930 COLISEUM WAY
OAKLAND
WELLS 2S/3W 17B80
PERMIT 91619

Destruction Requirements

1 Drill out the well so that the inner casing, seal, and gravel pack are removed to the bottom of the well.

2. Using a tremie pipe, fill the hole to 2 feet below the lower of finished grade or original ground with neat cement.

3. After seal has set, backfill the remaining hole with compacted material.

These destruction requirements as proposed by Voytek Bajsarowicz of Aqua Resources meet or exceed the Zone 7 minimum requirements.

AQUA RESOURCES, INC.

OBSERVATION WELL INSTALLATION REPORT

Well # OW-5

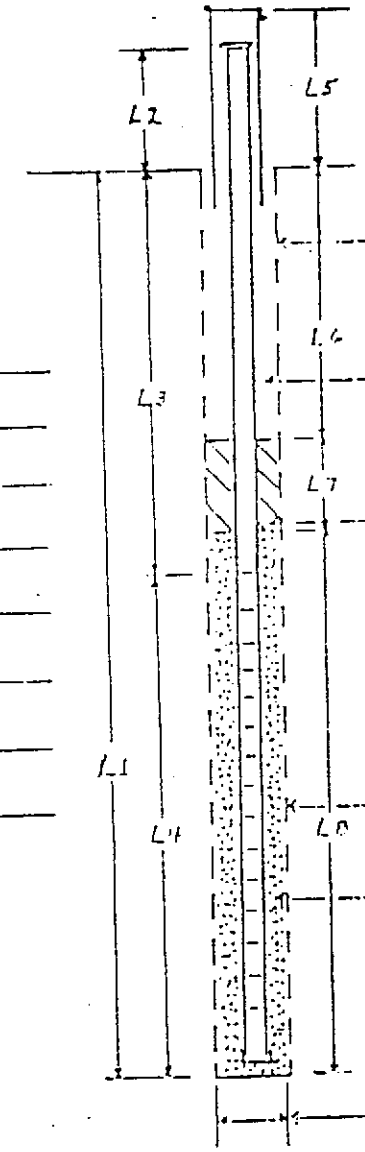
Project PG&E

Location 4930 Coliseum Way, Oakland, CA 94601

Type of Rig CME 55 Installed by HEW Drilling

Date Started 4/16/91 Date Finished 4/16/91

Type of Observation Well water Ground Elev. _____ Casing Top, Elev. _____



L1 16½ feet

L2 ½ foot

L3 6½ feet

L4 10 feet

L5 ½ foot

L6 5 feet

L7 1 foot

L8 10½ feet

Cap locking cap and sealed well cover

Type of Casing 2" pvc

Type of Backfill cement grout

Type of Seal Material bentonite pellets

Size of Openings .020 inch

Type of Filter Material #3 sand

Diameter of Boring 8 inches

Remarks _____

Observed by _____

AQUA RESOURCES, INC.

BORING LOG

LOCATION & NOTES

LOCATION: Oakland	JOB NAME: PG&E	JOB NO.: 90282.2	
DRILLING COMPANY: Exceltech/Resna		BORING NO.: OW-6	
DRILLER'S NAME: Don Jenkins		SHEET 1 OF 2	
DRILL RIG: [ ] Solid Flight Auger; 8" [X] Hollow Auger; [ ] Rotary Wash			
SAMPLER TYPE: [X] 2.0" I.D. Split Barrel; [ ] 2.0" I.D. Shelby Tube; [X] 6FT			
DRIVE WEIGHT: 140 LB.	FALL: 30 IN.	START TIME: 8:05 AM PM	FINISH TIME: 8:54 AM PM
WATER LEVEL (Feet): 8'			
TIME: 8:15 am		DATE: 12/19/91	
DATE: 12/19/91			
CASING DEPTH (FEET): 18'		FIELD ENGINEER: Mark Peterson	
ELEVATION: 3.37' FEET			

DATUM: [ ] Mean Sea Level [X] Other OW-2

BLOWS PER HALF FOOT	BLOWS/ft.	MOISTURE CONTENT %	DRY UNIT WEIGHT (pcf)	DEPTH IN FEET	USCS CLASSIFICATION	
				0		SURFACE CONDITIONS: Graded surface of agregate to base rock, nearly level - Since installation of well the surface has been paved with AC.
				1		
				2		
				3		
				4		
				5		
				6		
				7		
				8		
16					GC	Water on top end of sampler with slight sheen Gravel with interstitial silty clay, olive brown (2.5Y 4/3), saturated. Gravel backfill that penetrated saturated native soil.
18				9		
20	38					Gravelly sand, brown (10YR 4/3), saturated, medium dense, fine to coarse grained sand, poorly sorted, subangular gravel up to 3/4" across.
				10	SP	

AQUA RESOURCES, INC.

BORING LOG

LOCATION & NOTES

LOCATION	JOB NAME PG&E	JOB NO 90262.2	
DRILLING COMPANY Exceltech/Resna		BORING NO. OW-6	
DRILLER'S NAME Don Jenkins		SHEET 2 OF 2	
DRILL RIG [ ] Solid Flight Auger [X] Hollow Auger [ ] Rotary Wash			
SAMPLER TYPE: [ ] 2.0" I.D. Split Barrel [ ] 2.0" I.D. Shelby Tube [ ] SPT			
DRIVE WEIGHT LB.	FALL IN.	START TIME AM PM	FINISH TIME AM PM
WATER LEVEL (Feet)			
TIME		DATE 12/19/91	
DATE			
CASING DEPTH (FEET)			
ELEVATION FEET	FIELD ENGINEER Mark Peterson		

DATUM: [ ] Mean Sea Level [ ] Other

BLOWS PER HALF FOOT	BLOWS/FT.	MOISTURE CONTENT %	DRY UNIT WEIGHT (pcf)	DEPTH IN FEET	USCS CLASSIFICATION	SURFACE CONDITIONS
				10		
20						
20				11		
15	35					
				12		
				13		
				14	GM	Increased gravel at 14' to 15'
13						
9				15		
6	15				CL/CH	Silty clay with minor very fine grained sand, light yellowish brown (2.3Y5/3), wet, medium stiff to stiff, rare dark brown staining
				16		
				17		
2						
3				18		
4	SPT 7					Bottom at 18½'
				19		
				20		

AQUA RESOURCES, INC.

OBSERVATION WELL INSTALLATION REPORT

Well # OW-6

Project PG&E

Location 4930 Coliseum Way, Oakland CA 94601

Type of Rig Mobile B61 Installed by RESNA

Date Started 12/19/91 Date Finished 12/19/91

Type of Observation Well Water Ground Elev. _____ Casing Top, Elev. _____

L1 18½ feet

L2 ¼ foot

L3 7½ feet

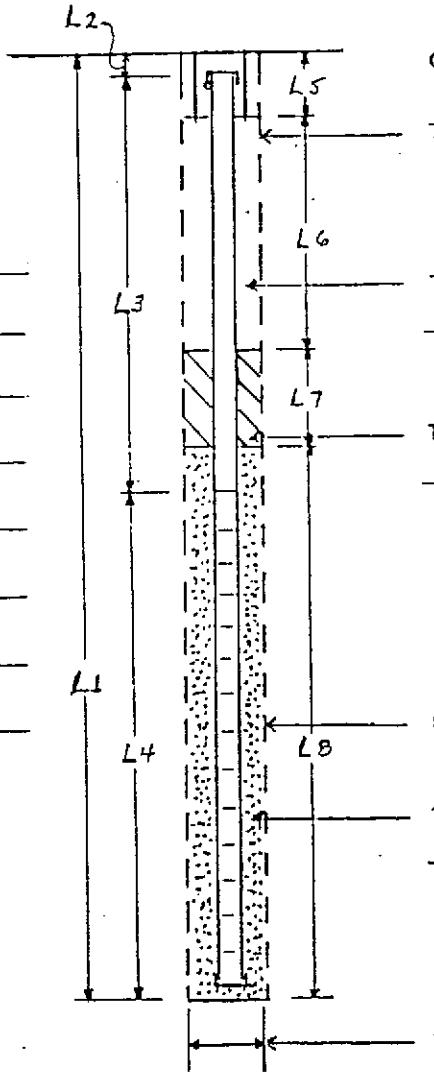
L4 10 feet

L5 ½ foot

L6 5 feet

L7 1 foot

L8 12½ feet



Cap locking cap and sealed well cover

Type of Casing 2" PVC

Type of Backfill cement grout

Type of Seal Material bentonite pellets

Size of Openings 0.020

Type of Filter Material 2/12 sand

Diameter of Boring 8 inches

Remarks _____

Observed by M. Peterson/A. Stessman

AQUA RESOURCES, INC.

BORING LOG

LOCATION & NOTES

LOCATION: Oakland	JOB NAME: PG&E	JOB NO: 90262.2	
DRILLING COMPANY: Exceltech/Resna		BORING NO.: OW-7	
DRILLER'S NAME: Don Jenkins		SHEET: 1 OF 2	
DRILL RIG: 8" [X] Hollow Auger [ ] Solid Flight Auger [ ] Rotary Wash			
SAMPLER TYPE: [X] 2.0" I.D. Split Barrel [ ] 2.0" I.D. Shelby Tube [ ] SPT			
DRIVE WEIGHT: 140 LB.	FALL: 30 IN.	START TIME: 9:55 AM/PM	FINISH TIME: AM/PM
WATER LEVEL (Feet): 13½			
TIME: 10:00am			
DATE: 12/19/91		DATE: 12/19/91	
CASING DEPTH (FEET): 17½			
ELEVATION: 4.76 FEET	FIELD ENGINEER: M. Peterson/ A. Stessman		

DATUM: [ ] Mean Sea Level [X] Other OW-2

BLOWS PER HALF FOOT	BLOWS/FT.	MOISTURE CONTENT %	DRY UNIT WEIGHT (pcf)	DEPTH IN FEET	USCS CLASSIFICATION	
				0		SURFACE CONDITIONS: Graded surface of aggregate to base rock, nearly level - since well installation the surface has been paved with AC.
				1		NOTE: No OVM = OVM reading of 0.o
				2		
				3		
				4		
				5		
				6		
				7		
				8		
20						Gravel backfill material
12				9		
11		23			SP/SC	Gravelly sand with minor silt and clay, greyish green (5G4/2), medium dense, wet, fine to coarse grained sand, poorly sorted, subangular gravel. Note tarry product visible. No OVM, slight hydrocarbon odor.
				10		

AQUA RESOURCES, INC.

BORING LOG

LOCATION & NOTES

LOCATION: Oakland	JOB NAME: PG&E	JOB NO: 90262.2	
DRILLING COMPANY		BORING NO.: OW-7	
DRILLER'S NAME		SHEET: 2 of 2	
DRILL RIG: [ ] Solid Flight Auger [ ] Hollow Auger [ ] Rotary Wash			
SAMPLER TYPE: [ ] 2.0" I.D. Split Barrel [ ] 2.0" I.D. Shelby Tube [ ] SPT			
DRIVE WEIGHT: LB.	FALL: IN.	START TIME: AM PM	FINISH TIME: AM PM
WATER LEVEL (Feet)		DATE	
TIME			
DATE			
CASING DEPTH (FEET)			
ELEVATION: FEET	FIELD ENGINEER		

DATUM: [ ] Mean Sea Level [ ] Other

SURFACE CONDITIONS:

SLOWS PER HALF FOOT	BLOWS/ft.	MOISTURE CONTENT %	DRY UNIT WEIGHT (pcf)	DEPTH IN FEET	USCS CLASSIFICATION	
				10		
				11		
				12		
7					SC	Gravelly sand with increasing clay and silt, yellowish brown (10 YR 516), loose, saturated, fine to coarse grained sand, poorly sorted, subangular gravel. No OVM or odor.
14				13		
11	25					
				14		Silty clay with minor very fine grained sand, light yellowish-brown (2.5Y 613), wet, stiff, rare dark brown staining. No OVM.
				15		
5					CL/CH	
8						No recovery/Redrove same interval recovered 100% 2" gravel lense
10	18			16		
6						
7				17		3" gravelly clay lense
8	15			18		Silty clay with trace sand and gravel, light yellowish brown (2.5Y 613), wet, stiff, common dark brown-brown staining. No OVM.
						Bottom at 18'
				19		
				20		

AQUA RESOURCES, INC.

OBSERVATION WELL INSTALLATION REPORT

Well # OW-7

Project PG&E

Location 4930 Coliseum Way, Oakland CA 94601

Type of Rig Mobile B61 Installed by RESNA

Date Started 12/19/91 Date Finished 12/19/91

Type of Observation Well Water Ground Elev. _____ Casing Top, Elev. _____

L1 18 feet

L2 ½ foot

L3 7½ feet

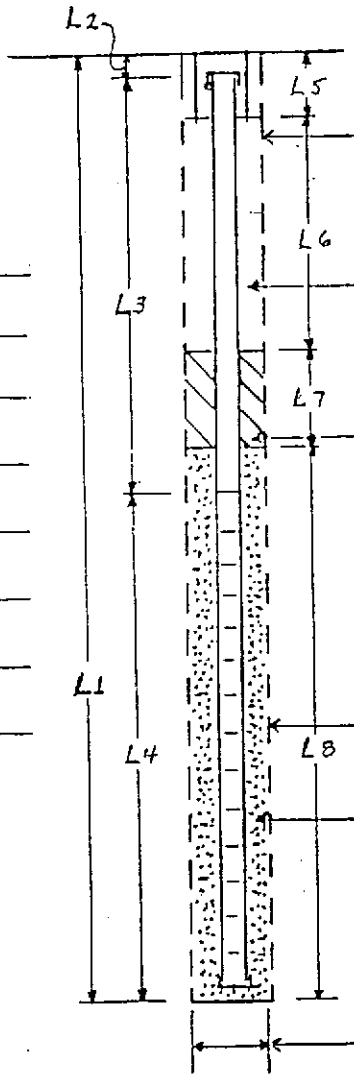
L4 10 feet

L5 ½ foot

L6 5 feet

L7 1 foot

L8 12 feet



Cap locking cap and sealed well cover

Type of Casing 2" PVC

Type of Backfill cement grout

Type of Seal Material bentonite pellets

Size of Openings 0.020

Type of Filter Material 2/12 sand

Diameter of Boring 8 inches

Remarks _____

Observed by M. Peterson/A. Stessman

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED