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ENVIRONMENTAL  
 PROTECTION

99 FEB 15 PM 3:17

**TRANSMITTAL**

**TO: Mr. David Thompson**  
**c/o Vikki Barron, Esq.**  
**Ryan, Andrada & Lifter**  
**300 Lakeside Drive, Suite 1045**  
**Oakland, CA 94612**

**DATE: 2/03/1999**

**Project#- 98115.23**

**WE ARE TRANSMITTING:**

- Per Your Request**
- Herewith**
- Under Separate Cover**

**THE FOLLOWING: One original & 1 copy of Groundwater Monitoring Well Installation and Sampling Report for 900 Central Avenue Alameda, California**

**REMARKS: One copy forward to Larry Seto Environmental Health Services Environmental Protection 1131 Harbor Bay Parkway, Suite 250 Alameda, CA 94502-6577**

**TRANSMITTED AS CHECKED BELOW:**

- For Approval**
- For Your Use**
- As Requested**
- For Review & Comment**

**SIGNED:** Long Ching **E**  **M** **F**  **P** **T**  **A**



**AllWest Environmental, Inc.**

Specialists in Physical Due  
Diligence and Remedial Services

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**GROUNDWATER MONITORING WELL  
INSTALLATION AND SAMPLING REPORT**

**900 Central Avenue  
Alameda, California**

**PREPARED FOR:**

Mr. David Thompson  
c/o Vikki Barron, Esq.  
Ryan, Andrada & Lifter  
300 Lakeside Drive, Suite 1045  
Oakland, CA 94612

AllWest Project No. 98115.23  
February 2, 1999

**PREPARED BY:**

12/31/2001

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Long Ching, PE  
Project Manager

**REVIEWED BY:**

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Robert Horwath, RG  
Senior Geologist

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## Groundwater Monitoring Well Installation and Sampling

900 Central Avenue  
Alameda, California

### I. EXECUTIVE SUMMARY

AllWest completed a groundwater monitoring well installation, development, and sampling program at 900 Central Avenue, Alameda, California between November 16 and 27, 1998. The program included the installation of three 2-inch diameter groundwater monitoring wells, the development and sampling of the newly constructed wells, and the chemical analyses of the collected groundwater samples. The purpose of this groundwater monitoring well installation and sampling program was to comply with the requirements of Alameda County Environmental Health Services (ACEHS) for monitoring the shallow groundwater quality at the former UST site.

Three groundwater monitoring wells (MW-1, MW-2 and MW-3) were installed at the subject property on November 16, 1998. The wells were developed on November 20, 1998 and sampled on November 27, 1998, according to standard well development and sampling procedures. One groundwater sample was collected from each well and forwarded to a state certified laboratory for chemical analyses to detect the presence of total petroleum hydrocarbons in the gasoline, diesel, and motor oil range (TPH-g, TPH-d, TPH-m), fuel related volatile compounds (BTEX), and a fuel oxygenate (MTBE).

The analytical results indicate no target analytes were detected in any of the collected groundwater samples except TPH-g and BTEX in well MW-1. The detected TPH-g concentration was 360 parts per billion (ppb), benzene was 5.8 ppb, toluene was 5.5 ppb, ethylbenzene was 9.2 ppb, and xylenes was 40 ppb. The benzene concentration exceeded the maximum contaminant level (MCL) of 1 ppb.

The data gathered during this groundwater monitoring well installation and sampling program confirmed the results of previous subsurface investigations via the Geoprobe method. The detected contaminant types and locations are similar to that of the previous Geoprobe sampling data. Since target contaminants are only detected in well MW-1, near the suspect former tank area, the extent of groundwater plume appeared to be limited to the northwest corner of the subject property. Considering that petroleum hydrocarbons and fuel volatiles will naturally degrade and attenuate over time, AllWest recommends completing the ACEHS mandated four-

quarter monitoring program to document the natural degradation and attenuation process. A copy of this report should be submitted to the ACEHS and the Alameda County Public Works Agency to fulfill the agency reporting requirements.

## II. INTRODUCTION

This report presents the results of a groundwater monitoring well installation and sampling program conducted at the former gasoline UST site located at 900 Central Avenue, Alameda, California. Included in this report is an abbreviated site investigation history, a description of field activities, a summary of analytical results, our interpretation of the data, and a recommended course of action. Supporting information such as site figures, sampling logs, and laboratory reports are included as appendices.

### A. Site Background

The subject property is located in the central-southern portion of Alameda amidst a predominantly residential area. The property is at the southeast corner of Central Avenue and Ninth Street. The site improvements consist of a two-story wood-frame duplex apartment with surrounding landscaped areas. A site location map and a generalized site plan are presented on Figures 1 and 2 in the FIGURES section of this report.

According to a 1994 Lowney Associates report, the subject property was used as a gas station with underground fuel storage tanks between 1931 and 1975. Lowney Associates also conducted a soil and groundwater sampling program at the site in 1994 to evaluate the potential of subsurface impact due to historical site use. The sampling program included the advancement of three borings, the collection of soil and grab groundwater samples, and the chemical analyses of selected samples. Lowney Associates reported that soil and groundwater samples from boring EB-1, located near the northwest corner of the subject property, contained elevated levels of gasoline (TPH-g) and fuel volatiles (BTEX).

In 1997, AllWest was retained to review and verify Lowney's 1994 findings. AllWest's 1997 investigation included the review of historical documents related to past site usage, the advancement of eight soil borings via the Geoprobe method to collect soil and groundwater samples, the chemical analyses of selected samples for TPH-g and BTEX, and a preliminary risk assessment using the ASTM RBCA process. The 1997 investigation results indicated that no source areas are located at the subject site, the majority of contaminated groundwater beneath the site is limited to the northwest corner, the extent of the groundwater contamination extends beyond the site boundary, and the former tank site is likely located in the public right-of-way, at the sidewalk of Central Avenue. The preliminary risk assessment indicated that the portion of groundwater contamination plume beneath the subject property is unlikely to cause increased cancer risk to site occupants.

The results of the 1997 AllWest investigation were submitted to Alameda County Environmental Health Services (ACEHS), the lead regulatory agency for leaking underground storage tank sites in the City of Alameda. In March 1998, the County issued a letter requesting quarterly groundwater monitoring for a minimum of one year at the subject site. Groundwater samples are required to be analyzed for the presence of TPH-g, BTEX, and methyl tert-butyl ether (MTBE), a fuel oxygenate. In June 1998, AllWest prepared a workplan for the well installation and groundwater monitoring program. The workplan was submitted to and approved by ACEHS in August 1998. In addition to TPH-g, BTEX, and MTBE, ACEHS required the analyses of total petroleum hydrocarbons in the diesel and motor oil ranges (TPH-d and TPH-m) for the groundwater samples.

#### **B. Purpose and Scope of Work**

The purpose of this groundwater monitoring well installation and sampling program was to comply with the requirements of ACEHS for monitoring the shallow groundwater quality at the former UST site.

The scope of work, as defined by the June 29, 1998 workplan prepared by AllWest and approved/ammended by the ACEHS in August 1998, included the following tasks:

1. Obtain a well drilling permit from Alameda County Public Works Agency. Arrange for underground utility clearing;
2. Retain a licensed well driller to advance three soil borings into the first groundwater table in the down-gradient direction of the suspected former UST. Install a 2-inch diameter groundwater monitoring well in each of the borings. Develop and sample the newly installed wells;
3. Submit the collected groundwater samples to a state certified laboratory for chemical analyses to detect the presence of total petroleum hydrocarbons in the gasoline, diesel, and motor oil range (TPH-g, TPH-d, TPH-m) by modified EPA method 8015, fuel related volatile organic compounds benzene, toluene, ethylbenzene, and xylene (BTEX) by EPA method 8020, and fuel oxygenate methyl tert-butyl ether (MTBE) by EPA method 8020; and
4. Prepare a written report to describe the field investigation, summarize the analytical results and field measurements, and provide recommendations as appropriate.

### **III. PROJECT INITIATION**

#### **A. Well Permit Application**

AllWest submitted a well permit application to Alameda County Public Works Agency (ACPWA) on September 1, 1998 for the proposed groundwater monitoring well. ACPWA approved the permit application on September 14, 1998. A copy of the well permit is included as Appendix A in the APPENDICES section of this report.

AllWest also contacted City of Alameda Central Permit Bureau on the proposed well installation and was verbally notified that no city permit is required. However, on the day of well installation, an city of Alameda inspector informed AllWest that an encroachment permit would be required since the drill rig occupied a portion of the sidewalk during drilling. AllWest is currently in the process of obtaining and closing the city encroachment permit. This process did not affect the well installation and sampling.

### **IV. FIELD ACTIVITIES**

#### **A. Underground Utility Clearing**

To avoid damaging the underground utilities during the course of subsurface investigation, AllWest contacted Underground Service Alert (USA), an organization for public utility information, on November 10, 1998 of the pending subsurface investigation. USA then notified each of the public and private entities that maintained underground utilities at the site to locate and mark their installations for field identification. An USA notification number 303862 was assigned to the project.

In addition to notifying USA, a private underground utility locator, California Utility Survey (CUS) of San Ramon, California, was also retained by AllWest to conduct a magnetometer sweep of the proposed drilling areas to detect unmarked underground utilities. CUS conducted the underground utility sweep on September 10, 1998. An AllWest engineer was also present to identify the proposed drilling point. The final proposed drilling locations were cleared of known underground utilities.

#### **B. Groundwater Monitoring Well Installation and Development**

Three groundwater monitoring wells were installed on November 16, 1998, under the direction of an AllWest engineer. Well installation was performed by Bay Area Exploration, a well drilling contractor with valid C-57 license. The groundwater monitoring wells were installed inside soil borings advanced by a CME-75 truck-mounted drilling rig with 8-inch outside diameter (OD) hollow-stem continuous flight augers. The borings were generally advanced at planned locations

as indicated in the approved workplan. However, due to the obstruction of a tree at the northwest property corner, MW-1 was relocated to the Ninth Street side of the property. The finished well locations are graphically depicted on Figure 2 of this report.

During the boring advancement, a field engineer from AllWest was present to collect soil samples, to conduct field screening, and to maintain a log of the drilling activities. The boring logs contained pertinent information on boring advancement and soil conditions, in particular the lithology of site soils and physical characteristics that suggest potential contamination. A copy of the boring logs as well as the log legends are included in Appendix B of this report. Soil cores were generated from the boring at intervals of 5 feet using the standard penetration test (SPT) sampler. The soil cores were field screened for classification and contamination indication purposes. None of the soil cores were preserved for chemical analyses during this well installation program. The soil borings were terminated at 18 to 20 feet below the ground surface (BGS).

After the soil boring advancement was complete, the well casing was lowered into the borehole through the center of the hollow stem augers. The augers were then removed one section at a time while the sand filter pack was being placed around the well casing. The well casings were constructed to depths between 18 and 19 feet BGS. Well casings were composed of 2-inch diameter, schedule-40, PVC pipes. The screen section of the casing had factory-slotted 0.02-inch perforations and extended from a depth of 6 feet BGS to the base of the borings. The blank (non-perforated) section was then added to the screen section to complete the well casing to a few inches BGS.

Pre-washed #3 Monterey sands were placed around the screen section of the well casing to form a filter pack. The filter pack was placed from the bottom of the well up to one half foot above the screen section. A one-foot bentonite seal was placed above the filter pack to prevent surface water infiltration. The remaining length of the annular space in the borehole was backfilled with neat cement grout up to a foot below the ground surface. The uppermost foot of the well casing was protected by a traffic-rated well vault set in concrete. A water-tight locking end-cap was placed on top of the well casing to prevent surface water intrusion and unauthorized access. Soil cuttings generated during the well installation were contained in Department of Transportation (DOT) approved 55-gallon steel drums and stored onsite for future disposal.

The wells were developed on November 20, 1998, after sufficient time (generally more than 72 hours) had passed after well installation to allow proper curing of the well material. Well development was accomplished by repeated pumping and surging. Well development was considered completed when the physical properties (temperature, pH, conductivity) of the groundwater were stabilized (consecutive readings within 10% of each other) and the pumped groundwater was relatively sediment free. Approximately 10 well volumes of groundwater were pumped from each well during the well development. Groundwater generated from the well development process was also contained in DOT-approved 55-gallon steel drums and stored onsite for future disposal. Copies of the well development field logs are included in Appendix B.



### C. Groundwater Sampling

A representative groundwater sample was collected by AllWest from each groundwater monitoring well on November 27, 1998, after proper well purging. Prior to well purging, an electric water level sounder was lowered into each well casing to measure the depth to the water to the nearest 0.01 feet. A clear poly bailer was then lowered into each well casing and partially submerged. Upon retrieval of the clear bailer, the surface of the water column retained in the bailer was examined for any floating product or product sheen. No floating product or visible product sheen was observed on the surface of water retained in the bailer. However, a slight hydrocarbon odor from the retained groundwater was noted in well MW-1.

After initial measurements were completed and recorded, each of the wells were purged by a disposal bailer. Approximately 3 well volumes of groundwater were purged from each well. During the purging process, the groundwater physical property indicators (temperature, pH, and conductivity) were monitored periodically with a combination meter. Purging was considered complete when indicators were stabilized (consecutive readings within 10% of each other) and the purged water was free of sediments.

Groundwater sampling was conducted after the water level recovered to at least 80% of the initial level, recorded prior to purging. The groundwater sample was collected by using a disposable bailer that was discarded after each well sampling event to avoid cross-contamination. Upon retrieval of the disposable bailer, the retained water was carefully transferred to appropriate pre-cleaned glassware furnished by the analytical laboratory. A special adapter fitted to the bottom end of the bailer was used to minimize the loss of volatile organics during transfer. All sample containers were fitted with a Teflon lined septum/cap and filled such that no headspace was present. After the water samples were properly transferred to the appropriate container, the containers were labeled and immediately placed on ice to preserve its chemical characteristics. A well sampling log was maintained during the sampling event and copies of the logs are included in Appendix B.

Samples were field stored and transported in an insulated cooler filled with crushed ice. After the samples arrived at AllWest's office, they were rechecked and then placed in a refrigerator awaiting transportation to the analytical laboratory. The samples were delivered to the analytical laboratory by a courier of the laboratory. All samples were transported to the laboratory under proper chain of custody documentation from the time of collection to the time of arrival at the laboratory.

To avoid cross-contamination, all groundwater sampling equipment that came in contact with the groundwater was thoroughly cleansed by washing it in Alconox (a non-phosphor detergent) solution and rinsed with distilled water prior to each well sampling event. Sample collection was by disposable bailers which were discarded after each well sampling event. All purged water was temporarily stored on-site in labeled DOT-approved 55-gallon steel drums awaiting test results to determine the proper disposal method.

## **D. Well Elevation Survey**

To determine the groundwater table elevation and groundwater flow direction, the top elevation of each well casing was surveyed by AllWest on November 27, 1998. Well elevation survey was conducted with a optical level capable of measuring to the nearest one one-hundredth foot. The elevation datum used for the survey was based on a city monument located at the southwest corner of the intersection between Central Avenue and Ninth Street. The elevation of this city monument is 24 feet above mean sea level (+24' MSL). The result of well elevation survey and groundwater table elevation determined from the well elevation is presented on Table 1 in the TABLES section of this report.

## **V. INVESTIGATION FINDINGS**

### **A. Subsurface Conditions**

Subsurface soils encountered within the soil borings generally consisted silty fine sands throughout the explored depths. The near surface sandy soils were generally brown, loose, and moist. Site soils generally graded to light brown and yellow brown, medium dense, and wet below 10 feet. No hydrocarbon odor was noted in site soils except at MW-1 from depths below 10 feet, near the groundwater interface.

Free groundwater was first encountered within the soil borings at approximately 14 feet BGS. The groundwater table rose to 12 feet BGS at the end of drilling and during well casing installation. Groundwater level stabilized at approximately 11.5 feet BGS during well development and sampling. Groundwater flow gradient and direction was calculated at 0.008 ft/ft and towards the south during this monitoring event. The sandy site soils would not impede the movement of contaminants in the groundwater

### **B. Laboratory Analyses**

The collected groundwater samples were forwarded to Chromalab of Pleasanton, California, a state certified analytical laboratory, for chemical analyses. Analyses performed on the groundwater samples included total petroleum hydrocarbons in the gasoline, diesel, and motor oil ranges (TPH-g, TPH-d, TPH-m) by gas chromatography (modified EPA method 8015), fuel related volatile organic compounds: benzene, toluene, ethylbenzene, and xylenes (BTEX) by gas chromatography (EPA method 8020), and the fuel oxygenate methyl tert-butyl ether (MTBE) also by EPA method 8020.

Analytical results indicate none of the target analytes were detected in any of the groundwater samples except for TPH-g and BTEX in MW-1 only. TPH-g was detected in MW-1 at a concentration of 360  $\mu\text{g/L}$ , equivalent to 360 parts per billion (ppb). Benzene, toluene,

ethylbenzene and xylene were detected at 5.8 ppb, 5.5 ppb, 9.2 ppb, and 40 ppb, respectively. A review of laboratory internal quality assurance/quality control (QA/QC) report indicates the method blank and sample spike data are within the laboratory recovery limits. The laboratory QA/QC report indicated that the groundwater samples were analyzed within the acceptable EPA holding time. Based on the laboratory QA/QC report, the analysis data from Chromalab are considered to be of good quality. A copy of the laboratory analytical reports and chain-of-custody records are presented in the LABORATORY RESULTS section of this report. A summary of the analytical results is presented on Table 2.

### C. Discussion of Findings

The analytical results indicate that detectable concentrations of TPH-g, and BTEX exist only in the groundwater sample collected from monitoring well MW-1. The detected benzene concentration in MW-1 exceeded the 1 ppb maximum contaminant level (MCL) for drinking water standard, the most stringent groundwater cleanup level that regulatory agencies can require. The detected toluene, ethylbenzene and xylene concentrations were below their respective MCLs of 100 ppb, 680 ppb, and 620 ppb, respectively. Currently, there is no MCL established for TPH-g.

Although the benzene concentrations in MW-1 exceeded MCL, the level of exceedence is relatively low (5.8 ppb vs. the MCL of 1 ppb). Considering that the shallow groundwater at the subject property has no current beneficial use and the previous preliminary risk assessment suggested no increased risk to site occupants, active groundwater remedial action is not warranted at this time.

The detection of TPH-g and BTEX only in the MW-1 groundwater sample is similar to the results of the previous investigations by the Geoprobe methods. This result suggests that the groundwater plume is limited to the northwest corner of the subject property, in the immediate vicinity of the suspected former UST area. Based on the southerly groundwater flow direction, well MW-3 is down-gradient of well MW-1. Since no target contaminants were detected in MW-3, the result further confirmed the limited on-site areal extent of the groundwater contamination plume.

Although the concentrations of detected TPH-g and BTEX in well sample MW-1 are less than those detected in previous investigations with the Geoprobe method, this reduction in contaminant concentration is inappropriate as a direct evidence of bio-degradation because Geoprobe sampling is a non-reproducible sampling method and not comparable with monitoring well data. Only through periodic sampling of the monitoring well can the trend of contaminant concentration variation be determined.

The absence of MTBE in the collected groundwater samples further confirm that any underground storage tank leak was not recent because MTBE was in general use only since the

early 1990s. This data further corroborates the reported site history that the former underground storage tanks were removed in the mid-1970s.

Considering that the suspect release(s) occurred at least 25 years ago, that the extent of the groundwater plume appeared to be limited to the northwest property corner, and that the previous preliminary risk assessment suggested no increased risk to site occupants, the appropriate course of action for the subject site is to demonstrate the occurrence of bio-degradation and/or natural attenuation of the target contaminants. This can be accomplished by completing the ACEHS mandated one-year quarterly groundwater monitoring through the newly installed groundwater monitoring wells at the site.

## **VI. CONCLUSIONS AND RECOMMENDATIONS**

The results of groundwater well installation and sampling indicate dissolved phase gasoline exists in groundwater at the northwest corner of the subject property, in the vicinity of the suspect former UST location. The detected type and location of groundwater contaminants are similar to those detected during the previous Geoprobe subsurface investigations. Even though the detected benzene concentrations exceeded the primary drinking water standard (MCL), groundwater remediation is not warranted at this time due to the relatively low contamination magnitude and the lack of current beneficial groundwater use.

AllWest recommends completing the ACEHS mandated one-year quarterly groundwater monitoring at the site through the newly installed groundwater monitoring wells to document the occurrence of bio-degradation and/or natural attenuation. A copy of this report should be submitted to the Alameda County Environmental Health Services and the Alameda County Public Works Agency to fulfill the agency reporting requirements.

## **VII. REPORT LIMITATIONS**

The work described in this report is performed in accordance with the Environmental Consulting Agreement between Mr. David Thompson and AllWest Environmental, dated March 25, 1998. AllWest has prepared this report for the exclusive use of Mr. David Thompson for this particular project and in accordance with generally accepted practices at the time of the work. No other warranties, certifications or representation, either expressed or implied are made as to the professional advice offered. The services provided for Mr. David Thompson were limited to their specific requirements; the limited scope allows for AllWest to form no more than an opinion of the actual site conditions. No matter how much research and sampling may be performed the only way to know about the actual composition and condition of the subsurface of a site is through excavation.

The conclusions and recommendations contained in this report are made based on observed conditions existing at the site, laboratory test results of the submitted samples, and interpretation of a limited data set. It must be recognized that changes can occur in subsurface conditions due to site use or other reasons. Furthermore, the distribution of chemical concentrations in the subsurface can vary spatially and over time. The results of chemical analysis are valid as of the date and at the sampling location only. AllWest cannot be held accountable for the accuracy of the test data from an independent laboratories nor for any analyte quantities falling below the recognized standard detection limits for the method utilized by the independent laboratories.

R98115.23

Table 1

SUMMARY OF GROUNDWATER ELEVATION MEASUREMENTS

900 Central Avenue, Alameda, California

Well Number	Casing Elevation	Date Measured	Depth to Water	Groundwater Elevation
MW-1	25.17	11/27/98	11.77	13.4
MW-2	25.21	11/27/98	11.76	13.45
MW-3	24.58	11/27/98	11.41	13.17

Table 2

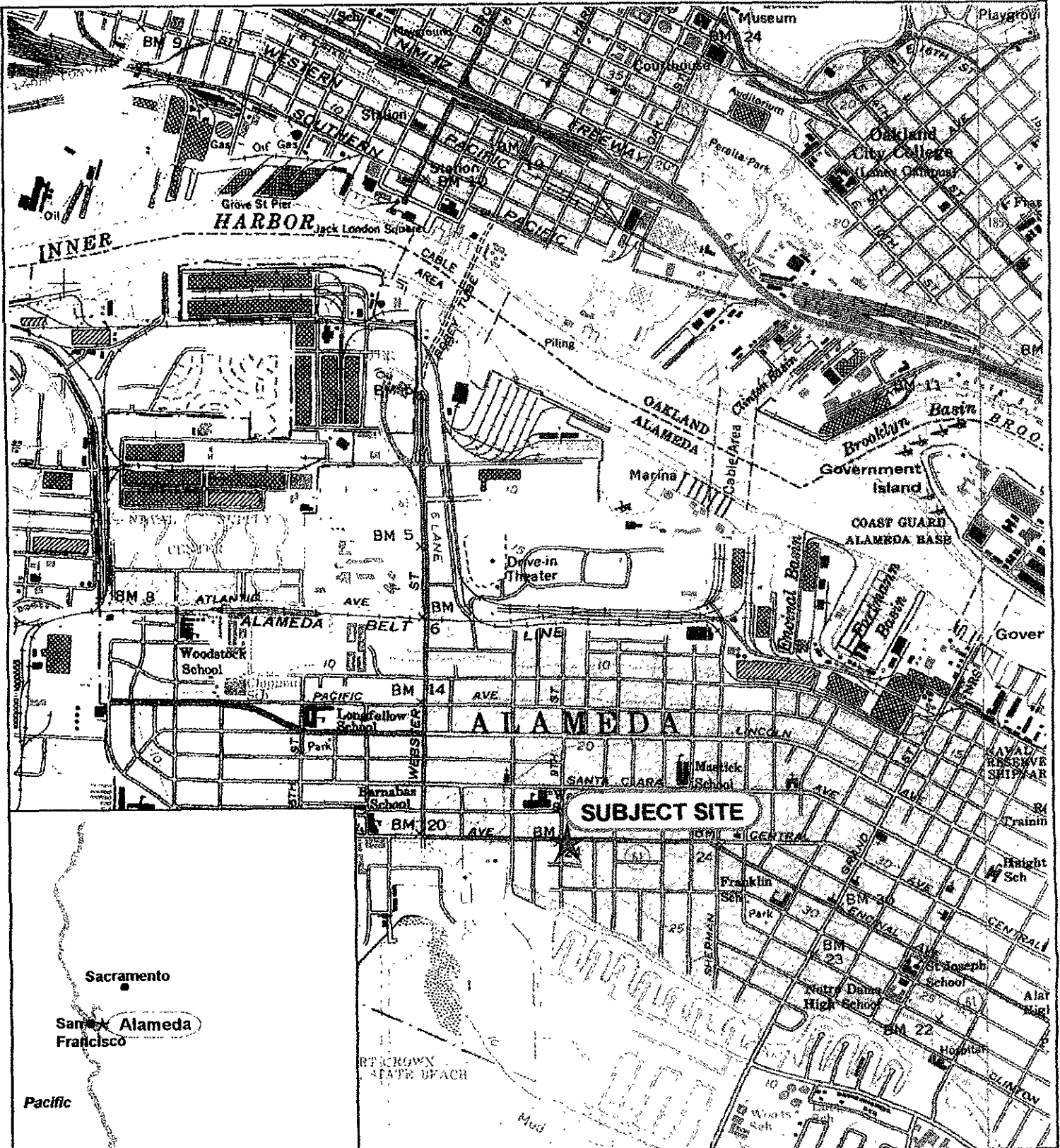
SUMMARY OF ANALYTICAL RESULTS

900 Central Avenue, Alameda, California

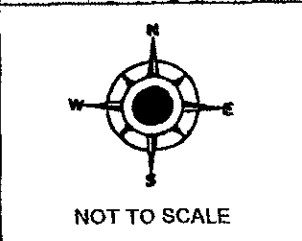
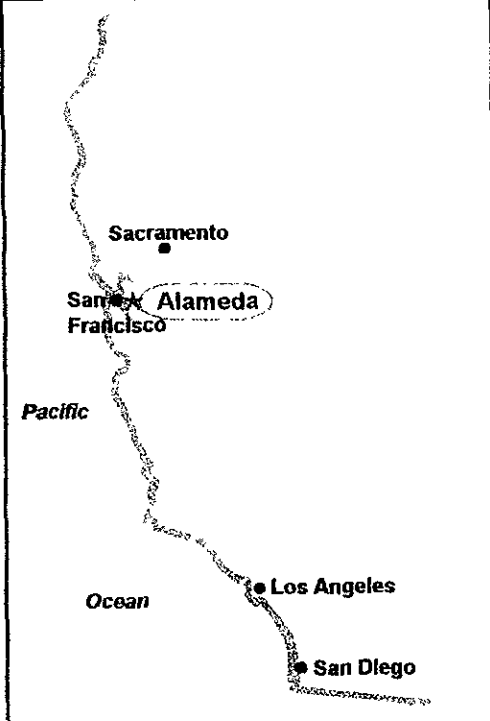
Well Number	Date Sampled	TPH-g	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	TPH-d	TPH-m
MW-1	11/27/98	360	5.8	5.5	9.2	40	< 5	< 50	< 500
MW-2	11/27/98	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5	< 50	< 500
MW-3	11/27/98	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5	< 50	< 500

Notes:

1. Values are in  $\mu\text{g/L}$ , equivalent to parts per billion (ppb)
2. "< x" stands for analytes not detected at the method detection limit of x ppb



**SUBJECT SITE**



PROJECT NO.  
98115.23

SITE LOCATION MAP  
 FIGURE 1  
 900 CENTRAL AVENUE  
 ALAMEDA, CALIFORNIA  
 SOURCE: USGS TOPO MAP  
 PREPARED BY: S. POON  
 DATE: 12/14/98



CENTRAL AVENUE

SIDEWALK



APPROXIMATE SCALE

0' 5' 10' 15'

SUSPECT  
FORMER  
UST

MW 2

MW-1

FORMER  
CANOPY

FENCE LINE

APARTMENT  
BUILDING

MW-3

FORMER  
STATION/GARAGE

NINTH STREET

SIDEWALK

### LEGEND



- SUSPECT LOCATION OF FORMER UNDERGROUND TANKS



- APPROXIMATE LOCATION OF FORMER STRUCTURE



- GROUNDWATER MONITORING WELL



**AllWest**

GENERALIZED SITE PLAN WITH WELL LOCATIONS

FIGURE 2

900 CENTRAL AVENUE

ALAMEDA, CALIFORNIA

SOURCE: ALLWEST

PROJECT NO.  
98115.23

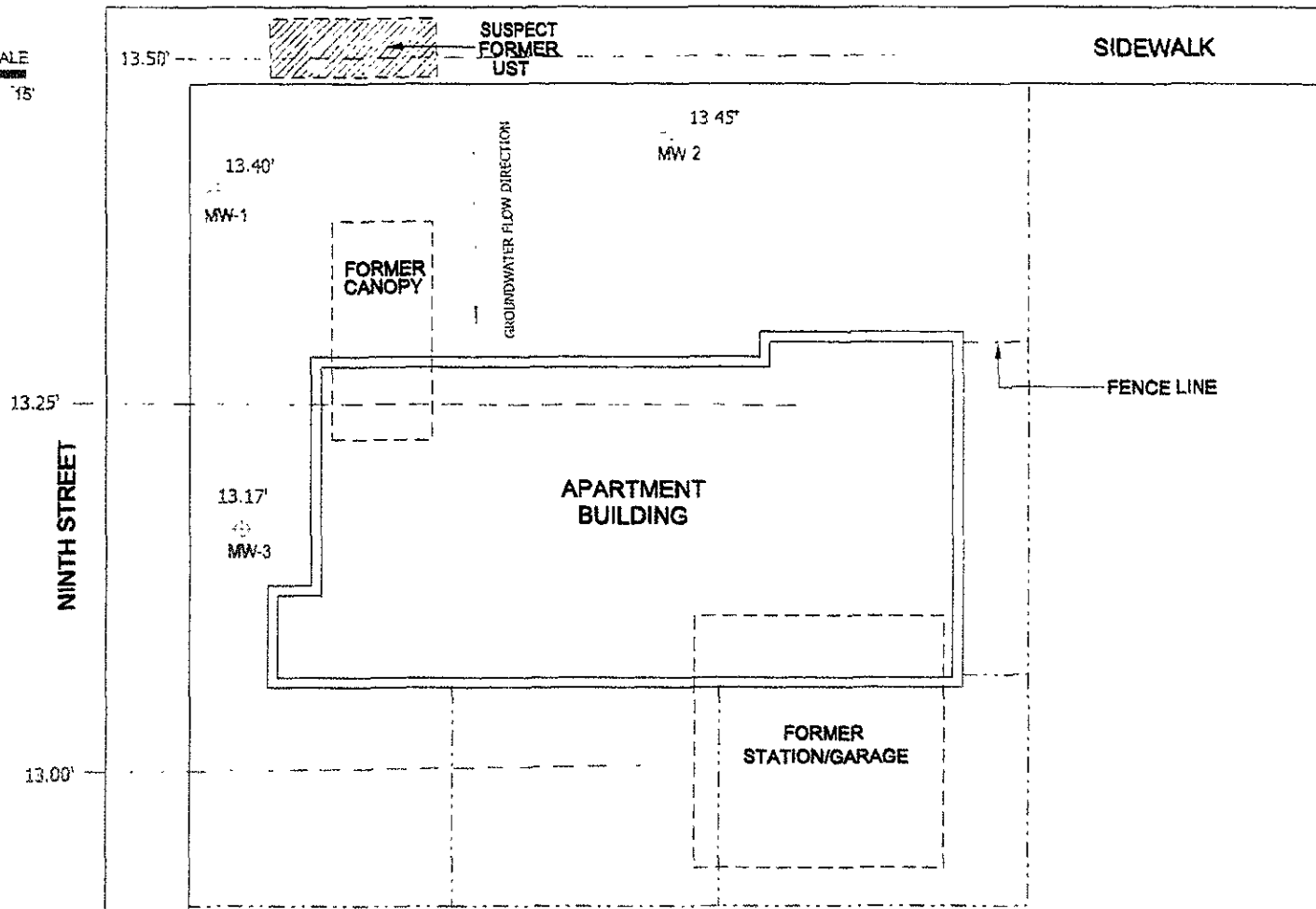
DRAWN BY: S. POON

DATE: 12/14/98

CENTRAL AVENUE







APPROXIMATE SCALE  
 0' 5' 10' 15'




NINTH STREET

SIDEWALK

**LEGEND**

-  - SUSPECT LOCATION OF FORMER UNDERGROUND TANKS
-  - APPROXIMATE LOCATION OF FORMER STRUCTURE
-  - GROUNDWATER MONITORING WELL
- 13.45' - GROUNDWATER ELEVATION
-  - GROUNDWATER CONTOUR LINE

 <b>All West</b>	GROUNDWATER CONTOUR MAP
	FIGURE 3
	900 CENTRAL AVENUE
	ALAMEDA, CALIFORNIA
	SOURCE: ALLWEST
PROJECT NO. 98115.23	DRAWN BY: S. POON
	DATE: 12/14/98

# CHROMALAB, INC.

Environmental Services (SDB)

December 8, 1998

Submission #: 9812024

ALLWEST ENVIRONMENTAL

Atten: Long Ching

Project: RYAN WELLS  
Received: December 1, 1998

Project#: 98115.23

re: One sample for Gasoline BTEX MTBE analysis.  
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: MW-1

Spl#: 218676


Matrix: WATER

Sampled: November 27, 1998

Run#:16343

Analyzed: December 4, 1998

<u>ANALYTE</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u> (ug/L)	<u>BLANK</u> <u>RESULT</u> (ug/L)	<u>BLANK</u> <u>SPIKE</u> (%)	<u>DILUTION</u> <u>FACTOR</u>
GASOLINE	360	50	N.D.	97	1
MTBE	N.D.	5.0	N.D.	85	1
BENZENE	5.8	0.50	N.D.	95	1
TOLUENE	5.5	0.50	N.D.	94	1
ETHYL BENZENE	9.2	0.50	N.D.	95	1
XYLENES	40	0.50	N.D.	89	1

  
Vincent Vancil  
Analyst

Michael Verona  
Operations Manager

# CHROMALAB, INC.

Environmental Services (SDB)

December 8, 1998

Submission #: 9812024

ALLWEST ENVIRONMENTAL

Atten: Long Ching

Project: RYAN WELLS  
Received: December 1, 1998

Project#: 98115.23

re: One sample for Gasoline BTEX MTBE analysis.  
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: MW-2

Spl#: 218677

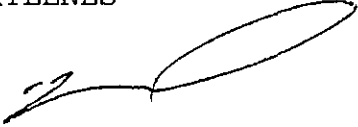
Matrix: WATER

Sampled: November 27, 1998

Run#:16343

Analyzed: December 4, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	N.D.	50	N.D.	97	1
MTBE	N.D.	5.0	N.D.	85	1
BENZENE	N.D.	0.50	N.D.	95	1
TOLUENE	N.D.	0.50	N.D.	94	1
ETHYL BENZENE	N.D.	0.50	N.D.	95	1
XYLENES	N.D.	0.50	N.D.	89	1



Vincent Vancil  
Analyst

Michael Verona  
Operations Manager

# CHROMALAB, INC.

Environmental Services (SDB)

December 8, 1998

Submission #: 9812024

ALLWEST ENVIRONMENTAL

Atten: Long Ching

Project: RYAN WELLS  
Received: December 1, 1998

Project#: 98115.23

re: One sample for Gasoline BTEX MTBE analysis.  
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: MW-3

Spl#: 218678

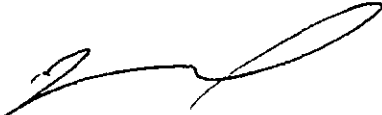
Matrix: WATER

Sampled: November 27, 1998

Run#:16343

Analyzed: December 4, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	N.D.	50	N.D.	97	1
MTBE	N.D.	5.0	N.D.	85	1
BENZENE	N.D.	0.50	N.D.	95	1
TOLUENE	N.D.	0.50	N.D.	94	1
ETHYL BENZENE	N.D.	0.50	N.D.	95	1
XYLENES	N.D.	0.50	N.D.	89	1

  
Vincent Vancil  
Analyst

Michael Verona  
Operations Manager

# CHROMALAB, INC.

Environmental Services (SDB)

December 9, 1998

Submission #: 9812024

ALLWEST ENVIRONMENTAL

Atten: Long Ching

Project: RYAN WELLS  
Received: December 1, 1998

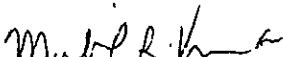
Project#: 98115.23

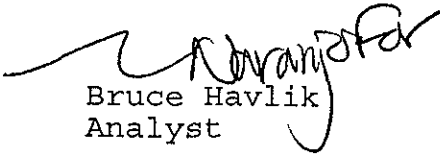
re: 3 samples for TEPH analysis.  
Method: EPA 8015M

Sampled: November 27, 1998  
Matrix: WATER  
Run#: 16263

Extracted: December 2, 1998  
Analyzed: December 7, 1998

Spl#	CLIENT SPL ID	Diesel (ug/L)	Motor Oil (ug/L)
218676	MW-1	N.D.	N.D.
218677	MW-2	N.D.	N.D.
218678	MW-3	N.D.	N.D.
Reporting Limits		50	500
Blank Result		N.D.	
Blank Spike Result (%)		95.2	--

  
Carolyn House  
Analyst

  
Bruce Havlik  
Analyst

# CHROMALAB, INC.

Environmental Services (SDB)

December 9, 1998

Submission #: 9812024

ALLWEST ENVIRONMENTAL

Atten: Long Ching

Project: RYAN WELLS  
Received: December 1, 1998

Project#: 98115.23

re: **Blank spike and duplicate** report for TEPH analysis.

Method: EPA 8015M

Matrix: WATER  
Lab Run#: 16263

Analyzed: December 9, 1998

Analyte	Spike Amount		Spike Amount Found		Spike Recov		Control Limits	% RPD	% RPD Lim
	BSP (ug/L)	Dup	BSP (ug/L)	Dup	BSP (%)	Dup (%)			
DIESEL	2500	2500	2380	2480	95.2	99.2	60-130	4.12	25

BS Smpl #: 218773  
BSD Smpl #: 218774

1220 Quarry Lane • Pleasanton, California 94566-4756  
(925) 484-1919 • Facsimile (925) 484-1096  
Federal ID #68-0140157

QC\_BSD1226 GARY 12:39:14

# CHROMALAB, INC.

Environmental Services (SDB)

December 9, 1998

Submission #: 9812024

ALLWEST ENVIRONMENTAL

Atten: Long Ching

Project: RYAN WELLS  
Received: December 1, 1998

Project#: 98115.23

re: **Surrogate** report for 3 samples for TEPH analysis.

Method: EPA 8015M  
Lab Run#: 16263  
Matrix: WATER

<u>Sample#</u>	<u>Client Sample ID</u>	<u>Surrogate</u>	<u>% Recovered</u>	<u>Recovery Limits</u>
218676-1	MW-1	O-TERPHENYL	89.5	60-130
218677-1	MW-2	O-TERPHENYL	92.5	60-130
218678-1	MW-3	O-TERPHENYL	91.0	60-130

<u>Sample#</u>	<u>QC Sample Type</u>	<u>Surrogate</u>	<u>% Recovered</u>	<u>Recovery Limits</u>
218772-1	Reagent blank (MDB)	O-TERPHENYL	95.7	60-130
218773-1	Spiked blank (BSP)	O-TERPHENYL	109	60-130
218774-1	Spiked blank duplicate (BSD)	O-TERPHENYL	109	60-130

S010  
QCSURR1229 GARY 09-Dec-98 12:39



# CHROMALAB, INC.

1220 Quarry Lane • Pleasanton, California 94566-4756  
510/484-1919 • Facsimile 510/484-1096

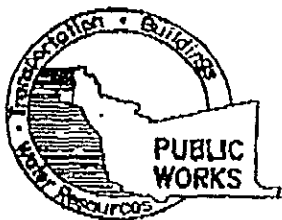
43406  
Chain of Custody

Environmental Services (SDB) (DOHS 1094)

9917824/219676-73

DATE 11/30/98 PAGE 1 OF 1

PROJ MGR <u>LONG CHING</u>					ANALYSIS REPORT															NUMBER OF CONTAINERS			
COMPANY <u>Allwest</u>					TPH - Gasoline (EPA 5030, 8015)	TPH - Gasoline (5030, 8015) w/BTEX (EPA 602, 8020)	TPH - Diesel, TEPH (EPA 3510/3550, 8015)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240, 524.2)	BASE/NEUTRALS, ACIDS (EPA 625/627, 8270, 525)	TOTAL OIL & GREASE (EPA 5520, 8+F, E+F)	PCB (EPA 608, 8080)	PESTICIDES (EPA 608, 8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	MTBE	LUFT METALS: Cd, Cr, Pb, Zn, Ni	CAM METALS (17)	PRIORITY POLLUTANT METALS (13)		TOTAL LEAD	EXTRACTION (TCLP, STLC)	THM/mg/l Oic
SAMPLE ID.	DATE	TIME	MATRIX	PRESERV.																			
MW-1	11/29/98	12:25	W	HELIUM ICE	X	X										X						X	5
MW-2	"	8:30	u	u	X	X										X						X	5
MW-3	u	9:20	u	u	X	X										X						X	5
SUB# #: 9812024 REF: PM																							
CLIENT: ALLWEST																							
DUE: 12/08/98																							
REF #: 43406																							
PROJECT INFORMATION					SAMPLE RECEIPT					RELINQUISHED BY 1			RELINQUISHED BY 2			RELINQUISHED BY 3							
PROJECT NAME <u>Ryan Weus</u>					TOTAL NO OF CONTAINERS					SIGNATURE <u>AM</u>			SIGNATURE			SIGNATURE							
PROJECT NUMBER <u>98115.23</u>					HEAD SPACE					TIME <u>14:15</u>			TIME			TIME							
P.O. #					REC'D GOOD CONDITION/COLD					DATE <u>12-1-98</u>			DATE			DATE							
TAT					CONFORMS TO RECORD					PRINTED NAME <u>Allwest</u>			PRINTED NAME			PRINTED NAME							
STANDARD 5-DAY <input checked="" type="checkbox"/>					24 48 72 OTHER					COMPANY <u>Allwest</u>			COMPANY			COMPANY							
SPECIAL INSTRUCTIONS/COMMENTS. <u>STARTING DATE 11/30/98.</u>  <u>5.0°C AP</u> <u>9 UDAS</u> <u>6 Amber</u>										RECEIVED BY 1			RECEIVED BY 2			RECEIVED BY (LABORATORY) 3							
										SIGNATURE <u>[Signature]</u>			SIGNATURE			SIGNATURE							
										TIME <u>12-1-98</u>			TIME			TIME							
										DATE <u>11/30/98</u>			DATE			DATE							
										COMPANY			COMPANY			COMPANY							
										LAB			LAB			LAB							



# ALAMEDA COUNTY PUBLIC WORKS AGENCY

## WATER RESOURCES SECTION

951 TURNER COURT, SUITE 300, HAYWARD, CA 94545-2651  
 PHONE (510) 670-5575 ANDREAS GODFREY FAX (510) 670-5262  
 (510) 670-5248 ALVIN KAN

### DRILLING PERMIT APPLICATION

**FOR APPLICANT TO COMPLETE**

LOCATION OF PROJECT 900 CENTRAL AVENUE  
ALAMEDA, CA 94501

California Coordinates Source                      ft. Accuracy  $\pm$                       ft.  
 CCM                      ft. CCE                      ft.  
 APN                     

**CLIENT**

Name RYAN, ANDRADA & LIFTER  
 Address 300 LAKESIDE DR, #1045 Phone 510-763-6510  
 City OAKLAND Zip 94612-3536

**APPLICANT**

Name ALLWEST ENVIRONMENTAL  
ALYN\* LONG CHING Fax 415-391-2008  
 Address ONE SUTTER ST, #600 Phone 415-391-3510  
 City SAN FRANCISCO Zip 94104

**TYPE OF PROJECT**

Well Construction	<input checked="" type="checkbox"/>	Geotechnical Investigation	<input type="checkbox"/>
Cathodic Protection	<input type="checkbox"/>	General	<input type="checkbox"/>
Water Supply	<input checked="" type="checkbox"/>	Contamination	<input type="checkbox"/>
Monitoring	<input checked="" type="checkbox"/>	Well Destruction	<input type="checkbox"/>

**PROPOSED WATER SUPPLY WELL USE**

New Domestic	<input type="checkbox"/>	Replacement Domestic	<input type="checkbox"/>
Municipal	<input type="checkbox"/>	Irrigation	<input type="checkbox"/>
Industrial	<input type="checkbox"/>	Other	<input type="checkbox"/>

**DRILLING METHOD:**

Mud Rotary	<input type="checkbox"/>	Air Rotary	<input type="checkbox"/>	Auger	<input checked="" type="checkbox"/>
Cable	<input type="checkbox"/>	Other	<input type="checkbox"/>		

DRILLER'S LICENSE NO. 257-522125

**WELL PROJECTS**

Drill Hole Diameter	<u>8</u> in.	Maximum	
Casing Diameter	<u>3</u> in.	Depth	<u>20</u> ft.
Surface Seal Depth	<u>4</u> ft.	Number	<u>3</u>

**GEOTECHNICAL PROJECTS**

Number of Borings	<u>                    </u>	Maximum	
Hole Diameter	<u>                    </u> in.	Depth	<u>                    </u> ft.

ESTIMATED STARTING DATE 9-16-98  
 ESTIMATED COMPLETION DATE 9-17-98

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

APPLICANT'S SIGNATURE                     

DATE 9-1-98

**FOR OFFICE USE**

PERMIT NUMBER 98WR385  
 WELL NUMBER                       
 APN                     

**PERMIT CONDITIONS**

Circled Permit Requirements Apply

**(A) GENERAL**

1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA 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 SUPPLY WELLS**

1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

**(C) GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS**

1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

**D. 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.

**E. CATHODIC**

Fill hole above anode zone with concrete placed by tremie

**F. WELL DESTRUCTION**

See attached.

**G. SPECIAL CONDITIONS**

APPROVED                      DATE 9/12

## UNIFIED SOIL CLASSIFICATION SYSTEM

PRIMARY DIVISIONS		GROUP SYMBOL	SECONDARY DIVISIONS
C O A R S E  G R A I N E D  S O I L	GRAVELS  More than half of course fraction is larger than No. 4 sieve.	Clean gravels (less than 5% of fines)	GW Well graded gravel-sand mixtures, little or no fines.
		Gravel with fines	GP Poorly graded gravels or gravel-sand mixtures, little or no fines.
			GM Silty gravels or gravel-sand-silt mixtures, with non-plastic fines.
		GC Clayey gravels or gravel-sand-clay mixtures, with plastic fines.	
	SANDS  More than half of course fraction is smaller than No. 4 sieve.	Clean sands (less than 5% of fines)	SW Well graded sands or gravelly sands, little or no fines.
			SP Poorly graded sands or gravelly sands, little or no fines.
		Sands with fines	SM Silty sands or sand-silt mixtures, with non-plastic fines.
			SC Clayey sands or sand-clay mixtures, with plastic fines.
F I N E  G R A I N E D  S O I L	SILTS AND CLAYS  Liquid Limit less than 50%	ML Inorganic silts and very fine sands, rock flour, or clayey silts, with slight plasticity.	
		CL Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.	
		OL Organic silts and organic silty clays of low plasticity.	
	SILTS AND CLAYS  Liquid Limit greater than 50%	MH Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.	
		CH Inorganic clays of high plasticity, fat clays.	
		OH Organic clays of medium to high plasticity, organic silts.	
HIGHLY ORGANIC SOILS		PT Peat and other highly organic soils.	

### BORING LOG LEGEND

Sampler Drive Interval

Relatively Undisturbed Sample Recovered and Preserved

Sampler Driven, No Sample Recovery

Disturbed Sample Recovered and Preserved



Log of Boring: MW-1  
 Project Address: 900 Central Avenue, Alameda, CA  
 Project Number: 98115.23  
 Drilling Date: 11/16/98

Drilling Contractor: Bay Area Exploration      Sampler: SPT sampler  
 Drill Rig: CME 75      Hammer: 140 lbs, 30" drop  
 Auger: 8" Diameter Hollow-Stem      Logged By: L. Ching

Blow Count	OVM Reading	Sample Interval	Depth in Feet	Well Profile	USCS Code	Soil Description
			1	Traffic-Rated Well Vault	SM	Grassy ground surface, landscaped area; Brown, silty fine to very fine SAND, loose, moist, non-plastic;
			2	Locking Upper End Cap		
			3	Concrete Seal		
			4	Blank Schedule 40 PVC Casing		
			4	Cement/Bentonite Grout Backfill		
			5	Bentonite Seal		
2		*	6		SM	Brown to dark brown, silty fine SAND, medium dense, non-plastic, moist to very moist;
3			7			
3			8			
			9			
7		*	10		SM	Olive brown to green brown, silty fine SAND, medium dense, non-plastic, very moist to wet, hydrocarbon odor;
9			11			
12			12			
			13	#3 Sand Filter Pack		
			14	0.02 Inch Slotted Schedule 40 PVC Screen	SM	groundwater first encountered at 14';
11		*	15			
13			16			
16			17			
			18			boring terminated at 18';
			19	Bottom End Cap		
			20			
			21			

Notes: \* Sample not preserved

Reviewed By:  
R. Horwath

Drawn By:  
S. Poon



Log of Boring: MW-2  
 Project Address: 900 Central Avenue, Alameda, CA  
 Project Number: 98115.23  
 Drilling Date: 11/16/98

Drilling Contractor: Bay Area Exploration  
 Drill Rig: CME 75  
 Auger: 8" Diameter Hollow-Stem

Sampler: SPT sampler  
 Hammer: 140 lbs, 30" drop  
 Logged By: L. Ching

Blow Count	OVM Reading	Sample Interval	Depth in Feet	Well Profile	USCS Code	Soil Description
						Grassy ground surface, landscaped area; Brown, silty fine to very fine SAND, loose, moist, non-plastic;
			1	Traffic-Rated Well Vault	SM	
			2	Locking Upper End Cap		
			3	Concrete Seal		
			4	Blank Schedule 40 PVC Casing		
			4	Cement/Bentonite Grout Backfill		
			5	Bentonite Seal		
2		*	6			
3			7			
4			8			
			9			
			10		SM	Brown to dark brown, silty fine SAND, medium dense, non-plastic, moist to wet;
7		*	11			
9			12			
10			13	#3 Sand Filter Pack		
			14			groundwater first encountered at 14';
			15			
11		*	16		SM	Brown to yellow brown, silty fine SAND, medium dense to dense, non-plastic, wet;
14			17			
17			18	0.02 Inch Slotted Schedule 40 PVC Screen		
			19	Bottom End Cap		
13		*	20			boring terminated at 21';
15			21			
18						

Notes: \* Sample not preserved

Reviewed By:  
R. Horwath

Drawn By:  
S. Poon



**AllWest**

AllWest Environmental, Inc.

Log of Boring: MW-3  
 Project Address: 900 Central Avenue, Alameda, CA  
 Project Number: 98115.23  
 Drilling Date: 11/16/98

Drilling Contractor: Bay Area Exploration  
 Drill Rig: CME 75  
 Auger: 8" Diameter Hollow-Stem

Sampler: SPT sampler  
 Hammer: 140 lbs, 30" drop  
 Logged By: L. Ching

Blow Count	OVM Reading	Sample Interval	Depth in Feet	Well Profile	USCS Code	Soil Description
			1	Traffic-Rated Well Vault	SM	Grassy ground surface, landscaped area; Brown, silty fine to very fine SAND, loose, moist, non-plastic;
			2	Locking Upper End Cap		
			3	Concrete Seal		
			4	Blank Schedule 40 PVC Casing		
			4	Cement/Bentonite Grout Backfill		
			5	Bentonite Seal		
3		*	6		SM	Brown to dark brown, silty fine SAND, medium dense, non-plastic, moist to very moist;
3			7			
4			8			
			9			
6		*	10		SM	Brown to yellow brown, silty fine SAND, medium dense to dense non-plastic, very moist to wet;
9			11			
10			12			
			13	#3 Sand Filter Pack		
			14	0.02 Inch Slotted Schedule 40 PVC Screen		groundwater first encountered at 14';
12		*	15		SM	boring terminated at 18';
15			16			
17			17			
			18			
			19	Bottom End Cap		
			20			
			21			

Notes: \* Sample not preserved

Reviewed By:  
R. Horwath

Drawn By:  
S. Poon



# GROUNDWATER MONITORING WELL DEVELOPMENT FIELD LOG

Project No.: 98115.23 Project Name: 900 Central Avenue

Well No.: MW-1 Well Location: Northwest Corner

Well Depth: 18.41 (ft.) Casing Diameter: 2 (in.)

Depth to Water: 12.00 (ft.) Date: 11/20/98 Time: 9:52

Water Column in Well: 6.41 (ft.) Well Volume: 1.09 (gal.)

Odor? Yes Free Product? No Thickness: N/A

Purging Method: Hand Pump  Submersible Pump  Bailer  Other

Time	pH	Conduc. (µS)	Temp. (°F)	Water Level	Volume Removed	Remarks
9:58	6.83	623	66.6		2.5 gal.	moderate turbidity
10:02	6.67	640	67.4		5.0 gal.	moderate turbidity
10:04	6.84	779	66.1		7.5 gal.	moderate turbidity
10:11	6.73	793	67.6		10.0 gal.	low turbidity
10:21	7.01	725	64.4		12.5 gal.	low turbidity

Purging Start Time: 9:53 Purging Stop Time: 10:21

Total Volume Purged: 12.5 (gal.) Well Dewater? Yes

Remarks: slow recharging, sheen on purged water

Sampler: R. Ravelo Date/Time: 11-20-98 10:30



# AllWest

## GROUNDWATER MONITORING WELL DEVELOPMENT FIELD LOG

Project No.: 98115.23 Project Name: 900 Central Avenue

Well No.: MW-2 Well Location: Northeast Corner

Well Depth: 19.30 (ft.) Casing Diameter: 2 (in.)

Depth to Water: 11.88 (ft.) Date: 11/20/98 Time: 9:52

Water Column in Well: 6.42 (ft.) Well Volume: 1.09 (gal.)

Odor? No Free Product? No Thickness: N/A

Purging Method: Hand Pump  Submersible Pump  Bailer  Other

Time	pH	Conduc. (μS)	Temp. (°F)	Water Level	Volume Removed	Remarks
8:14	7.13	609	61.7		2.5 gal.	high turbidity
8:24	6.99	621	62.9		5 gal.	high turbidity
8:35	6.82	530	60.4		7.5 gal.	high turbidity
8:38	6.98	539	63.4		10 gal.	high turbidity
8:50	7.34	398	59.9		15 gal.	moderate turbidity
9:15	7.03	414	62.9		20 gal.	moderate turbidity
9:40	7.09	337	64.1		25 gal.	moderate turbidity

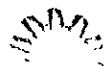
Purging Start Time: 8:14 Purging Stop Time: 9:40

Total Volume Purged: 25 (gal.) Well Dewater? No

Remarks: slow recharging

Sampler: R. Ravelo Date/Time: 11-20-98 9:45



**AllWest****GROUNDWATER MONITORING WELL DEVELOPMENT FIELD LOG**Project No.: 98115.23 Project Name: 900 Central AvenueWell No.: MW-3 Well Location: Southwest CornerWell Depth: 17.92 (ft.) Casing Diameter: 2 (in.)Depth to Water: 11.54 (ft.) Date: 11/20/98 Time: 10:30Water Column in Well: 6.38 (ft.) Well Volume: 1.08 (gal.)Odor? No Free Product? No Thickness: N/APurging Method: Hand Pump  Submersible Pump  Bailer  Other 

Time	pH	Conduc. ( $\mu$ S)	Temp. ( $^{\circ}$ F)	Water Level	Volume Removed	Remarks
10:48	8.22	517	63.7		2.5 gal.	high turbidity
10:52	7.98	509	66.2		5 gal.	high turbidity
11:00	7.59	523	68.0		7.5 gal.	high turbidity
11:10	7.46	529	69.0		10 gal.	moderate turbidity
11:25	7.30	515	68.8		15 gal.	moderate turbidity
11:40	7.36	509	64.3		20 gal.	low turbidity
12:00	7.20	510	67.9		25 gal.	low turbidity
12:20	7.54	475	64.3		30 gal.	low turbidity

Purging Start Time: 10:40 Purging Stop Time: 12:20Total Volume Purged: 30 (gal.) Well Dewater? NoRemarks: slow rechargingSampler: R. Ravelo Date/Time: 11-20-98 12:30



GROUNDWATER MONITORING WELL SAMPLING FIELD LOG

Project No.: 98115.23 Project Name: 900 Central Avenue

Well No.: MW-1 Well Location: Northwest Corner

Well Depth: 18.43 (ft.) Casing Diameter: 2 (in.)

Depth to Water: 11.77 (ft.) Date: 11/27/98 Time: 9:45

Water Column in Well: 6.66 (ft.) Well Volume: 1.13 (gal.)

Odor? Yes Free Product? No Thickness: N/A

Purging Method: Hand Pump Submersible Pump Bailer X Other

Time	pH	Conduc. (µS)	Temp. (°F)	Water Level	Volume Removed	Remarks
9:52	7.27	323	64.7		1.5 gal.	low turbidity
10:10	7.16	329	65.7		2.5 gal.	low turbidity
10:18	6.94	334	66.7		3.5 gal.	low turbidity

Purging Start Time: 9:45 Purging Stop Time: 10:18

Total Volume Purged: 3.5 (gal.) Well Dewater? No

Water Level Prior to Sampling: 11.9 (ft.) Time: 10:20

Sampling Method: Teflon Bailer Disposable Bailer X Sampling Pump

Sample Collected: 3x40-ml and 2x1-liter Sample No.: MW-1

Remarks:

Sampler: R. Ravelo Date/Time: 11-27-98 10:25

# AllWest

## GROUNDWATER MONITORING WELL SAMPLING FIELD LOG

Project No.: 98115.23 Project Name: 900 Central Avenue

Well No.: MW-2 Well Location: Northeast Corner

Well Depth: 18.93 (ft.) Casing Diameter: 2 (in.)

Depth to Water: 11.76 (ft.) Date: 11/27/98 Time: 8:00

Water Column in Well: 7.17 (ft.) Well Volume: 1.22 (gal.)

Odor? No Free Product? No Thickness: N/A

Purging Method: Hand Pump  Submersible Pump  Bailer  Other

Time	pH	Conduc. (μS)	Temp. (°F)	Water Level	Volume Removed	Remarks
8:10	7.38	197	65.4		1.5 gal.	mod. turbidity
8:17	7.01	166	66.4		2.5 gal.	mod. turbidity
8:30	6.97	167	66.8		4 gal.	mod. turbidity

Purging Start Time: 8:00 Purging Stop Time: 8:30

Total Volume Purged: 4 (gal.) Well Dewater? No

Water Level Prior to Sampling: 11.9 (ft.) Time: 8:35

Sampling Method: Teflon Bailer  Disposable Bailer  Sampling Pump

Sample Collected: 3x40-ml and 2x1-liter Sample No.: MW-2

Remarks: \_\_\_\_\_

Sampler: R. Ravelo Date/Time: 11-27-98 8:40



**AllWest**

**GROUNDWATER MONITORING WELL SAMPLING FIELD LOG**

Project No.: 98115.23 Project Name: 900 Central Avenue

Well No.: MW-3 Well Location: Southwest Corner

Well Depth: 18.31 (ft.) Casing Diameter: 2 (in.)

Depth to Water: 11.41 (ft.) Date: 11/27/98 Time: 8:50

Water Column in Well: 6.9 (ft.) Well Volume: 1.17 (gal.)

Odor? No Free Product? No Thickness: N/A

Purging Method: Hand Pump  Submersible Pump  Bailer  Other

Time	pH	Conduc. (µS)	Temp. (°F)	Water Level	Volume Removed	Remarks
8:55	6.85	302	65.0		1.5 gal.	mod. turbidity
9:10	6.63	324	67.2		2.5 gal.	mod. turbidity
9:20	6.59	325	67.7		4 gal.	mod. turbidity

Purging Start Time: 8:50 Purging Stop Time: 9:20

Total Volume Purged: 4 (gal.) Well Dewater? No

Water Level Prior to Sampling: 11.5 (ft.) Time: 9:25

Sampling Method: Teflon Bailer  Disposable Bailer  Sampling Pump

Sample Collected: 3x40-ml and 2x1-liter Sample No.: MW-3

Remarks: \_\_\_\_\_

Sampler: R. Ravelo Date/Time: 11-27-98 9:30