aqua science engineers inc.

January 23, 1997

REPORT
of
SOIL AND GROUNDWATER ASSESSMENT
ASE JOB NO. 3011
at
Zima Center Corporation
2951 High Street
Oakland, California

REGISTERED PROFESSIONAL ENGINEER
DAVID M. SCHULTZ
No. 38738
Exp. 4/97
CIVIL
STATE OF CALIFORNIA

Submitted by:
AQUA SCIENCE ENGINEERS, INC.
2411 Old Crow Canyon Road, #4
San Ramon, CA 94583
(510) 820-9391

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

APPENDIX A	ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY LETTERS DATED SEPTEMBER 17 AND OCTOBER 28, 1996
APPENDIX B	PERMITS
APPENDIX C	BORING LOGS AND WELL CONSTRUCTION DETAILS
APPENDIX D	ANALYTICAL REPORT AND CHAIN OF CUSTODY FORM FOR SOIL SAMPLES
APPENDIX E	WELL SAMPLING FIELD LOGS
APPENDIX F	ANALYTICAL REPORT AND CHAIN OF CUSTODY FORM FOR GROUNDWATER SAMPLES

1.0 INTRODUCTION

This submittal outlines Aqua Science Engineer's, Inc. (ASE) soil and groundwater assessment at the Zima Center Corporation located at 2951 High Street in Oakland, California (Figure 1). The proposed site assessment activities were initiated by Mr. Mohammad A. Mashhoon, owner of the property, as required in letters from the Alameda County Health Care Services Agency (ACHCSA) dated September 17 and October 28, 1996 (Appendix A).

2.0 SITE HISTORY

In September 1993, one (1) 300-gallon waste oil underground storage tank (UST) was removed by Alpha Geo Services of Santa Clara, California. One soil sample was collected by Soil Tech Engineering, Inc. (STE) approximately two (2) feet beneath the former UST. This sample contained 40 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPH-G), 120 ppm total oil and grease (TOG), 0.13 ppm benzene, 0.33 ppm toluene, 0.018 ppm ethylbenzene, 0.50 ppm total xylenes, 0.091 ppm 1,1,2,2-tetrachloroethane and 0.034 ppm 1,1,2-trichloroethane. A soil sample collected from the stockpiled soil produced during the UST removal contained 48 ppm TPH-G, 70 ppm TOG, 0.65 ppm benzene, 1.8 ppm toluene, 0.38 ppm ethylbenzene, 2.5 ppm total xylenes, 0.036 ppm 1,1,2,2-tetrachloroethane and 0.085 ppm 1,1,2-trichloroethane. No total petroleum hydrocarbons as diesel (TPH-D), semi-volatile organic compounds (SVOCs) or elevated metal concentrations were detected in these samples.

In October 1993, STE overexcavated approximately 40 cubic yards of contaminated soil from the former waste oil UST area. Confirmation soil samples were then collected from each excavation sidewall as well as from the floor of the excavation. Up to 2.6 ppm TPH-G, 3,700 ppm TOG, 0.014 ppm benzene, 0.013 ppm toluene, 0.005 ppm ethylbenzene, 0.018 ppm total xylenes and 0.042 ppm tetrachloroethylene (PCE) were detected in the confirmation soil samples. The TOG concentration of 3,700 ppm was, however, only in one location. The other samples contained TOG concentrations ranging from non-detectable to 120 ppm. The contaminated soil was subsequently disposed of at the Forward Landfill in Stockton, California under manifest.

In February 1995, STE drilled four (4) soil borings at the site and installed groundwater monitoring wells in the borings. No hydrocarbons were detected in soil samples collected from borings MW-1 and MW-3. Up to

3.5 ppm TPH-G, 21 ppm TOG, 0.005 ppm toluene, 0.0058 ppm ethylbenzene and 0.054 ppm total xylenes were detected in soil samples collected from monitoring well MW-2. Up to 110 ppm TPH-D, 1,900 ppm TPH-G, 200 ppm TOG, 3.5 ppm benzene, 4.7 ppm toluene, 3.9 ppm ethylbenzene and 11 ppm total xylenes were detected in the soil sample collected from 6-feet below ground surface (bgs) in monitoring well MW-4. Much lower hydrocarbon concentrations (4.6 ppm TPH-G, 0.048 ppm benzene, 0.026 ppm toluene, 0.037 ppm ethylbenzene and 0.06 ppm total xylenes) were detected in the soil sample collected from 11-feet bgs in boring MW-4, and no hydrocarbons were detected in the soil sample collected from 16-feet bgs in boring MW-4. Groundwater samples were collected following the installation and development of the monitoring wells. 3,300 parts per billion (ppb) TPH-G, 470 ppb TPH-D, 18,000 ppb TOG, 9.6 ppb benzene, 13 ppm toluene, 8 ppb ethylbenzene and 28 ppb total xylenes were detected in groundwater samples collected from monitoring well MW-2. Only 280 ppb TPH-D and 600 ppb TOG were detected in groundwater samples collected from monitoring well MW-1 with no TPH-G or benzene, toluene, ethylbenzene and total xylenes (BTEX) concentrations detected. No hydrocarbons were detected in the groundwater samples collected from monitoring well MW-3, and no volatile organic compounds (other than BTEX) were detected in groundwater samples collected from any of the monitoring wells. Monitoring well MW-4 contained a sheen and was not sampled. The groundwater flow direction at the time of this initial assessment was to the north.

Following the initial assessment, the site was placed on a quarterly groundwater sampling schedule. During the next two quarters, up to 4,600 ppb TPH-G, 39 ppb benzene, 18 ppb toluene, 21 ppb ethylbenzene and 39 ppb total xylenes were detected in groundwater samples collected from monitoring well MW-2. No hydrocarbons were detected in groundwater samples collected from monitoring wells MW-1 and MW-3 during this period. In addition, no TPH-D, TOG or VOCs (other than BTEX) were detected in any of the groundwater samples during this period. Monitoring well MW-4 contained a sheen throughout this period and was not sampled. During the May and August 1995 sampling periods, the groundwater flow direction was to the south.

In June 1996, ASE drilled five soil borings at the site and collected soil and groundwater samples for analysis. ASE also collected groundwater samples from monitoring well MW-4. 39 ppm TPH-G, 0.43 ppm benzene, 0.086 ppm toluene, 0.47 ppm ethylbenzene, 1 ppm total xylenes and 0.90 ppm MTBE were detected in the soil sample collected from 5.0-feet bgs in

boring BH-A. 0.045 ppm benzene, 0.043 ppm toluene, 0.021 ppm total xylenes and 2.0 ppm MTBE were detected in the soil sample collected from 15.0-feet bgs in boring BH-B. No TPH-G or BTEX were detected in the soil samples collected from borings BH-C, BH-D and BH-E. MTBE concentrations in these samples ranged from non-detectable at a detection limit of 0.005 ppm to 1.7 ppm. Relatively high hydrocarbon concentrations were detected in most of the water samples analyzed, especially those from borings BH-A, BH-B and monitoring well MW-4. These borings are to the north or west of the existing USTs. Groundwater concentrations were as high as 23,000 ppb TPH-G, 4,600 ppb benzene, 2,800 ppb toluene, 700 ppb ethylbenzene, 2,700 ppb total xylenes and 13,000 ppb MTBE in boring BH-A. 4,000 ppb TPH-G, 490 ppb benzene, 680 ppb toluene, 100 ppb ethylbenzene, 520 ppb total xylenes and 620 ppb MTBE were detected in groundwater samples collected from boring BH-B. 2,500 ppb TPH-G, 230 ppb benzene, 64 ppb toluene, 99 ppb ethylbenzene, 110 ppb total xylenes and 5,700 ppb MTBE were detected in groundwater samples collected from monitoring well MW-4. Much lower hydrocarbon concentrations were detected in groundwater samples collected from borings BH-C and BH-E. Groundwater was encountered in these borings at 26-feet bgs which is much deeper than in the pre-existing site monitoring wells. No groundwater was encountered in boring BH-D.

3.0 SCOPE OF WORK (SOW)

Based on the site history and requirements outlined in the ACHCSA letters dated September 17 and October 28, 1996, ASE's proposed SOW is as follows:

1) Prepare a workplan for approval by the ACHCSA.

2) Obtain all necessary permits from the appropriate agencies including an Alameda County Flood Control and Water Conservation District - Zone 7 well construction permit and City of Oakland encroachment and excavation permits. ASE will also notify Underground Service Alert (USA) to have all known public utility lines marked.

3) Drill one (1) soil boring at the northern edge of the property between borings BH-A and BH-B and one (1) soil boring in the City of Oakland right-of-way downgradient of the site assuming a groundwater flow direction to the north.

4) Analyze one soil sample from each boring at a CAL-EPA certified environmental laboratory for total petroleum hydrocarbons as

gasoline (TPH-G) by modified EPA Method 5030/8015 and benzene, toluene, ethylbenzene and total xylenes (BTEX) and MTBE by EPA Method 8020.

5) Install a 2-inch diameter groundwater monitoring well in each boring described in task 3.

6) Develop the wells and collect groundwater samples for analyses.

7) Analyze the groundwater samples at a CAL-EPA certified environmental laboratory for TPH-G, BTEX and MTBE.

8) Survey the top of casing elevation of each new well relative to the existing on-site wells and determine the groundwater flow direction and gradient beneath the site.

9) Prepare a report detailing the methods and findings of the assessment.

4.0 DRILLING SOIL BORINGS AND COLLECTING SAMPLES

Prior to drilling, ASE obtained City of Oakland encroachment and excavation permits to drill in the city's right of way and an Alameda County Flood Control and Water Conservation District (Zone 7) drilling permit (Appendix B). ASE also notified Underground Service Alert (USA) to have underground public utilities in the vicinity of the site marked.

On December 9, 1996, Soils Exploration Services of Vacaville, California drilled soil boring MW-5 at the site using a CME-55 drill rig equipped with 8-inch diameter hollow-stem augers. An attempt was also made to drill boring MW-6 at this time but this boring had to be abandoned after hitting an unmarked natural gas line. Boring MW-6 was finally completed on January 7, 1997. Groundwater monitoring wells MW-5 and MW-6 were subsequently constructed in these borings.

Undisturbed soil samples were collected at 5-foot intervals as drilling progressed for lithologic and hydrogeologic description and for possible chemical analyses. The samples were collected by driving a split-barrel drive sampler lined with 2-inch diameter stainless steel tubes ahead of the auger tip with successive blows from a 140-lb. hammer dropped 30-inches. One tube from each sampling interval was immediately trimmed, sealed with Teflon tape, plastic end caps and duct tape, labeled, sealed in a plastic bag and stored on ice for transport to Chromalab, Inc. of Pleasanton,

California (ELAP #1094) under chain of custody. Soil from the remaining tubes was described by the site geologist using the Unified Soil Classification System and was screened for volatile compounds with an Organic Vapor Meter (OVM). The soil was screened by emptying soil from one of the sample tubes into a plastic bag. The bag was then sealed and placed in the sun for approximately 10 minutes. After the hydrocarbons were allowed to volatilize, the OVM measured the vapor in the bag through a small hole punched in the bag. OVM readings are used as a screening tool only, since the procedures are not as rigorous as those used in the laboratory.

Drilling equipment was steam-cleaned prior to use, and sampling equipment was washed with a TSP solution between sampling intervals to prevent cross-contamination. Rinsate was contained on-site in sealed and labeled Department of Transportation approved 55-gallon (DOT 17H) drums.

Sediments encountered during drilling generally consisted of sandy silt from beneath the asphaltic concrete and baserock surface to 7-feet below ground surface (bgs), clayey silt from 7-feet bgs to 14-feet bgs, silty sand from 14-feet bgs to 19-feet bgs, sandy silt from 19-feet bgs to 23-feet bgs, and gravely sand from 23-feet bgs to the total depth explored of 30-feet bgs. Groundwater was encountered at approximately 21-feet bgs and subsequently rose to approximately 6.5-feet bgs, indicating that the water bearing zone is under head even though the sediments encountered do not appear indicative to a confining layer. The boring logs and well construction details are included as Appendix C. Drill cuttings were spread in an unpaved portion of the property for aeration by the client.

5.0 ANALYTICAL RESULTS FOR SOIL

The soil samples collected from 6.0-feet bgs in boring MW-5 (sample with the highest OVM reading) and 21.0-feet bgs in boring MW-6 (sample just above where groundwater was encountered) were analyzed by Chromalab, Inc. for TPH-G by modified EPA Method 5030/8015 and BTEX and MTBE by EPA Method 8020. The analytical results are tabulated in Table One, and a copy of the certified analytical report and chain of custody form are included in Appendix D.

of water were removed from each well during development, and evacuation continued until the water was relatively clear.

On December 13, 1996, ASE environmental specialist Scott Ferriman collected groundwater samples from monitoring wells MW-2 and MW-5. On January 13, 1997, ASE environmental specialist Scott Ferriman collected groundwater samples from monitoring well MW-6. No groundwater samples were collected from monitoring wells MW-1 and MW-3 since historical results from these wells show only non-detectable TPH-G and BTEX concentrations. Groundwater samples were not collected from monitoring well MW-4 since it is constructed in the tank backfill and is not considered representative of groundwater beneath the site. Prior to sampling, each well to be sampled was purged of four well casing volumes of groundwater. The pH, temperature and conductivity of the purge water were monitored during evacuation, and samples were not collected until these parameters stabilized. Samples were collected from each well using dedicated polyethylene bailers. The groundwater samples were decanted from the bailers into 40-ml volatile organic analysis (VOA) vials, preserved with hydrochloric acid, labeled, placed in protective foam sleeves, and stored on ice for transport to Chromalab, Inc. under chain of custody.

No sheen or free-floating hydrocarbons were present on the surface of groundwater from any of the monitoring wells. Well development and sampling purge water were contained in DOT 17H drums and stored on-site for handling by the client at a later date. See Appendix E for a copy of the Field Logs.

7.0 GROUNDWATER ELEVATIONS

On January 16, 1997, ASE surveyed the top of casing elevations of monitoring wells MW-5 and MW-6 relative to the top of casing elevations of monitoring wells MW-1, MW-2, MW-3 and MW-4. Top of casing elevations for monitoring wells MW-1, MW-2, MW-3 and MW-4 were previously reported in the March 8, 1995 report prepared by STE. These elevations are relative to an arbitrary site datum of 100-feet above mean sea level.

On December 13, 1996 and January 16, 1997, ASE environmental specialist Scott Ferriman measured the depth to groundwater in all site monitoring wells prior to any well purging activities. The depth to groundwater measurements are presented in Table Two, and groundwater elevations are noted on Figure 3.

TABLE ONE
Summary of Chemical Analysis of **SOIL** Samples
All results are in **parts per million**

Boring & Depth	TPH-G	Benzene	Toluene	Ethyl Benzene	Total Xylenes	MTBE
MW-5 - 6.0'	1,600	17	69	39	170	<7.6
MW-6 - 21.0'	< 1.0	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

Notes:
Non-detectable concentrations are noted by the less than sign (<) followed by the detection limit.

Elevated hydrocarbon concentrations were detected in the soil sample collected from boring MW-5 with the benzene concentration of 17 ppm exceeding the United States Environmental Protection Agency (US EPA) Region IX Preliminary Remediation Goals (PRGs) for residential soil of 1.4 ppm and industrial soil of 3.2 ppm.

No hydrocarbons were detected in the soil sample collected from 21.0-feet bgs in boring MW-6.

6.0 MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

Groundwater monitoring wells MW-5 and MW-6 were constructed in borings MW-5 and MW-6, respectively. The monitoring wells were constructed with 2-inch diameter, 0.020-inch slotted, flush-threaded, Schedule 40 PVC well screen and blank casing. The wells are screened between 5-feet bgs and 30-feet bgs (the total depth of the borings) to monitor the first water bearing zone encountered. Each monitoring well is constructed as follows. Lonestar #3 Monterey sand occupies the annular space between the borehole and the casing from the bottom of the boring to approximately 1.5-feet above the well screen. A 0.5-foot thick hydrated bentonite layer separates the sand from the overlying cement surface seal. The wellheads are secured with locking wellplugs beneath at-grade traffic-rated vaults.

ASE environmental specialist Scott Ferriman developed monitoring well MW-5 on December 11, 1996 and monitoring well MW-6 on January 10, 1997. Each monitoring well was developed using at least two episodes of surge-block agitation and bailer evacuation. Over ten well casing volumes

TABLE TWO

Summary of Groundwater Well Survey Data

Well I.D.	Date of Measurement	Top of Casing Elevation (msl)	Depth to Water (feet)	Groundwater Elevation (msl)
MW-1	02-23-95	97.62	5.89	91.73
	05-26-95		5.20	92.42
	08-23-95		8.67	88.95
	12-13-96		4.61	93.01
	01-16-97		3.79	93.83
MW-2	02-23-95	97.87	6.81	91.06
	05-26-95		4.90	92.97
	08-23-95		8.33	89.54
	12-13-96		6.85	91.02
	01-16-97		1.54	96.33
MW-3	02-23-95	97.03	4.21	92.82
	05-26-95		6.44	90.59
	08-23-95		8.69	88.34
	12-13-96		5.60	91.43
	01-16-97		5.28	91.75
MW-4	02-23-95	96.77	6.90	89.87
	05-26-95		6.18	90.59
	08-23-95		8.55	88.22
	12-13-96		5.86	90.91
	01-16-97		5.79	90.98
MW-5	12-13-96	98.32	6.25	92.07
	01-16-97		6.32	92.00
MW-6	01-16-97	98.16	5.12	93.04

As Table Two indicates, groundwater in the various site wells are at elevations which make no sense hydrogeologically. The groundwater elevations in monitoring wells MW-2 and MW-3 differ by over 4.5-feet yet the wells are in close proximity to each other. This may be due to water levels in monitoring wells MW-1, MW-2 and/or MW-3 being influenced by water in the backfill of the former waste oil tank. ASE also believes that monitoring well MW-4 is installed in the backfill of the active tank farm. Based on the information in Table Two, ASE can't accurately determine the groundwater flow direction beneath the site. The groundwater flow direction based on the groundwater elevation contours on Figure 3 indicate southeastward and southward flow. However, based on the analytical results for groundwater in ASE's June 1996 groundwater assessment with hydrocarbon concentrations being highest in borings BH-A and BH-B both

on the northern portion of the property, and the analytical results of monitoring wells MW-1, MW-2 and MW-3 with the highest hydrocarbon concentrations being in MW-2 which is the northern most well, it is assumed that groundwater flows to the north.

8.0 ANALYTICAL RESULTS FOR GROUNDWATER

The groundwater samples were analyzed by Chromalab, Inc. for TPH-G by modified EPA Method 5030/8015 and BTEX and MTBE by EPA Method 8020. The analytical results are tabulated in Table Three, and copies of the certified analytical report and chain of custody form are included in Appendix F.

TABLE THREE
Summary of Chemical Analysis of **GROUNDWATER** Samples
All results are in **parts per billion**

Date Sampled	TPH-G	Benzene	Toluene	Ethyl Benzene	Total Xylenes	MTBE
MW-1						
02-23-95	<50	<0.5	<0.5	<0.5	<0.5	---
05-26-95	<50	<0.5	<0.5	<0.5	<0.5	---
08-23-95	<50	<0.5	<0.5	<0.5	<0.5	---
MW-2						
02-23-95	3,300	9.6	13	8	28	---
05-26-95	4,600	39	18	21	39	---
08-23-95	<50	15	6	10	15	---
12-13-96	1,900	110	110	120	330	65
MW-3						
02-23-95	<50	<0.5	<0.5	<0.5	<0.5	---
05-26-95	<50	<0.5	<0.5	<0.5	<0.5	---
08-23-95	<50	<0.5	<0.5	<0.5	<0.5	---
MW-4						
06-26-96	2,500	230	64	99	110	5,700
MW-5						
12-13-96	3,600	180	350	81	510	430
MW-6						
01-13-97	<50	<0.5	<0.5	<0.5	<0.5	<5

Notes:
Non-detectable concentrations are noted by the less than sign (<) followed by the detection limit.

Groundwater samples collected from monitoring well MW-2 contained 1,900 ppb TPH-G as well as BTEX and MTBE concentrations ranging from 65 ppb to 330 ppb. This TPH-G concentration is consistent with previous results, although the BTEX concentrations are slightly higher than previous results. The benzene concentrations exceeded the California Department of Toxic Substances Control (DTSC) maximum contaminant level (MCL) for drinking water.

Groundwater samples collected from monitoring well MW-5 contained elevated TPH-G, BTEX and MTBE concentrations with benzene concentrations exceeding DTSC MCLs for drinking water.

No hydrocarbons were detected in groundwater samples collected from monitoring well MW-6.

9.0 CONCLUSIONS AND RECOMMENDATIONS

Elevated hydrocarbon concentrations were detected in a soil sample collected from boring MW-5. The benzene concentration in this boring exceeded the US EPA Region IX PRG for both residential and industrial soil. This boring is in the narrow area between the existing tank farm and the property line and overexcavation to remove this soil is not a reasonable option.

Elevated hydrocarbon concentrations were detected in groundwater samples collected from monitoring well MW-5 at the northern property line indicating that these concentrations appear to be leaving the site. No hydrocarbons were detected in groundwater samples collected from monitoring well MW-6 indicating that, assuming a northward groundwater flow direction, hydrocarbon concentrations have not reached MW-6.

ASE recommends that this site be placed on a quarterly groundwater monitoring schedule. Unless ASE is contacted with other instructions, ASE will schedule the next sampling for April 1997.

On behalf of our client, Mr. Mohammad A. Mashhoon, ASE requests that the ACHCSA make a decision on whether the site may be closed without remediation or whether remediation will be required at the site in order to obtain case closure. If the site can not be closed without remediation, remedial activities should be conducted as soon as possible to allow the property owner, Mr. Mohammad A. Mashhoon, meet a contractual obligation related to cleanup on the site in a timely manner.

10.0 REPORT LIMITATIONS

The results of this assessment represent conditions at the time of the soil and groundwater sampling, at the specific locations at which the samples were collected, and for the specific parameters analyzed by the laboratory.

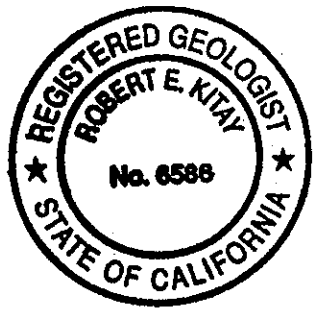
It does not fully characterize the site for contamination resulting from unknown sources, or for parameters not analyzed by the laboratory. All of the laboratory work cited in this report was prepared under the direction of an independent California state certified laboratory. The independent laboratory is solely responsible for the contents and conclusions of the chemical analysis data.

Should you have any questions or comments, please feel free to call us at (510) 820-9391.

Respectfully submitted,

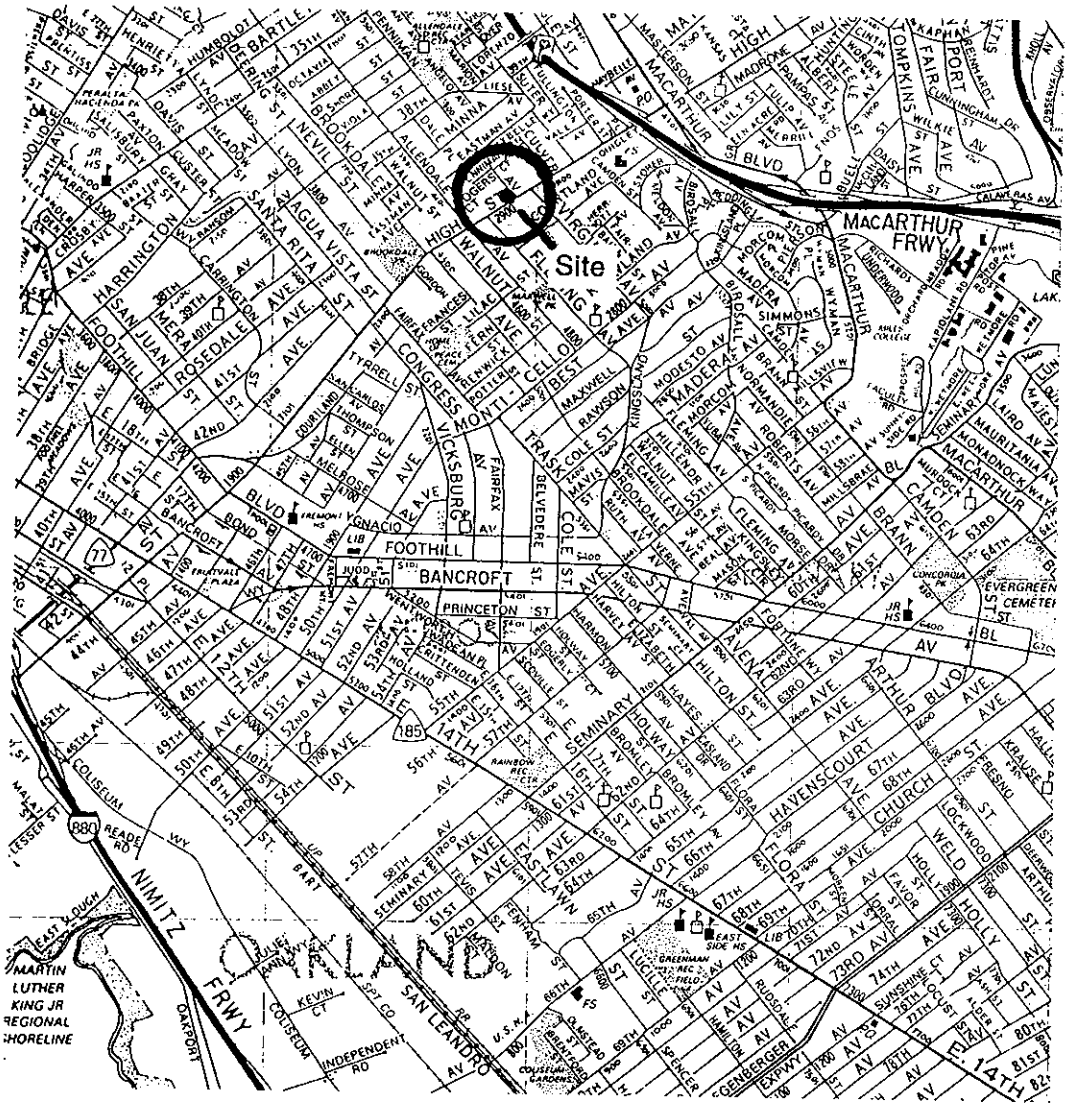
AQUA SCIENCE ENGINEERS, INC.

Robert E. Kitay, R.G., R.E.A.
Project Geologist



Attachments: Figures 1 through 3
Appendices A through F

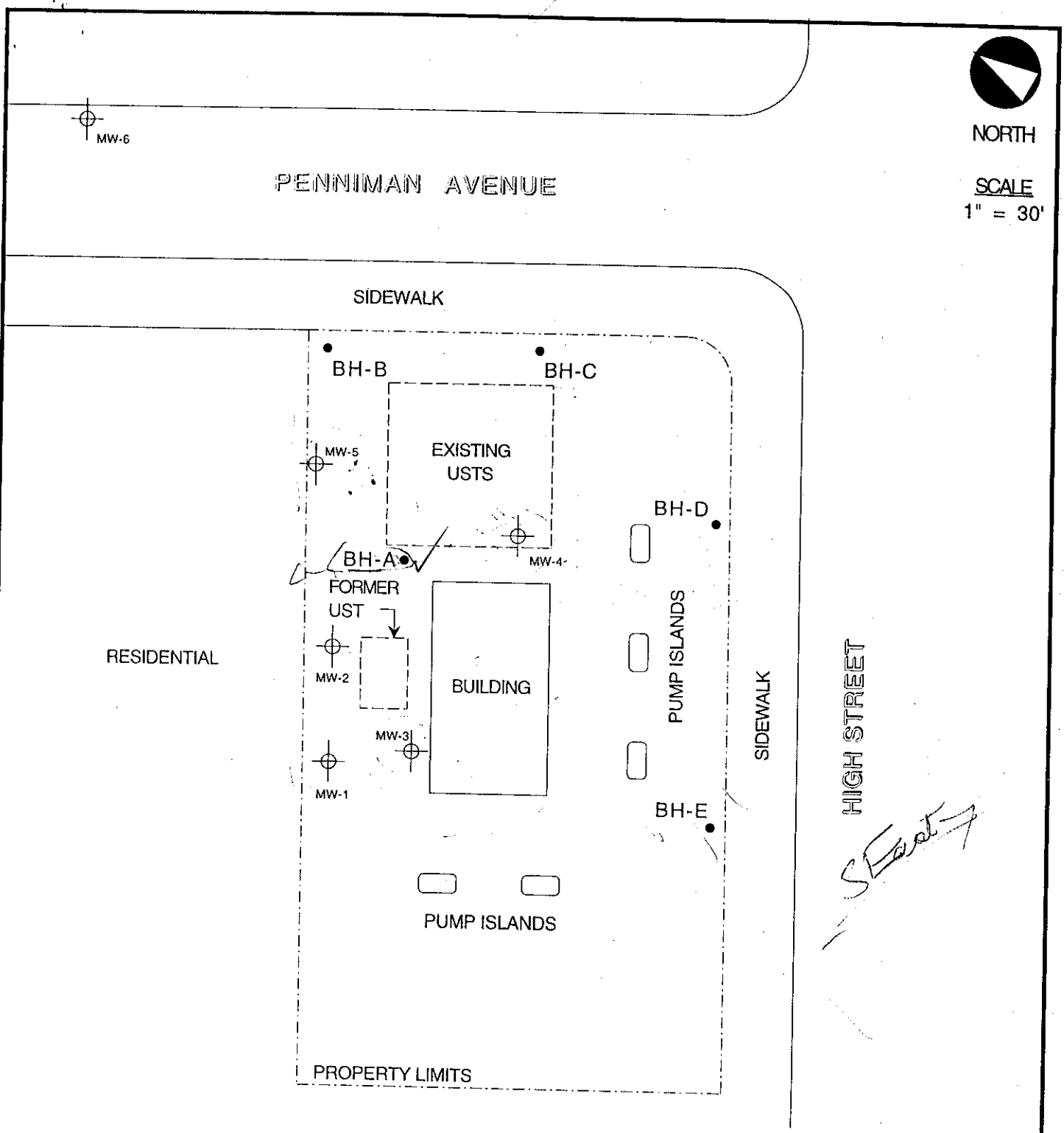
FIGURES



SITE LOCATION MAP

ZIMA CENTER CORPORATION
2951 HIGH STREET
OAKLAND, CALIFORNIA

AQUA SCIENCE ENGINEERS, INC. | FIGURE 1



LEGEND

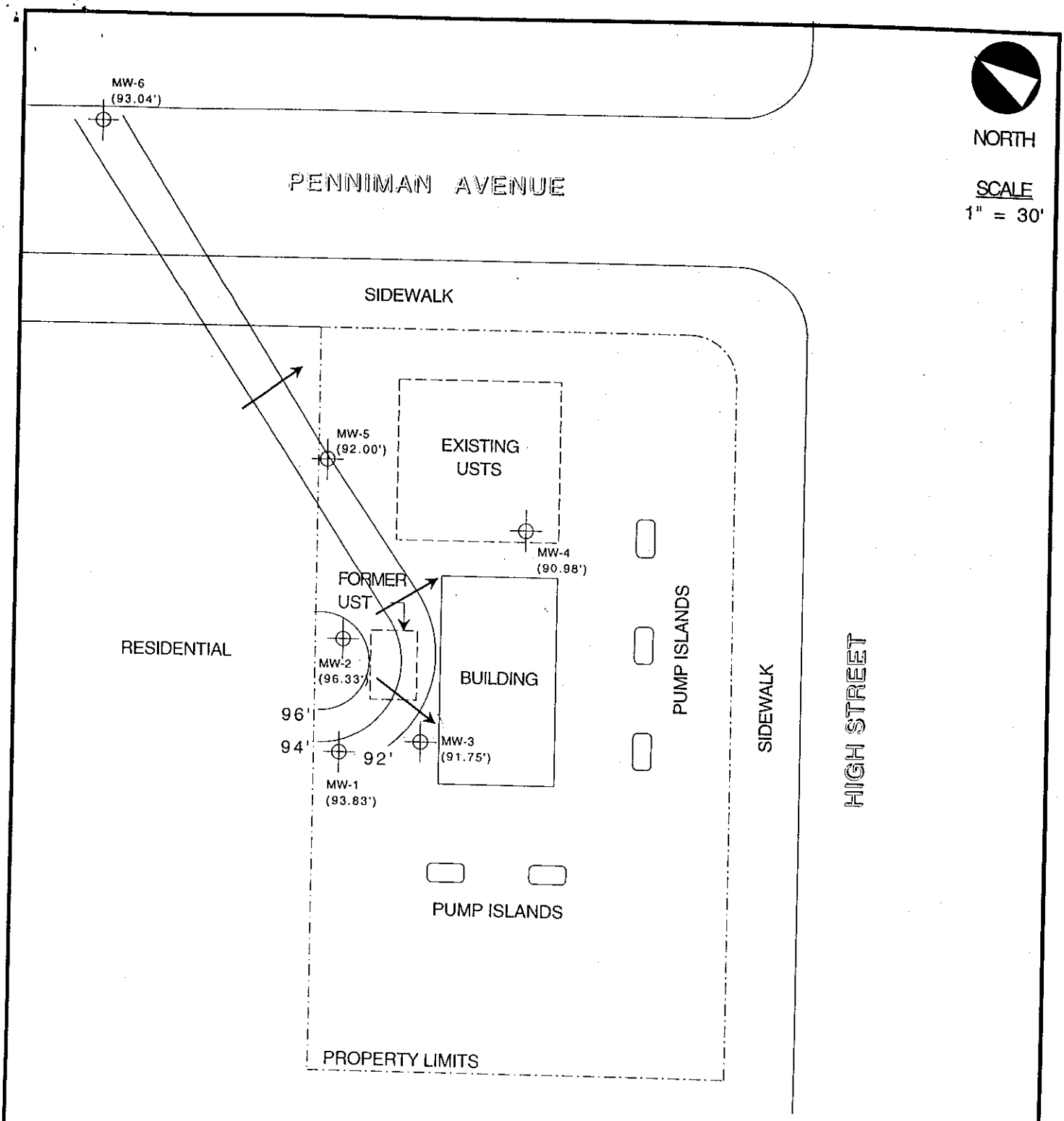
MW-6 — EXISTING MONITORING WELL

BH-E — SOIL BORING

MONITORING WELL LOCATION MAP

ZIMA CENTER CORPORATION
2951 HIGH STREET
OAKLAND, CALIFORNIA

AQUA SCIENCE ENGINEERS, INC. | FIGURE 2



LEGEND

MW-6 (93.04') — Monitoring well with groundwater elevation

96' — Groundwater elevation contour

Groundwater flow direction

GROUNDWATER ELEVATION CONTOUR MAP - 1/16/97

ZIMA CENTER CORPORATION
2951 HIGH STREET
OAKLAND, CALIFORNIA

AQUA SCIENCE ENGINEERS, INC. | FIGURE 3

APPENDIX A

Alameda County Health Care Services Agency
Letters Dated September 17 and October 28, 1996

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, #250
Alameda, CA 94502-6577
(510) 567-6700 FAX (510) 337-9335

September 17, 1996

Mr. Mohammad Mashoon
2951 High St,
Oakland, CA - 94619

STID 1038

RE: 2951 High Street, Oakland, CA

Dear Mr. Mashoon:

I am in receipt of the document titled "Report of Soil and Groundwater Assessment", dated July 17, 1996, prepared by Aqua Science Engineers for the above referenced property.

Five borings BHA to BHE were installed on the property to further delineate the extent of contamination from the former underground storage tanks. Both soil and groundwater samples were collected from each of the borings except BHD from which a groundwater sample could not be collected. Significant concentrations of gasoline and BTEX was identified in borings BHA and BHB, the downgradient borings from the tanks.

Based on a review of the document, this Department is requiring that the following additional work be conducted on the property:

- To complete groundwater characterization and define the extent of contamination, a monitoring well should be installed in the downgradient direction to borings, BHA and BHB. This well could serve as a target well to identify any potential contaminant migration to offsite receptors.

- Quarterly monitoring and gradient measurement should be conducted on all onsite monitoring wells at a quarterly frequency. For expedited closure, this Department recommends that more aggressive remediation options be considered to treat the contamination in the groundwater to acceptable standards. Also, in future, if the concentrations of petroleum hydrocarbons reduce significantly, either due to natural biodegradation or due to treatment, then a risk assessment can be conducted on site to evaluate any potential threats to onsite/offsite receptors. A site specific risk assessment conducted on the property can determine cleanup standards that are site specific and based on the assessment this Department could evaluate the site for closure.

Please submit a work plan to address the above listed concerns within 30 days from the receipt of this letter. If you have any questions, you can reach me at (510) 567-6764.

Sincerely,

Madhulla Logan

Madhulla Logan,
Hazardous Material Specialist

C: **Robert Kitay,** Aqua Science Engineers Inc, 2411 Old Crow Canyon Rd, #4, San Ramon, CA - 94583.

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

October 28, 1996

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION (LOP)
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

Mr. Mohammad Mashoon
2951 High St,
Oakland, CA - 94619

STID 1038

RE: 2951 High Street, Oakland, CA

Dear Mr. Mashoon:

I am in receipt of your workplan for soil and groundwater assessment, dated October 15, 1996 for the above referenced property. This workplan is acceptable with the following changes:

- The workplan includes a well placement in the corner of Penniman Avenue, downgradient to BH-B (assuming a northerly gradient). However, this does not address the high concentrations of gasoline and BTEX observed during the previous investigation from samples collected from borings, BH-A and BH-B. Hence, an additional monitoring well needs to be installed between BH-A and BH-B and as close to the property boundary line adjacent to the residential site. This will give more accurate data on the contamination levels present in this area and on the groundwater gradient and depth.

Based on the results of this investigation (to be implemented), this Department may require that a a remediation plan be submitted to mitigate the risk to public health and water quality.

The workplan with the modification listed above should be implemented within 30 days from the date of this letter. Any extension should be requested in writing. If you have any questions, you can reach me at (510) 567-6764.

Sincerely,

Madhulla Logan

Madhulla Logan
Hazardous Material Specialist

C: **Robert Kitay,** Aqua Science Engineering, Inc, 2411 Old Crow Canyon road, #4
San Ramon, CA 94583

APPENDIX B

Permits

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Zima Center Corporation
2951 High Street
Oakland, CA

CLIENT
Name Zima Center Corporation
Address 2951 High Street Voice 510-436-4700
City Oakland, CA Zip 94619

APPLICANT
Name Aqua Sciences Engineers, Inc.
Attn: Robert Kitay Fax 510-837-4853
Address 2411 Old Crow Canyon Rd #4 Voice 510-820-9391
City San Ramon, CA Zip 94583

TYPE OF PROJECT

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

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

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

DRILLER'S LICENSE NO. C-57 582696

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 50 ft.
Surface Seal Depth 10 ft. Number 2

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

ESTIMATED STARTING DATE 11/5/96
ESTIMATED COMPLETION DATE 11/5/96

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

APPLICANT'S SIGNATURE Robert C. Kitay Date 11/2/96

FOR OFFICE USE

PERMIT NUMBER 96845
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

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

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

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

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

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 3 Dec 96
Wyman Hong

91992

CITY OF OAKLAND
Office of Planning and Building

EXCAVATION PERMIT

TO EXCAVATE IN STREETS OR OTHER SPECIFIED WORK

CIVIL ENGINEERING

PERMIT NUMBER	SITE ADDRESS/LOCATION
X9600966	2851 High Street (work on Penniman Ave only)
APPROX. START DATE: 12-5-96 / APPROX. END DATE:	24-HOUR EMERGENCY PHONE NUMBER (Permit not valid without 24-Hour number): 510-820-9391
CONTRACTOR'S LICENSE # AND CLASS: 487000, A, Haz, C-57	CITY BUSINESS TAX #

ATTENTION:

1) State law requires that the contractor/owner call *Underground Service Alert (USA)* two working days before excavating. This permit is not valid unless applicant has secured an inquiry identification number issued by USA. The USA telephone number is 1 (800) 642-2444. UNDERGROUND SERVICE ALERT (USA) #: 338337

2) **48 hours prior to starting work, YOU MUST CALL (510) 238-3651 TO SCHEDULE AN INSPECTION.**

OWNER/BUILDER

I hereby affirm that I am exempt from the Contractor's License Law for the following reason (Sec. 7031.5 Business and Professions Code: Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he is licensed pursuant to the provisions of the Contractor's License law Chapter 9 (commencing with Sec. 7000) of Division 3 of the Business and Professions Code, or that he is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than $500):

☐ I, as an owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or through his own employees, provided that such improvements are not intended or offered for sale. If however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he did not build or improve for the purpose of sale).

☐ I, as owner of the property, am exempt from the sale requirements of the above due to: (1) I am improving my principal place of residence or appurtenances thereto, (2) the work will be performed prior to sale, (3) I have resided in the residence for the 12 months prior to completion of the work, and (4) I have not claimed exemption on this subdivision on more than two structures more than once during any three-year period. (Sec. 7044 Business and Professions Code).

☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project, (Sec. 7044, Business and Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractor's License law).

☐ I am exempt under Sec. _____, B&PC for this reason _____.

WORKER'S COMPENSATION

☐ I hereby affirm that I have a certificate of consent to self-insure, or a certificate of Worker's Compensation Insurance, or a certified copy thereof (Sec. 3700, Labor Code).

Policy # _____ Company Name _____

☐ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws of California (not required for work valued at one hundred dollars ($100) or less).

NOTICE TO APPLICANT: If, after making this Certificate of Exemption, you should become subject to the Worker's Compensation provisions of the Labor Code, you must forthwith comply with such provisions or this permit shall be deemed revoked. This permit is issued pursuant to all provisions of Chapter 6, Article 2 of the Oakland Municipal Code. It is granted upon the express condition that the permittee shall be responsible for all claims and liabilities arising out of work performed under the permit or arising out of permittee's failure to perform the obligations with respect to street maintenance. The permittee shall, and by acceptance of the permit agrees to defend, indemnify, save and hold harmless the City, its officers and employees, from and against any and all suits, claims, or actions brought by any person for or on account of any bodily injuries, disease or illness or damage to persons and/or property sustained or arising in the construction of the work performed under the permit or in consequence of permittee's failure to perform the obligations with respect to street maintenance. This permit is void 90 days from the date of issuance unless an extension is granted by the Director of the Office of Planning and Building.

I hereby affirm that I am licensed under provisions of Chapter 9 of Division 3 of the Business and Professions Code and my license is in full force and effect (if contractor), that I have read this permit and agree to its requirements, and that the above information is true and correct under penalty of law.

Scott T. F — Signature of Permittee ☒ Agent for ☐ Contractor ☐ Owner — Date 12-3-96

DATE STREET LAST RESURFACED	SPECIAL PAVING DETAIL REQUIRED?	HOLIDAY RESTRICTION? (NOV 1 - JAN 1)	LIMITED OPERATION AREA? (7AM-9AM & 4PM-6PM)
1990	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☒ NO

ISSUED BY: M. Millan — DATE ISSUED: 12-3-96

APPENDIX C

Boring Logs and Well Construction Details

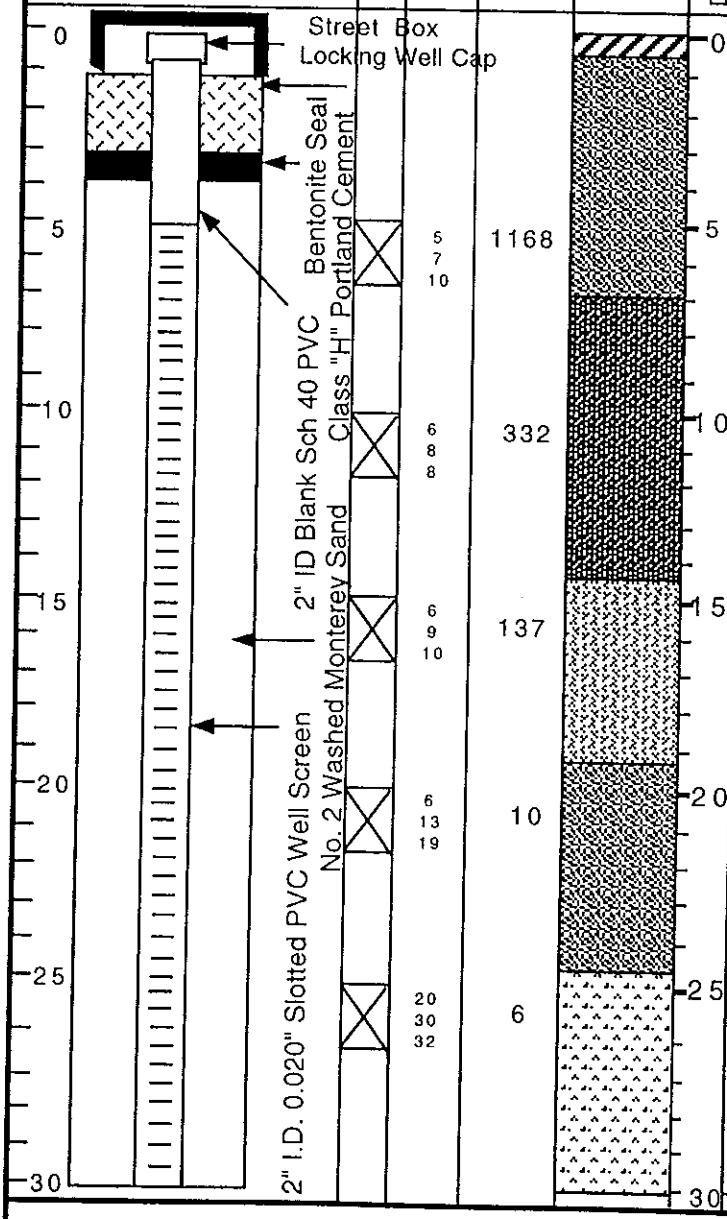
SOIL BORING LOG AND WELL COMPLETION DETAILS

Monitoring Well MW-5

Project Name: Zima Center Corporation	Project Location: 2951 High Street, Oakland, CA	Page 1 of 1
Driller: Soils Exploration Services	Type of Rig: CME 55	Size of Drill: 8" O.D. Hollow-Stem Augers
Logged By: Robert E. Kitay	Date Drilled: December 9, 1996	Checked By: David M. Schultz, P.E.

WATER AND WELL DATA

- Depth of Water First Encountered: 22'
- Static Depth of Water in Well: 6.5'
- Total Depth of Boring: 30.0'
- Total Depth of Well Completed: 30.0'
- Well Screen Type and Diameter: 2" Diameter PVC
- Well Screen Slot Size: 0.020"
- Type and Size of Soil Sampler: 2.0" I.D. California Sampler



DESCRIPTION OF LITHOLOGY

standard classification, texture, relative moisture, density, stiffness, odor-staining, USCS designation.

0 — Asphaltic concrete

Sandy SILT (ML); brown; stiff; damp; 65% silt; 20% fine to coarse sand; 10% subangular pebbles to 0.5" diameter; 5% clay; slight plasticity; low estimated K; moderate hydrocarbon odor

▽ *Static Groundwater Level*

Clayey SILT (MH); brown; stiff; moist; 75% silt; 15% clay; 5% coarse sand; 5% subangular pebbles to 0.5" diameter; high plasticity; low estimated K; slight hydrocarbon odor

Silty SAND (SM); brown; medium dense; wet; 65% medium to coarse sand; 20% silt; 10% subangular pebbles to 0.5" diameter; 5% clay; low plasticity; low estimated K; slight hydrocarbon odor

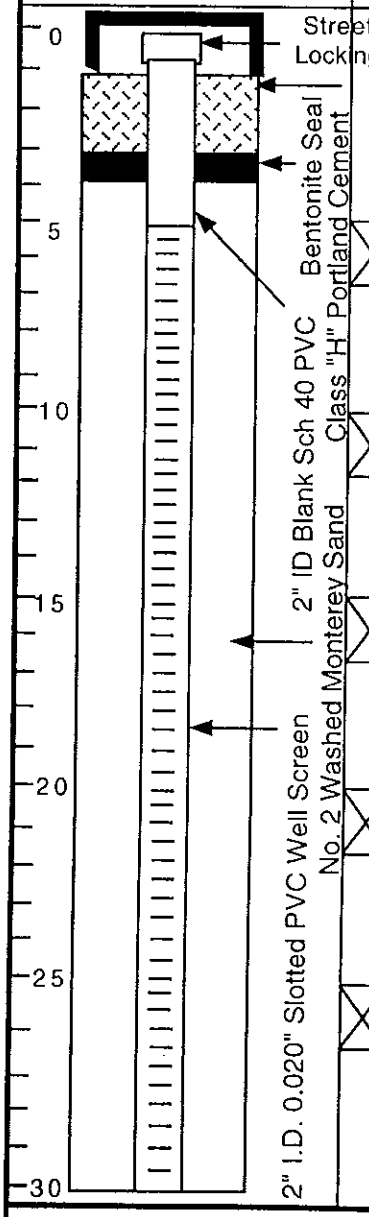
Sandy SILT (ML); brown; stiff; moist; 85% silt; 10% fine to medium sand; 5% subangular pebbles to 0.5" diameter; non-plastic; low estimated K; no odor

▼ *Groundwater First Encountered*

Gravelly SAND (SM); brown; dense; wet; 60% medium to coarse sand; 30% subangular pebbles to 1" diameter; 10% silt; non-plastic; medium estimated K; no odor

SOIL BORING LOG AND WELL COMPLETION DETAILS		Monitoring Well MW-6
Project Name: Zima Center Corporation	Project Location: 2951 High Street, Oakland, CA	Page 1 of 1
Driller: Soils Exploration Services	Type of Rig: CME 55	Size of Drill: 8" O.D. Hollow-Stem Augers
Logged By: Robert E. Kitay	Date Drilled: January 7, 1997	Checked By: David M. Schultz, P.E.

WATER AND WELL DATA	
Depth of Water First Encountered: 22'	Total Depth of Well Completed: 30.0'
Static Depth of Water in Well: 6.5'	Well Screen Type and Diameter: 2" Diameter PVC
Total Depth of Boring: 30.0'	Well Screen Slot Size: 0.020"
	Type and Size of Soil Sampler: 2.0" I.D. California Sampler



SOIL/ROCK SAMPLE DATA

Interval	Blow Ct.	OVM (ppmv)	Graphic Log
	10 10 12	0	
	11 15 25	0	
	11 18 25	0	
	28 46 50	0	
	18 29 38	0	

Depth in Feet: 0, 5, 10, 15, 20, 25, 30

DESCRIPTION OF LITHOLOGY

standard classification, texture, relative moisture, density, stiffness, odor-staining, USCS designation.

0 — Asphalt
Concrete

Gravelly SAND (SW); grey; wet; dense; 65% medium to coarse sand; 25% subangular to subrounded pebbles to 2.5" diameter; 10% silt; non-plastic; high est K; no odor

5 — Sandy SILT (ML); yellow brown; medium stiff; moist; 65% silt; 20% fine to coarse sand; 10% subangular pebbles to 0.5" diameter; 5% clay; slight plasticity; low estimated K; no odor

Clayey SILT (MH); brown; stiff; moist; 70% silt; 15% clay; 10% coarse sand; 5% subangular pebbles to 0.5" diameter; high plasticity; low estimated K; no odor

10

15 — Silty SAND (SM); brown; medium dense; wet; 65% medium to coarse sand; 20% silt; 10% subangular pebbles to 0.5" diameter; 5% clay; low plasticity; low estimated K; no odor

Sandy SILT (ML); brown; stiff; moist; 85% silt; 10% fine to medium sand; 5% subangular pebbles to 0.5" diameter; non-plastic; low estimated K; no odor

20 — ▼ *Groundwater First Encountered*

Gravelly SAND (SM); brown; dense; wet; 60% medium to coarse sand; 30% subangular pebbles to 1" diameter; 10% silt; non-plastic; medium estimated K; no odor

25

30

APPENDIX D

Analytical Report and Chain of Custody Form
For Soil Samples

CHROMALAB, INC.

Environmental Services (SDB)

December 17, 1996 *Submission #:* 9612125

AQUA SCIENCE ENGINEERS INC

Atten: Robert Kitay

Project: ZIMA CENTER CORPORATION *Project#:* 3011
Received: December 10, 1996

re: One sample for Gasoline and BTEX compounds analysis.
Method: *EPA 8015M SW846 8020A Nov 1990*

Client Sample ID: **MW-5 6.0'**
Spl#: 110331 *Matrix:* SOIL
Sampled: December 10, 1996 *Run#:* 4515 *Analyzed:* December 16, 1996

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	1600	150	N.D.	92.2	1200
BENZENE	17	1.5	N.D.	97.5	1200
TOLUENE	69	1.5	N.D.	100	1200
ETHYL BENZENE	39	1.5	N.D.	109	1200
XYLENES	170	1.5	N.D.	105	1200
MTBE	N.D.	7.6	N.D.	119	1200

Kayvan Kimyai
Chemist

Marianne Alexander
Gas/BTEX Supervisor

510-837-4853 MV 12/17

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.
SAMPLE RECEIPT CHECKLIST

Client Name AQUA SCIENCE

Project 3011

Reference/Subm # 31129/9612125

Checklist completed by: [signature] / 12/10/96 (Signature / Date)

Date/Time Received 12/10/96 (Date) / 1046 (Time)

Received by B Monroe

Carrier name

Logged in by CR / 12/10/96 (Initials / Date)

Matrix Soil

Shipping container in good condition?			NA___	Yes ✓ No___
Custody seals present on shipping container?	Intact___	Broken___	Yes___	No ✓
Custody seals on sample bottles?	Intact___	Broken___	Yes___	No ✓
Chain of custody present?				Yes ✓ No___
Chain of custody signed when relinquished and received?				Yes ✓ No___
Chain of custody agrees with sample labels?				Yes ✓ No___
Samples in proper container/bottle?				Yes ✓ No___
Samples intact?				Yes ✓ No___
Sufficient sample volume for indicated test?				Yes ✓ No___
VOA vials have zero headspace?			NA ✓	Yes___ No___
Trip Blank received?			NA ✓	Yes___ No___
All samples received within holding time?				Yes ✓ No___

Container temperature? 3.3°C

pH upon receipt _____ pH adjusted _____ Check performed by: _____ NA ✓

Any NO response must be detailed in the comments section below. If items are not applicable, they should be marked NA.

Client contacted? _____ Date contacted? _____

Person contacted? _____ Contacted by? _____

Regarding? _____

Comments: _____

Corrective Action: _____

SMPLRECD.CK

125/110331 - 110334

31129

Aqua Science Engineers, Inc.
2411 Old Crow Canyon Road, #4,
San Ramon, CA 94583
(510) 820-9391 - FAX (510) 837-4853

Chain of Custody

DATE 12-9-96 PAGE 1 OF 1

SAMPLERS (SIGNATURE) (PHONE NO.)
Robert E. Kitay (510) 820-9391

PROJECT NAME Zima Center Corporation NO. 3011
ADDRESS 2951 High Street, Oakland,

SUBM #: 9612125 REP: MV
CLIENT: ASE
DUE: 12/17/96
REF #:31129

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:

SAMPLE ID.	DATE	TIME	MATRIX	NO. OF SAMPLES	TPH- GASOLINE (EPA 5030/8015)	TPH- GASOLINE/BTEX/MTBE (EPA 5030/8015-8020)	TPH- DIESEL (EPA 3510/8015)	PURGABLE AROMATICS (EPA 602/8020)	PURGABLE HALOCARBONS (EPA 601/8010)	VOLATILE ORGANICS (EPA 624/8240)	BASE/NUETRALS, ACIDS (EPA 625/8270)	OIL & GREASE (EPA 5520 E&F or B&F)	LUFT METALS (5) (EPA 6010+7000)	TITLE 22 (CAM 17) (EPA 6010+7000)	TCLP (EPA 1311/1310)	STLC- CAM WET (EPA 1311/131	REACTIVITY CORROSIVITY IGNITABILITY	HOLD
MW-4 6.0'	12/9	12:45	Soil	1		X												
MW-4 11.0'	↓	12:53	↓	1														X
MW-4 16.0'	↓	13:10	↓	1														X
MW-4 21.0'	↓	13:17	↓	1														X

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY LABORATORY:	COMMENTS:
Robert E. Kitay 17:45	[illegible] 1049	[illegible] 1330	Chris Rowley 1330	
(signature) (time)	(signature) (time)	(signature) (time)	(signature) (time)	
Robert E. Kitay 12-9-96	[illegible] 12-9-96	[illegible] 12-9-96	Chris Rowley 12/10/96	
(printed name) (date)	(printed name) (date)	(printed name) (date)	(printed name) (date)	
Company- ASE	Company- Chromalab	Company- Chromalab	Company- Chromalab	

Lock in secure location overnight

CHROMALAB, INC.

Environmental Services (SDB)

January 15, 1997 *Submission #:* 9701074

AQUA SCIENCE ENGINEERS INC

Atten: Robert Kitay

Project: ZIMA CENTER CORPORATION *Project#:* 3011
Received: January 8, 1997

re: One sample for Gasoline and BTEX compounds analysis.
Method: *EPA 8015M SW846 8020A Nov 1990*

Client Sample ID: **MW-6-21.0'**
Spl#: 113277 *Matrix:* SOIL
Sampled: January 7, 1997 *Run#:* 4852 *Analyzed:* January 14, 1997

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	N.D.	1.0	N.D.	102	1
BENZENE	N.D.	0.0050	N.D.	86.0	1
TOLUENE	N.D.	0.0050	N.D.	85.0	1
ETHYL BENZENE	N.D.	0.0050	N.D.	94.5	1
XYLENES	N.D.	0.0050	N.D.	90.2	1
MTBE	N.D.	0.0050	N.D.	96.5	1

Kayvan Kimyai
Chemist

Marianne Alexander
Gas/BTEX Supervisor

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

0'14/113275 - 113277

01500

Aqua Science Engineers, Inc.
2411 Old Crow Canyon Road, #4,
San Ramon, CA 94583
(510) 820-9391 - FAX (510) 837-4853

Chain of Custody

DATE 1-7-97 PAGE 1 OF 1

SAMPLERS (SIGNATURE) (PHONE NO.)
Robert E. Kitay (510) 820-9391

PROJECT NAME Zima Center Corporation NO. 3011
ADDRESS 2951 High Street, Oakland, CA

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:

SAMPLE ID.	DATE	TIME	MATRIX	NO. OF SAMPLES	TPH- GASOLINE (EPA 5030/8015)	TPH- GASOLINE/BTEX/MTBE (EPA 5030/8015-8020)	TPH- DIESEL (EPA 3510/8015)	PURGABLE AROMATICS (EPA 602/8020)	PURGABLE HALOCARBONS (EPA 601/8010)	VOLATILE ORGANICS (EPA 624/8240)	BASE/NUETRALS, ACIDS (EPA 625/8270)	OIL & GREASE (EPA 5520 E&F or B&F)	LUFT METALS (5) (EPA 6010+7000)	TITLE 22 (CAM 17) (EPA 6010+7000)	TCLP (EPA 1311/1310)	STLC- CAM WET (EPA 1311/1310)	REACTIVITY CORROSIVITY IGNITABILITY	1701.D
MW-6-6.0'	1/7	13:30	Soil	1														X
MW-6-11.0'		13:52																X
MW-6-16'		14:00																X
MW-6-21.0'		14:15				X	~~X~~											
MW-6-25.0'		14:36																X

SUBM #: 9701074 REP: MV
CLIENT: ASE
DUE: 01/15/97
REF #:31530

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY LABORATORY:	COMMENTS:
Robert C. Kitay 9:57 1-8-97	1100	1838	1838 1/8/97	
(signature) (time)	(signature) (time)	(signature) (time)	(signature) (time)	
Robert E. Kitay	B. Morrow 1-8-97	B. Morrow 1-8-97	S. Antone	
(printed name) (date)	(printed name) (date)	(printed name) (date)	(printed name) (date)	
Company- ASE	Company- Chromalab	Company- Chromalab	Company- CL	

CHROMALAB, INC.

Environmental Service (SDB)

Sample Receipt Checklist

Client Name: AQUA SCIENCE

Date/Time Received: 1/8/97 (Date) / 1100 (Time)

Reference/Subm #: 31530/9701074

Received by: BM (Initials)

Checklist completed by: Crowley (Signature) / 1/9/97 (Date)

Carrier name: client - ChromaLab -

Shipping container in good condition?	NA____	Yes ✓	No____
Custody seals intact on shipping container?	NA ✓	Yes____	No____
Custody seals intact on sample bottles?	NA ✓	Yes____	No____
Chain of custody present?		Yes ✓	No____
Chain of custody signed when relinquished and received?		Yes ✓	No____
Chain of custody agrees with sample labels?		Yes ✓	No____
Samples in proper container/bottle?		Yes ✓	No____
Sample containers intact?		Yes ✓	No____
Sufficient sample volume for indicated test?		Yes ✓	No____
All samples received within holding time?		Yes ✓	No____
Container/Trip Blank temperature in compliance?	Temp: 4.8 °C	Yes ✓	No____
Water - VOA vials have zero headspace?		Yes____	No____

Water - pH upon receipt?____pH adjusted____Check performed by____ / chemist for VOAs

Any NO response must be detailed in the comments section below. If items are not applicable, they should be marked NA.

==========

Client contacted: _____ Date contacted: _____ Person contacted: _____

Contacted by: _____ Regarding: _____

Comments: _____

_____

_____

Corrective Action: _____

_____

_____

APPENDIX E

Well Sampling Field Logs

aqua science engineers inc.

WELL SAMPLING FIELD LOG

Project Name and Address: Zima Center Corporation, 2951 High Street, Oakland, CA
Job #: 3011 Date of sampling: 12-13-96
Well Name: MW-2 Sampled by: SA
Total depth of well (feet): 19.82 Well diameter (inches): 2"
Depth to water before sampling (feet): 6.85
Thickness of floating product if any: none
Depth of well casing in water (feet): 12.97
Number of gallons per well casing volume (gallons): 2.2
Number of well casing volumes to be removed: 4
Req'd volume of groundwater to be purged before sampling (gallons): 9
Equipment used to purge the well: Dedicated Poly Bailer
Time Evacuation Began: 13:40 Time Evacuation Finished: 13:59
Approximate volume of groundwater purged: 9
Did the well go dry?: no After how many gallons: —
Time samples were collected: ~~1430~~ 15:30
Depth to water at time of sampling: 8.41
Percent recovery at time of sampling: 87 %
Samples collected with: Dedicated Poly Bailer
Sample color: clear Odor: Slight HC odor
Description of sediment in sample: none

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
1	68.6	7.48	751
2	68.6	7.11	784
3	68.6	6.89	786
4	68.6	6.85	789

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
MW-2	3	40ml VOAs	HCl	Yes	TPHg/BTEX/MTBE

2411 Old Crow Canyon Road #4 San Ramon, CA 94583 • 510-820-9391 • Fax 510-837-4853

aqua science engineers inc.

WELL SAMPLING FIELD LOG

Project Name and Address: Zima Center Corporation, 2951 Hgh Street, Oakland, CA
Job #: 3011 Date of sampling: 12-13-96
Well Name: MW-5 Sampled by: SF
Total depth of well (feet): 29.32 Well diameter (inches): 2"
Depth to water before sampling (feet): ~~6.89~~ 6.25
Thickness of floating product if any: None
Depth of well casing in water (feet): 23.07
Number of gallons per well casing volume (gallons): 4
Number of well casing volumes to be removed: 4
Req'd volume of groundwater to be purged before sampling (gallons): 16
Equipment used to purge the well: Dedicated Poly Bailer
Time Evacuation Began: 14:25 Time Evacuation Finished: 15:00
Approximate volume of groundwater purged: 16
Did the well go dry?: No After how many gallons: -
Time samples were collected: ~~15:00~~ 15:20
Depth to water at time of sampling: 6.89
Percent recovery at time of sampling: 97%
Samples collected with: Dedicated Poly Bailer
Sample color: Clear Odor: Slight HC odor
Description of sediment in sample: Small amount of Brown Silt

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
1	68.9	7.40	1008
2	68.8	7.19	964
3	68.6	7.16	829
4	68.6	7.10	821

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
MW-5	3	40 ml VOAs	HCl	Yes	TPH-g/BTEX/MTBE

2411 Old Crow Canyon Road #4 San Ramon, CA 94583 • 510-820-9391 • Fax 510-837-4853

aqua science engineers inc.

WELL SAMPLING FIELD LOG

Project Name and Address: Zimpa Center Corporation, 2951 High Street, Oakland, CA
Job #: 2011 Date of sampling: 1-13-97
Well Name: MW-6 Sampled by: SF
Total depth of well (feet): 28.24 Well diameter (inches): 2"
Depth to water before sampling (feet): 4.79
Thickness of floating product if any: none
Depth of well casing in water (feet): 23.45
Number of gallons per well casing volume (gallons): 4
Number of well casing volumes to be removed: 4
Req'd volume of groundwater to be purged before sampling (gallons): 16
Equipment used to purge the well: 12 volt PVC Pump
Time Evacuation Began: 10:45 Time Evacuation Finished: 11:10
Approximate volume of groundwater purged: 16
Did the well go dry?: no After how many gallons: -
Time samples were collected: 11:15
Depth to water at time of sampling: 5.08
Percent recovery at time of sampling: 99%
Samples collected with: Dedicated Poly Bailer
Sample color: Clear Odor: none
Description of sediment in sample: Brown Silt

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
1	62.9	8.86	755
2	65.7	8.46	928
3	66.4	8.31	1049
4	66.6	8.24	1065

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
MW-6	3	40 ml VOAs	HCl	Yes	TPHg/BTEX/MTBE

2411 Old Crow Canyon Road #4, San Ramon, CA 94583 • 510-820-9391 • Fax 510-837-4853

APPENDIX F

Analytical Report and Chain of Custody Form
For Groundwater Samples

CHROMALAB, INC.

Environmental Services (SDB)

December 20, 1996

Submission #: 9612184

AQUA SCIENCE ENGINEERS INC

Atten: Scott Ferriman

Project: ZIMA CENTER CORPORATION *Project#:* 3011
Received: December 13, 1996

re: One sample for Gasoline, BTEX & MTBE analysis.
Method: *EPA 8015M SW846 8020A Nov 1990*

Client Sample ID: **MW-2**
Spl#: 110815 *Matrix:* WATER
Sampled: December 13, 1996 *Run#:* 4593 *Analyzed:* December 20, 1996

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	1900	50	N.D.	115	1
BENZENE	110	0.50	N.D.	108	1
TOLUENE	110	0.50	N.D.	106	1
ETHYL BENZENE	120	0.50	N.D.	103	1
XYLENES	330	0.50	0.131	102	1
MTBE	65	5.0	N.D.	97.6	1

Note: Surrogate recovery was outside QA/QC limits due to sample interference. See Surrogate Summary page.

Kayvan Kimyai
Chemist

Marianne Alexander
Gas/BTEX Supervisor

CHROMALAB, INC.

Environmental Services (SDB)

December 20, 1996

Submission #: 9612184

AQUA SCIENCE ENGINEERS INC

Atten: Scott Ferriman

Project: ZIMA CENTER CORPORATION *Project#:* 3011
Received: December 13, 1996

re: One sample for Gasoline, BTEX & MTBE analysis.
Method: *EPA 8015M SW846 8020A Nov 1990*

Client Sample ID: **MW-5**
Spl#: 110816 *Matrix:* WATER
Sampled: December 13, 1996 *Run#:* 4593 *Analyzed:* December 20, 1996

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	3600	500	N.D.	115	10
BENZENE	180	5.0	N.D.	108	10
TOLUENE	350	5.0	N.D.	106	10
ETHYL BENZENE	81	5.0	N.D.	103	10
XYLENES	510	5.0	0.131	102	10
MTBE	430	50	N.D.	97.6	10

Kayvan Kimyai
Chemist

Marianne Alexander
Gas/BTEX Supervisor

CHROMALAB, INC.

Environmental Services (SDB)

December 20, 1996 *Submission #:* 9612184

AQUA SCIENCE ENGINEERS INC

Atten: Scott Ferriman

Project: ZIMA CENTER CORPORATION *Project#:* 3011
Received: December 13, 1996

re: **Surrogate** report for 2 samples for Gasoline, BTEX & MTBE
Method: EPA 8015M SW846 8020A Nov 1990
Lab Run#: 4593
Matrix: WATER

Sample#	Client Sample ID	Surrogate	% Recovered	Recovery Limits
110815-1	MW-2	TRIFLUOROTOLUENE	147	65-135
110816-1	MW-5	TRIFLUOROTOLUENE	104	65-135

Sample#	QC Sample Type	Surrogate	% Recovered	Recovery Limits
111798-1	*Reagent blank (MDB)*	TRIFLUOROTOLUENE	103	65-135
111799-1	*Spiked blank (BSP)*	TRIFLUOROTOLUENE	106	65-135

V125
QCSURR1229 KAYVAN 20-Dec-96 1

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

184 / 110815 - 110816

Aqua Science Engineers, Inc.
2411 Old Crow Canyon Road, #4,
San Ramon, CA 94583
(510) 820-9391 - FAX (510) 837-4853

Chain of Custody

31192

DATE 12-13-96 PAGE 1 OF 1

SAMPLERS (SIGNATURE) Scott T. Ferriman (PHONE NO.) 510-820-9391

PROJECT NAME Zim's Center Corporation NO. 3011

ADDRESS 2951 High Street, Oakland CA

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:

5-Day

SAMPLE ID.	DATE	TIME	MATRIX	NO. OF SAMPLES	TPH-GASOLINE (EPA 5030/8015)	TPH-GASOLINE/BTEX (EPA 5030/8015-8020)	TPH-DIESEL (EPA 3510/8015)	PURGABLE AROMATICS (EPA 602/8020)	PURGABLE HALOCARBONS (EPA 601/8010)	VOLATILE ORGANICS (EPA 624/8240)	BASE/NUETRALS, ACIDS (EPA 625/8270)	OIL & GREASE (EPA 5520 E&F or B&F)	LUFT METALS (5) (EPA 6010+7000)	TITLE 22 (CAM 17) (EPA 6010+7000)	TCLP (EPA 1311/1310)	STLC-CAM WET (EPA 1311/1310)	REACTIVITY CORROSIVITY IGNITABILITY
MW-2	12-13-96	15:30	water	3		X											
MW-5	12-13-96	15:20	water	3		X											

SUBM #: 9612184 REP: MV
CLIENT: ASE
DUE: 12/20/96
REF #: 31192

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY LABORATORY:	COMMENTS:
Scott T. Ferriman 15:35	B Morton 1531	B Morton 1805	Mimie Park 1805	
(signature) (time)	(signature) (time)	(signature) (time)	(signature) (time)	
Scott T. Ferriman 12-13-96	B Morton 12-13-96	B Morton 12-13-96	Mimie Park 12/13/96	
(printed name) (date)	(printed name) (date)	(printed name) (date)	(printed name) (date)	
Company- ASE, Inc.	Company- Chromalab	Company-	Company- Chromalab	

CHROMALAB, INC.

Environmental Services (SDB)

January 15, 1997

Submission #: 9701135

AQUA SCIENCE ENGINEERS INC

Atten: Scott Ferriman

Project: ZIMA CENTER CORPORATION *Project#:* 3011
Received: January 13, 1997

re: One sample for Gasoline, BTEX & MTBE analysis.
Method: *EPA 8015M SW846 8020A Nov 1990*

Client Sample ID: **MW-6**
Spl#: 113782 *Matrix:* WATER
Sampled: January 13, 1997 *Run#:* 4854 *Analyzed:* January 14, 1997

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	N.D.	50	N.D.	100	1
BENZENE	N.D.	0.50	N.D.	102	1
TOLUENE	N.D.	0.50	N.D.	101	1
ETHYL BENZENE	N.D.	0.50	N.D.	95.9	1
XYLENES	N.D.	0.50	N.D.	97.6	1
MTBE	N.D.	5.0	N.D.	82.0	1

Kayvan Kimyai
Chemist

Marianne Alexander
Gas/BTEX Supervisor

510-837-4853 MV 01/15

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

135/113782

31599

Aqua Science Engineers, Inc.
2411 Old Crow Canyon Road, #4,
San Ramon, CA 94583
(510) 820-9391 - FAX (510) 837-4853

Chain of Custody

DATE 1-13-97 PAGE 1 OF 1

SAMPLERS (SIGNATURE) Scott T. Lee (PHONE NO.) 510-820-9391

PROJECT NAME Zim Center Corporation NO. 3011

ADDRESS 2951 High Street, Oakland, CA

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:

48 hour Rush

SAMPLE ID.	DATE	TIME	MATRIX	NO. OF SAMPLES	TPH-GASOLINE (EPA 5030/8015)	TPH-GASOLINE/BTEX/MTBE (EPA 5030/8015-8020)	TPH-DIESEL (EPA 3510/8015)	PURGABLE AROMATICS (EPA 602/8020)	PURGABLE HALOCARBONS (EPA 601/8010)	VOLATILE ORGANICS (EPA 624/8240)	BASE/NUETRALS, ACIDS (EPA 625/8270)	OIL & GREASE (EPA 5520 E&F or B&F)	LUFT METALS (5) (EPA 6010+7000)	TITLE 22 (CAM 17) (EPA 6010+7000)	TCLP (EPA 1311/1310)	STLC- CAM WET (EPA 1311/1310)	REACTIVITY CORROSIVITY IGNITABILITY
MW-6	1-13-97	11:15	water	3		X											

SUBM #: 9701135 REP: MV
CLIENT: ASE
DUE: 01/15/97
REF #:31599

RUSH

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY LABORATORY:	COMMENTS:
Scott T. Lee 15:36	G. Moran 1536	G. Moran 1625	Mimie Park 1625	
(signature) (time)	(signature) (time)	(signature) (time)	(signature) (time)	
Scott T. Ferriman 1-13-97	G. Moran 1-13-97	R Moran 1/13/97	Mimie Park 1/13/97	
(printed name) (date)	(printed name) (date)	(printed name) (date)	(printed name) (date)	
Company- ASE, Inc.	Company- Chromalab	Company- Chromalab	Company- Chromalab	

CHROMALAB, INC.
Environmental Service (SDB)

Sample Receipt Checklist

Client Name: AQUA SCIENCE Date/Time Received: 1/13/97 (Date) / 1536 (Time)

Reference/Subm #: 31599/970135 Received by: BM (Initials)

Checklist completed by: CRowley 1/14/97 (Signature / Date) Carrier name: client - Chromalab -

Shipping container in good condition?	NA____	Yes ✓	No____
Custody seals intact on shipping container?	NA ✓	Yes____	No____
Custody seals intact on sample bottles?	NA ✓	Yes____	No____
Chain of custody present?		Yes ✓	No____
Chain of custody signed when relinquished and received?		Yes ✓	No____
Chain of custody agrees with sample labels?		Yes ✓	No____
Samples in proper container/bottle?		Yes ✓	No____
Sample containers intact?		Yes ✓	No____
Sufficient sample volume for indicated test?		Yes ✓	No____
All samples received within holding time?		Yes ✓	No____
Container/Trip Blank temperature in compliance?	Temp: 2.5 °C	Yes ✓	No____
Water - VOA vials have zero headspace?		Yes ✓	No____

Water - pH upon receipt?____pH adjusted____Check performed by____/ Chemist for VOAs

Any NO response must be detailed in the comments section below. If items are not applicable, they should be marked NA.

==========

Client contacted: _____ Date contacted: _____ Person contacted: _____

Contacted by: _____ Regarding: _____

Comments: _____

_____

_____

_____

Corrective Action: _____

_____

_____