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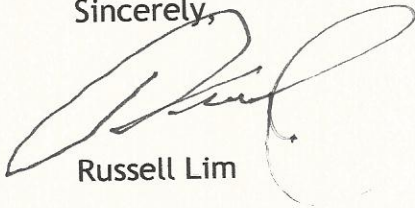
Alameda County Health Care Agency  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502

Re: RO #479, Report 

I declare under penalty of perjury that to the best of my knowledge the information and/or recommendations contained in the attached report is/are true and correct.

If you have further questions I may be reached at 925-381-3608.

Sincerely,



Russell Lim



Aqua Science Engineers, Inc. 55 Oak Court, Danville, CA 94526  
(925) 820-9391 - Fax (925) 837-4853 - [www.aquascienceengineers.com](http://www.aquascienceengineers.com)

August 29, 2014

Mr. Jerry Wickham  
Alameda County Health Care Services Agency  
1131 Harbor Bay Parkway  
Alameda, CA 94502-6577

**SUBJECT: OZONE-SPARGING AND VAPOR EXTRACTION REMEDIATION  
SYSTEMS SEMI-ANNUAL OPERATION REPORT AND CURRENT  
GROUNDWATER MONITORING WELL ANALYTICAL RESULTS  
Lim Family Property, RO #0000479  
250 8<sup>th</sup> Street  
Oakland, California**

Dear Mr. Wickham:

On behalf of our clients, Alice Ng and May Lee Lim, Aqua Science Engineers, Inc. (ASE) is pleased to submit this report detailing the semi-annual operation of the ozone-sparging and vapor-extraction remediation equipment at the subject site. This report also includes current groundwater monitoring well analytical results.

Should you require any additional information, please feel free to call me at (925) 820-9391.

Respectfully submitted,

AQUA SCIENCE ENGINEERS, INC.

A handwritten signature in black ink that reads "David Allen". The signature is written in a cursive, flowing style.

David Allen  
Vice President



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August 29, 2014

REMEDICATION SYSTEMS SEMI-ANNUAL OPERATION REPORT  
AND GROUNDWATER MONITORING RESULTS  
LIM FAMILY PROPERTY  
250 8TH STREET  
OAKLAND, CALIFORNIA  
(ASE JOB NO. 2808)  
(RO #0000479)  
(USTCF Claim Number 7699)

for

Alice Ng Lim & May Lee Lim  
c/o Mr. Russell Lim  
3111 Diablo View Road  
Lafayette, CA 94549

Submitted by:

Aqua Science Engineers  
55 Oak Court, Suite 220  
Danville, CA 94526  
(925) 820-9391



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## **1.0 INTRODUCTION**

This report details Aqua Science Engineers, Inc. (ASE's) operation of the ozone-sparging and vapor-extraction remediation systems at the Lim property located at 250 8<sup>th</sup> Street in Oakland, California since February 2014 (Figure 1). This report also provides current groundwater concentrations in the site's on and off-site groundwater monitoring wells.

## **2.0 WEEKLY OPERATION AND MAINTENANCE ACTIVITIES**

ASE personnel visited the site on a regular basis to maintain the remediation equipment and to comply with Bay Area Air Quality Management District (BAAQMD) permit requirements. During most visits, ASE personnel completes the following:

- Record the vacuum influence of the vapor-extraction system,
- Measure and record the influent vapor concentration of each individual vapor-extraction well with ASE's photoionization detector (PID),
- Measure with ASE's PID and record the influent vapor concentration, which provides the total hydrocarbon concentration entering the remediation system. This concentration is less than the sum of the individual vapor-extraction wells due to fresh air that enters the system as a safety mechanism by ASE for the granulated activated carbon canisters (GAC's) installed in November 2012,
- Measure with ASE's PID and record hydrocarbon concentrations in the on and off-site utility boxes and the vapor-monitoring points to ensure that hydrocarbon vapors are not being forced to the atmosphere due to the sparging activities,
- Record alarms and information on the sparging remediation equipment,
- Inspect site security fencing.

## **3.0 REMEDIATION SYSTEMS OPERATION**

### **3.1 Ozone-Sparging Remediation System Operation**

Since February 2014, the ozone-sparging remediation equipment continued to operate in "high-flow ozone" mode into each of the ten sparging wells that are located on and off-site (Figure 2). Downtime for the ozone-sparging system only occurred for maintenance purposes and an occasional power failure at the site.

### **3.2 Vapor-Extraction Remediation System Operation**

Since February 2014, the ASE vapor-extraction system has operated continuously. The ASE fixed vapor-extraction system consists of a 100 cfm Rotron blower piped to a moisture knock-out drum. The negative-pressure side of the ASE vapor-extraction system is plumbed to the manifold of vapor-extraction wells. The positive-pressure side of the ASE vapor-extraction system is plumbed to two 200 pound GAC canisters filled with virgin, vapor-phase GAC supplied to ASE by Baker Corporation. These GAC canisters are plumbed in series, and are approved for used by Bay Area Air Quality Management District (BAAQMD) Permit To Operate - Plant Number 18100. The ASE vapor-extraction system, plumbed to two 200 pound GAC canisters (ASE VE System), became fully operational on November 12, 2012.



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All existing vapor-extraction wells (VE-1 through VE-9) and monitoring wells that were fitted with vapor-extraction plumbing (MW-3 and MW-4R) have been used for vapor-extraction in various percentages of open mode. For the most part, wells with consistent measureable hydrocarbons, using the PID, are in 50% - 100% open mode, with the remainder of the wells in a 15% - 25% open mode to allow for air movement through the entire vadose zone. During this last period, VE has been most-concentrated on monitoring well MW-3, the well with the highest concentration of hydrocarbons based on routine PID readings. As shown on the attached Vapor-Extraction System Log, the influent vapor concentrations, when measured using ASE's PID, have been fairly stable in all of the VE wells. Note that the total influent concentration measured just prior to the GAC canisters is far less than the sum of the individual vapor-extraction wells. This is due to fresh air that enters the system as a safety mechanism by ASE. The BAAQMD permit requires ASE to measure the influent and effluent on a weekly basis to determine when breakthrough of hydrocarbons occurs on the first and second GAC canisters.

### 3.21 Periodic Influent Vapor Sampling

Since February 2014, ASE collected one influent vapor sample, on August 19, 2014, to determine petroleum hydrocarbon concentrations in the extracted subsurface air.

- The sample collected on August 19, 2014, is an influent vapor sample collected from a sample port on the negative side of the blower (on the VE subsurface piping manifold and before the fresh-air dilution point) and consisted of soil vapors being extracted from all the vapor-extraction wells on-site and off-site (VE-1 through VE-9) and monitoring wells MW-3 and MW-4R. This sample (sample Id. INF-VE-8.19.14) was used to calculate the pounds of hydrocarbons removed from the site during the consistent operating parameters of the VE system.

The sample was collected in a new 1-liter Tedlar bag, labeled individually, and submitted to McCampbell Analytical of Pittsburg, California under chain of custody procedures. The sample was analyzed by McCampbell for total petroleum hydrocarbons as gasoline (TPH-G) by EPA Method 8015, and MTBE, benzene, toluene, ethylbenzene, and xylenes (collectively known as MBTEX) by EPA Method 8021. The analytical results are summarized below, and copies of the certified analytical report from McCampbell is attached in Appendix A.

- INF-VE-8.19.14 influent vapor sample contained 640 ug/L TPH-G, 5.7 ug/L benzene, 10 ug/L toluene, < 0.25 ug/L ethylbenzene, 6.6 ug/L xylenes, and < 2.5 ug/L MTBE.

The influent vapor sample collected during this period is one order of magnitude lower than the sample collected in February 2014. This indicates that concentrations are dropping in the vadose zone, but there still exists moderate levels of hydrocarbons near monitoring well MW-3 within the vadose zone that require continued removal with the VE system.

*ASE plans to continue operation of the ASE VE System to (a) reduce the elevated concentration of hydrocarbons identified in well MW-3, (b) continue to alleviate the potential for build-up of vapors due to sparging beneath the off-site properties, and (c) to stimulate air-flow through the polluted zone for assistance in bio-remediation.*



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### 3.22 *Estimated TPH-G Extracted from Vadose Zone*

Using the analytical results of the influent vapor samples collected on August 19, 2014, ASE has calculated the volume of gasoline, in gallons, extracted from the subsurface both on and off-site. As shown on the attached Gasoline Extraction Log, and associated Mass Extraction Calculations, ASE estimates that 74.1 gallons of gasoline, in vapor phase, have been removed from the subsurface vadose zone between February 2014 and August 2014. Since start-up of the VE System, ASE estimates that 1,155.9 gallons of gasoline, in vapor phase, have been removed from the subsurface vadose zone. These calculations used a typical operating flowrate of 50 cfm (based on the blower curve supplied with the regenerative blower), and used actual days of operation of the system. For months of operation where actual air bag samples were not collected, ASE estimated the gallons extracted per day by using the actual air bag analytical results of the samples collected prior to and after the months without data, and finding the average between these months. See Appendix B for a copy of the Gasoline Extraction Log.

## **4.0 REMEDIATION SYSTEMS AND SITE MONITORING**

### 4.1 Remediation Equipment Operating Parameters

ASE visits the site on a regular basis to confirm that the remediation equipment, both sparging and vapor-extraction, are working as designed. As the attached Vapor-Extraction Equipment Log shows, ASE logged/measured the system's operating flow in cfm, the overall influent vapor concentration (using a PID), and the individual well influent vapor concentrations. As the attached Sparging Well Log shows, ASE logged the operating parameters of each sparging well, showing the duration and injection media low or high-flow air/ozone). See Appendix B for copies of the Sparging Well Log and Vapor-Extraction System Log.

### 4.2 Hydrocarbon Vapor Readings from Utility and Well Boxes Using PID

ASE measured for hydrocarbon vapors in the VMP's, remediation well boxes, and sidewalk utility boxes across 8<sup>th</sup> Street using a PID in an effort to determine if stripped hydrocarbons were being forced to the atmosphere by operation of the sparging wells. As shown on the attached Hydrocarbon Vapor Measurement Log, PID readings have always been "0" ppmv since the start-up of the vapor-extraction remediation system. ASE also measured for hydrocarbons in the utility boxes in the sidewalk in front of the subject site and within the well boxes and underground piping manifold box on site. Again, at no time were any PID readings above "0" observed in any sampling point. See Appendix B for a copy of the Hydrocarbon Vapor Measurement Log.



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## **5.0 GROUNDWATER MONITORING WELL SAMPLE COLLECTION**

### **5.1 Water levels, Free-Product Thickness, and Flow Direction**

On June 30, 2014, ASE measured the depth to water in monitoring wells MW-1, MW-2, MW-4R, MW-5, and MW-7 using an electric water level sounder, see Table One. The depth to groundwater in monitoring well MW-3 could not be measured due to a malfunction in the interface probe. Monitoring wells MW-6 and MW-8 are no longer sampled. The surface of the groundwater was also checked for the presence of free-floating hydrocarbons or sheen. No free-floating hydrocarbons were present in any of the monitoring wells other than a sheen on the surface of water in monitoring well MW-3. This is the fourth consecutive semi-annual sampling event where neither monitoring well MW-3 nor MW-4R contained free-floating hydrocarbons thicker than a sheen. Groundwater elevation data is presented in Table One. Water levels were somewhat unusual during this sampling event with some water levels higher than the previous sampling event, while others are lower. In particular, the water level in monitoring well MW-2 appeared anomalous and was not used for contouring.

A groundwater elevation (potentiometric surface) contour map is shown as Figure 3. The groundwater flow direction at the site is generally to the south with an approximate gradient of approximately 0.005 feet/foot during this sampling period. The gradient and flow direction are generally consistent with previous findings.

### **5.2 Groundwater Sample Collection**

On June 30, 2014, ASE collected groundwater samples from six monitoring wells for analysis. Prior to sampling, the wells were purged of three well casing volumes of groundwater using disposable polyethylene bailers. 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 disposable polyethylene bailers. The groundwater samples were decanted from the bottom of the bailers using low-flow emptying devices into 40-ml volatile organic analysis (VOA) vials, preserved with hydrochloric acid, sealed without headspace and labeled. All samples were stored on ice for transport to Kiff Analytical, LLC, (KIFF) of Davis, California under appropriate chain of custody documentation. Well sampling purge water was contained in a sealed and labeled 55-gallon steel drum for temporary storage until off-site disposal can be arranged. See Appendix C for copies of the well sampling field logs.

### **5.3 Analytical Results for Groundwater Samples**

All groundwater samples were analyzed by KIFF for TPH-G, benzene, toluene, ethylbenzene, total xylenes (collectively known as BTEX), fuel oxygenates including methyl tertiary butyl ether (MTBE), and lead scavengers by EPA Method 8260B, and total petroleum hydrocarbons as diesel (TPH-D) by modified EPA Method 8015. The analytical results are tabulated in Table Two, and copies of the certified analytical report and chain of custody form are included in Appendix D. The groundwater analytical results are summarized below:

- Hydrocarbon concentrations in groundwater samples collected from monitoring well MW-1 are very similar to concentrations from the previous sampling event, with a very slight decrease in TPH-G and TPH-D concentrations and slight increases in benzene and DIPE concentrations.





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- Hydrocarbon concentrations, other than TPH-D, in groundwater samples collected from monitoring well MW-2 increased to the highest concentrations since June 2011.
- No free-floating hydrocarbons were detected in monitoring well MW-3 this period. However, very high hydrocarbon concentrations (97,000 ppb TPH-G, 5,900 ppb TPH-D, 4,600 ppb benzene, 2,100 ppb toluene, 860 ppb ethyl benzene, and 11,000 ppb total xylenes) were detected in the groundwater sample collected from this monitoring well. All of these concentrations were similar to or an increase from the previous sampling event.
- No free-floating hydrocarbons were detected in monitoring well MW-4R this period. Hydrocarbon concentrations in groundwater samples collected from monitoring well MW-4R generally increased from the historic low concentrations during the last sampling event in December 2013 to concentrations generally similar to the results one year ago, with the exception of benzene which increased to the highest concentration since June 2011.
- No hydrocarbon concentrations were detected in groundwater samples collected from monitoring well MW-5 during this sampling period, other than 0.70 ppb DIPE. These results are consistent with previous results.
- There was a slight increase in hydrocarbon concentrations detected in groundwater samples collected from monitoring well MW-7 during this sampling event from the previous sampling event in December 2013. However, there is a long term decreasing trend in hydrocarbon concentrations for samples collected from this well dating back to 2010.

See Figure 4 for a map showing TPH-G and benzene concentrations during this sampling period. Concentrations in groundwater samples collected from the following wells exceeded Environmental Screening Levels (ESLs) for drinking water as presented in the "Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater" document prepared by the California Regional Water Quality Control Board, San Francisco Bay Region dated December 2013:

- Concentrations of TPH-G, TPH-D, benzene, toluene, ethyl benzene, total xylenes, and TBA in the groundwater sample collected from monitoring wells MW-2, MW-3, and MW-7 exceeded ESLs.
- Concentrations of TPH-G, TPH-D and benzene in groundwater samples collected from monitoring wells MW-1 and MW-4R exceeded ESLs.

For the most part, current groundwater concentrations are trending lower than in previous sampling events; this is obviously due to the ongoing soil-vapor and groundwater remediation activities. ASE believes that continuation of the remediation systems will have an even greater affect on decreasing the hydrocarbon concentrations in groundwater over the next 6 months, since free-floating hydrocarbons are no longer present beneath the site.



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## **6.0 DISCUSSION OF COST**

The cost for operation of the ozone-sparging and vapor-extraction systems is the largest portion of the annual operating budget set for this site by the USTCF. Typically, continued operation of such remediation systems is based on multiple factors – one being the cost for operation. At the point where diminishing returns are achieved (cost outweighed by remedial effect on the subsurface soil and groundwater), operation of remediation equipment is typically suspended for a period of time to see if a rebounding effect will occur.

- Based on hydrocarbon concentrations in groundwater, it appears that the remedial effect has eliminated free-phase hydrocarbons in wells MW-3 and MW-4R, and total hydrocarbon concentrations on the remaining monitoring wells are generally showing a decreasing trend due to the ozone-sparging.
- Based on the hydrocarbon concentrations in the vadose-zone, it appears that the remedial effect continues to remove hydrocarbons in both soil and groundwater that are being stripped by ozone-sparging.

It is the opinion of ASE that the data within this report supports the continued operation of both the ozone-sparging and vapor-extraction systems until February of 2015 or until diminishing returns appears to have been achieved.

## **7.0 COMPARISON TO LOW-THREAT CLOSURE POLICY CRITERIA**

A brief evaluation on how the current site conditions compare to the California Regional Water Quality Control Board Low-Threat Closure Policy are as follows:

- All of the general criteria have been met.
- The site best compares to scenario 2 of the groundwater-specific criteria, since it appears that (a) the plume is greater than 100-feet in length but not over 250-feet in length, (b) the site no longer contains free-product, (c) the nearest water supply well or surface water body is greater than 1,000-feet from the plume boundary, and (d) the MTBE concentration does not exceed 1,000 ppb. However, monitoring well MW-3 contains 4,600 ppb benzene, which exceeds the maximum allowable benzene concentration allowed under the criteria of 3,000 ppb. It is thought that the benzene concentration will drop below this concentration with additional remediation.
- A soil vapor survey will be needed to meet the criteria outlined in Appendix 4, Scenario 4 – Direct Measurement of Soil Gas Concentrations, which appears to be the most appropriate scenario given current site conditions. This soil vapor survey should take place at the completion of the soil and groundwater remediation.



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## 8.0 RECOMMENDATIONS

Based on the findings and the details reported within, ASE recommends the following:

Continued operation of the remediation systems at the site. Re-evaluate the need for vapor-extraction remediation in February 2105. Maintain the current remediation system's operating parameters, adjusting the VE wells as necessary based on periodic influent air sampling with the ASE PID. Collect groundwater samples from all monitoring wells in December 2014. Prepare a Remediation Effectiveness and Groundwater Results report within the first quarter of 2015.

## 9.0 SIGNATURES

Should you require any additional information, please feel free to contact us at (925) 820-9391.

Respectfully submitted,

AQUA SCIENCE ENGINEERS, INC.

A handwritten signature in cursive script that reads "David Allen".

David Allen  
Vice President



A handwritten signature in cursive script that reads "Robert E. Kitay".

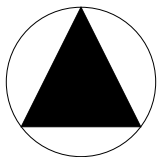
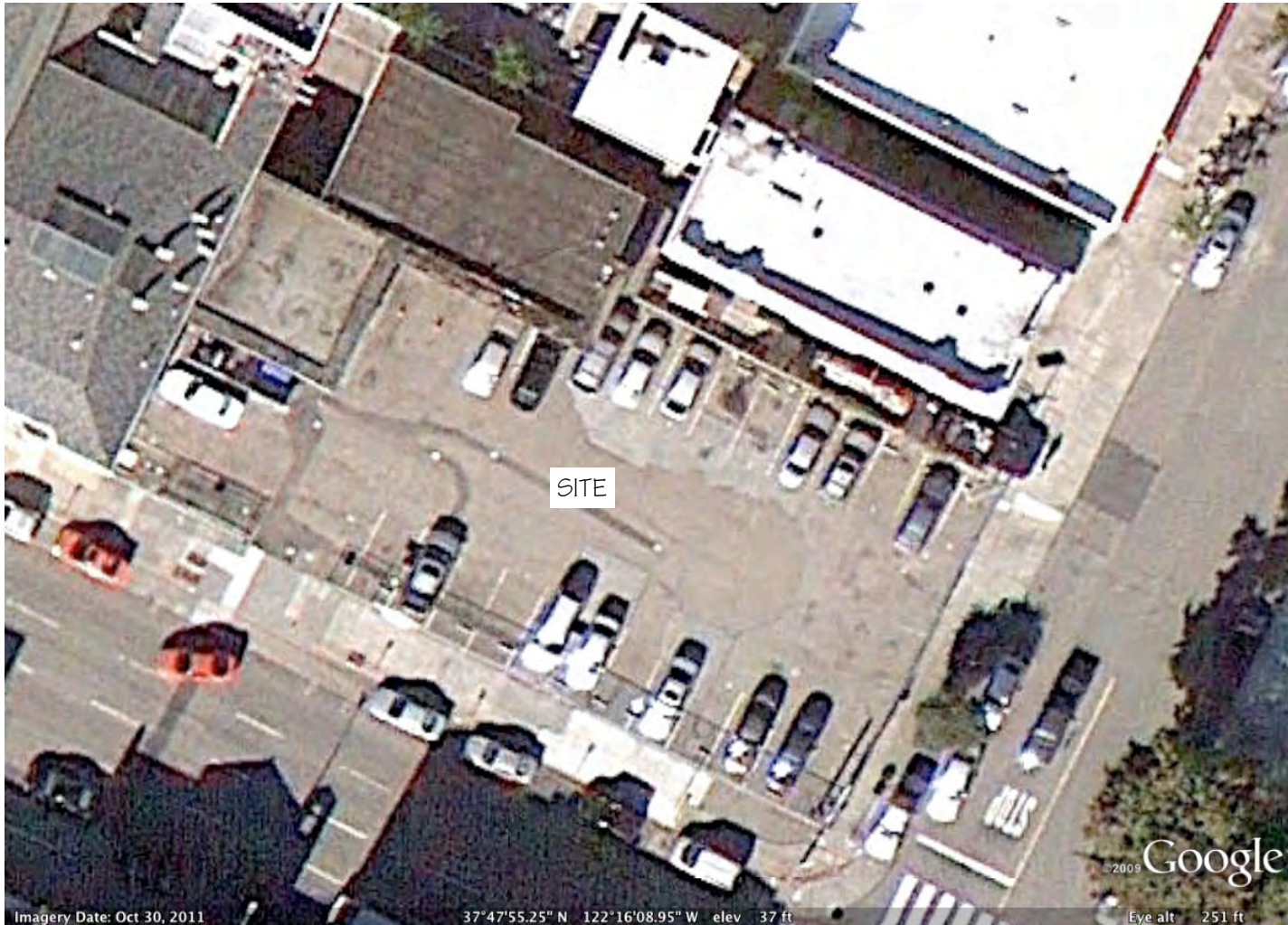
Robert Kitay, P.G.  
Senior Geologist

Cc: Mr. Jerry Wickhman, ACHCSA, electronically  
Mr. Russ Lim, responsible party representative, electronically  
RWQCB Geotracker Database, electronically



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## **FIGURES**



NORTH

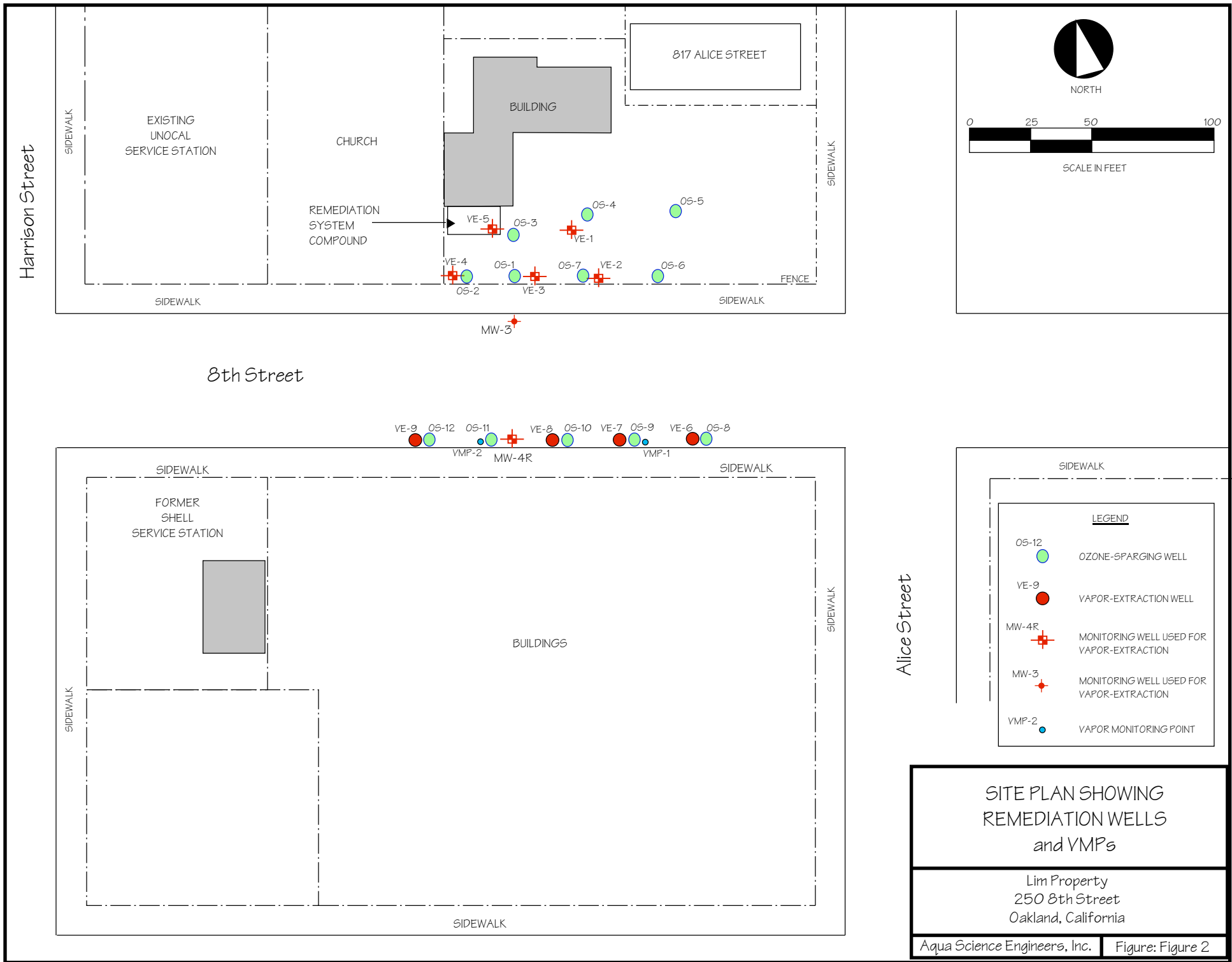
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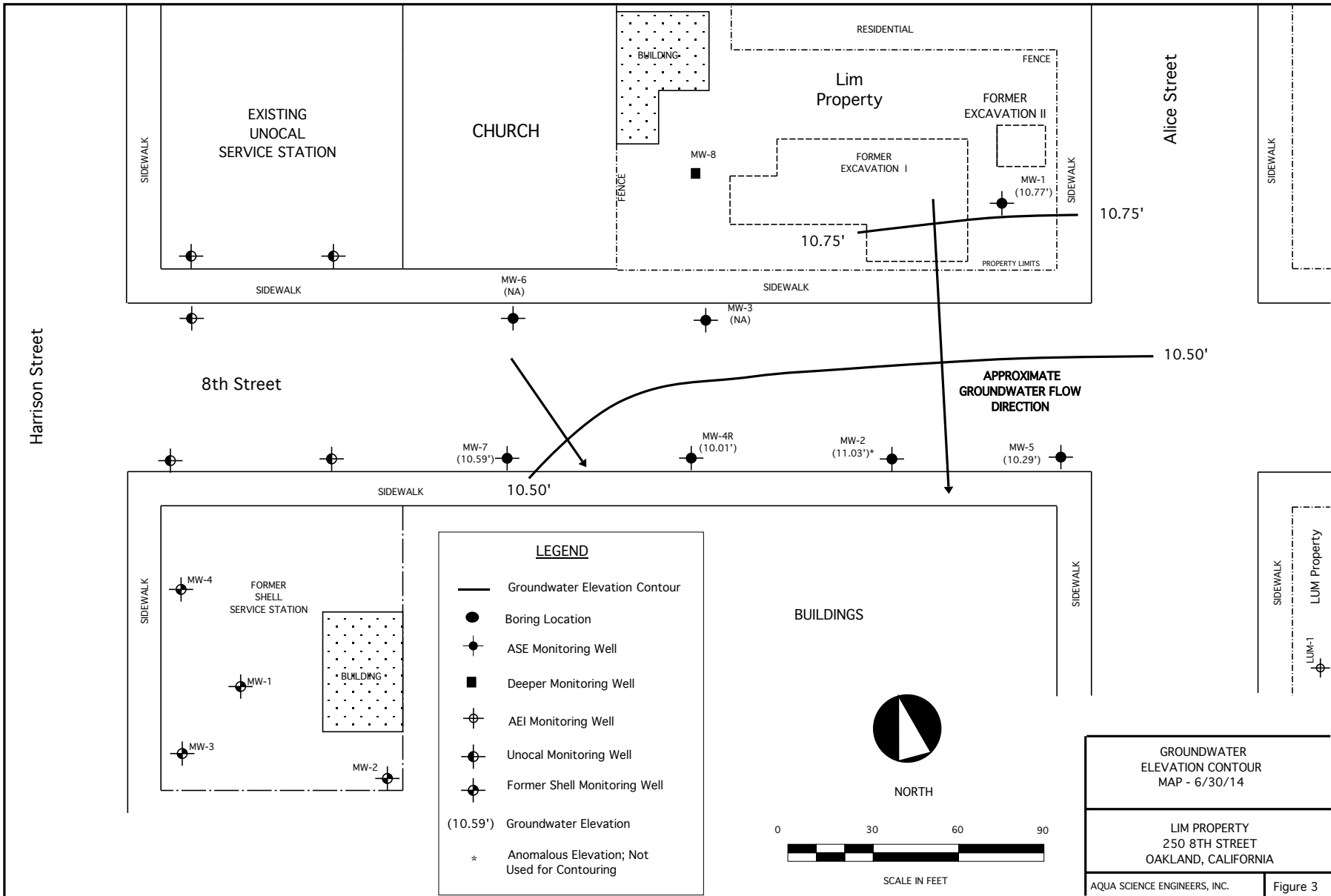
## SITE LOCATION MAP

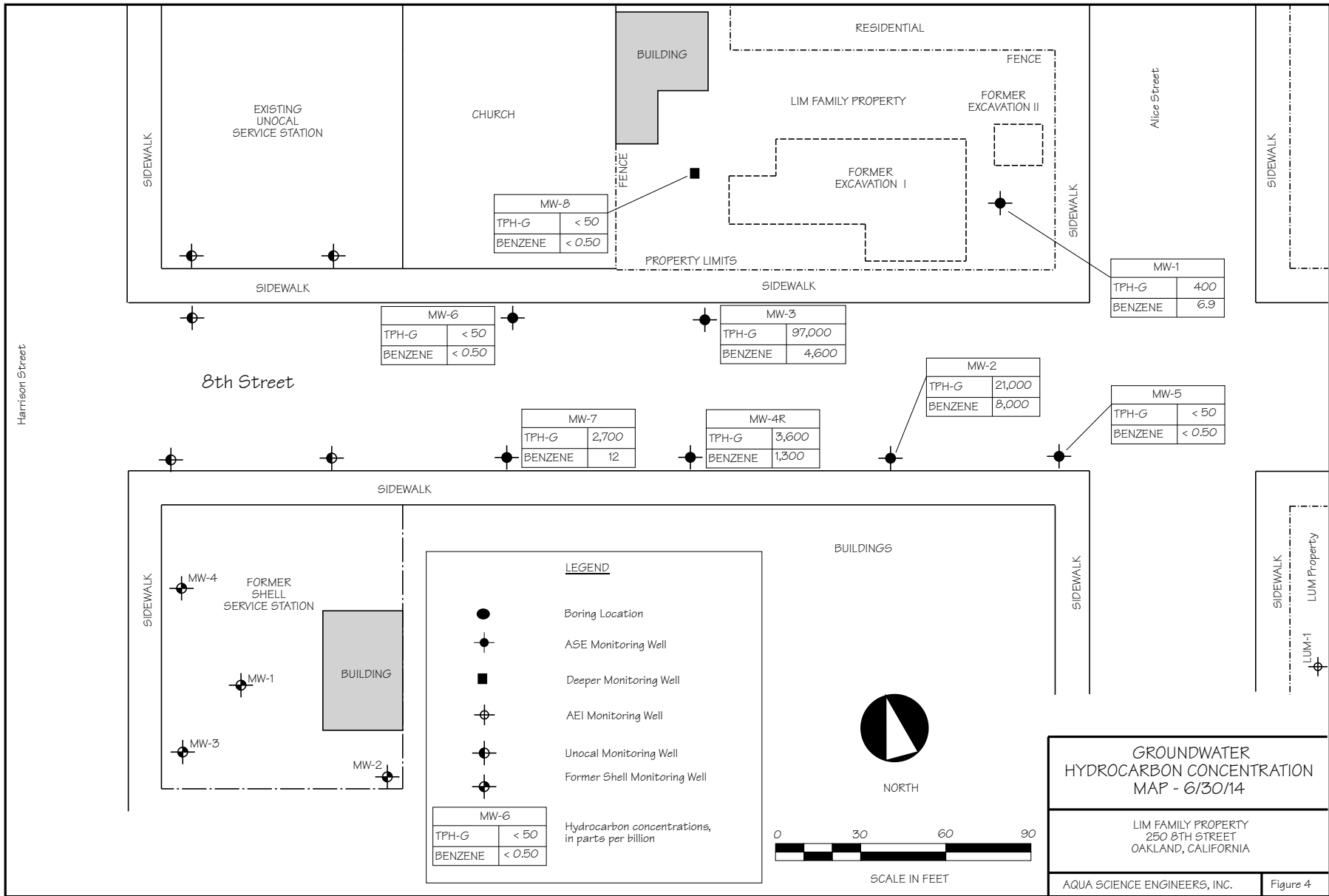
Lim Family Property  
250 8th Street  
Oakland, California

Aqua Science Engineers

Figure 1











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## **TABLES**

**TABLE ONE**  
 Groundwater Elevation Data  
 Lim Family Property  
 250 8th Street  
 Oakland, CA

Well I.D.	Date of Measurement	Top of Casing Elevation (msl)	Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation (msl)
<b>MW-1</b>	01/30/95	25.51	16.21		9.30
	04/12/95		15.71		9.80
	07/14/95		16.71		8.80
	10/17/95		17.72		7.79
	01/12/96		18.03		7.48
	07/25/96		16.82		8.69
	01/06/97		15.60		9.91
	07/08/97		17.31		8.20
	01/26/98		15.21		10.30
	07/23/98		15.38		10.13
	01/05/99		16.82		8.69
	07/13/99		15.89		9.62
	01/12/00		17.44		8.07
	04/24/00		16.37		9.14
	07/20/00		16.30		9.21
	10/24/00		17.25		8.26
	01/18/01		17.29		8.22
	04/05/01		15.88		9.63
	07/17/01		16.54		8.97
	10/25/01		16.89		8.62
	01/21/02		14.92		10.59
	04/11/02	14.02		11.49	
	06/11/02	29.72	15.33		14.39
	09/17/02		15.96		13.76
	12/18/02		16.14		13.58
	03/25/03		16.16		13.56
	06/23/03		16.01		13.71
	09/26/03		16.57		13.15
	12/18/03		16.41		13.31
	03/12/04		14.64		15.08
	06/17/04		15.71		14.01
	09/17/04		16.35		13.37
	12/17/04	16.10		13.62	
	04/28/05	14.10		15.62	
	07/19/05	15.94		13.78	
	10/03/05	16.34		13.38	
	12/06/05	16.21		13.51	
	03/15/06	16.21		13.51	
	06/28/06	14.92		14.80	
	08/31/06	15.60		14.12	
	11/21/06	17.20		12.52	
02/12/07	16.12		13.60		
05/02/07	16.92		12.80		
08/09/07	17.58		12.14		
12/06/07	18.60		11.12		
02/26/08	17.13		12.59		
05/30/08	18.17		11.55		
08/28/08	18.47		11.25		
12/11/08	19.19		10.53		
03/31/09	17.59		12.13		
12/31/09	18.57		11.15		
06/03/10	16.94		12.78		
12/20/10	18.21		11.51		
06/30/11	17.43		12.29		
06/22/12	17.08		12.64		
12/13/12	17.32		12.40		
06/18/13	18.13		11.59		
12/23/13	18.29		11.43		
<b>06/30/14</b>		<b>18.95</b>		<b>10.77</b>	

**TABLE ONE**  
 Groundwater Elevation Data  
 Lim Family Property  
 250 8th Street  
 Oakland, CA

Well I.D.	Date of Measurement	Top of Casing Elevation (msl)	Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation (msl)
<b>MW-2</b>	01/30/95	23.99	15.02		8.97
	04/12/95		14.75		9.24
	07/14/95		16.02		7.97
	10/17/95		16.94		7.05
	01/12/96		17.05		6.94
	07/25/96		16.02		7.97
	01/06/97		14.34		9.65
	07/08/97		16.52		7.47
	01/26/98		14.10		9.89
	07/23/98		14.70		9.29
	01/05/99		16.01		7.98
	07/13/99		15.40		8.59
	01/12/00		16.76		7.23
	04/24/00		15.67		8.32
	07/20/00		15.70		8.29
	10/24/00		16.56		7.43
	01/18/01		16.47		7.52
	04/05/01		15.88		8.11
	07/17/01		15.35		8.64
	10/25/01		15.63		8.36
	01/21/02		13.55		10.44
	04/11/02		13.74		10.25
	06/11/02		28.19	14.06	
	09/17/02	14.67			13.52
	12/18/02	14.88		13.31	
	03/25/03	15.11		13.08	
	06/23/03	14.94		13.25	
	09/26/03	15.49		12.70	
	12/18/03	15.13		13.06	
	03/12/04	13.50		14.69	
	06/17/04	14.63		13.56	
	09/17/04	15.19		13.00	
	12/17/04	14.88		13.31	
	04/28/05	13.39		14.80	
	07/19/05	15.27		12.92	
	10/03/05	15.57		12.62	
	12/06/05	15.35		12.84	
	03/15/06	12.65		15.54	
	06/28/06	14.45		13.74	
	08/31/06	15.37		12.82	
	11/21/06	16.22		11.97	
	02/12/07	16.12		12.07	
05/02/07	16.12		12.07		
08/09/07	16.85		11.34		
12/06/07	17.95		10.24		
02/26/08	16.15		12.04		
05/30/08	17.33		10.86		
08/28/08	17.53		10.66		
12/11/08	18.28		9.91		
03/31/09	16.63		11.56		
12/31/09	17.46		10.73		
06/03/10	16.00		12.19		
12/20/10	17.25		10.94		
06/30/11	16.55		11.64		
06/22/12	16.36		11.83		
12/13/12	16.24		11.95		
06/18/13	17.28		10.91		
12/23/13	18.60		9.59		
<b>06/30/14</b>			<b>17.16</b>		<b>11.03</b>

**TABLE ONE**  
 Groundwater Elevation Data  
 Lim Family Property  
 250 8th Street  
 Oakland, CA

Well I.D.	Date of Measurement	Top of Casing Elevation (msl)	Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation (msl)	
<b>MW-3</b>	01/12/00	24.25	16.68	0.01	7.58*	
	04/24/00		15.58	0.15	8.79*	
	07/20/00		16.01	0.41	8.57*	
	10/24/00		16.95	0.21	7.47*	
	01/18/01		16.63	0.21	7.79*	
	04/05/01		15.16	0.23	9.27*	
	07/17/01		15.92	0.39	8.64*	
	10/25/01		16.26	0.38	8.29*	
	01/21/02		14.08	0.16	10.30*	
	04/11/02		14.59	0.54	10.09*	
	06/11/02		28.58	15.16	0.90	14.14*
	09/17/02			16.04	1.24	13.53*
	10/01/02			16.14	1.23	13.42*
	10/25/02			15.80	0.60	13.26*
	11/12/02			15.87	0.47	13.09*
	12/18/02			15.42	0.47	13.54*
	03/25/03			16.11	1.14	13.38*
	06/23/03	16.58		1.86	13.49*	
	09/26/03	16.11		0.66	13.00*	
	12/18/03	15.83		0.59	13.22*	
	03/12/04	14.51		1.21	15.04*	
	06/17/04	15.25		0.68	13.87*	
	09/17/04	16.14		0.96	13.21*	
	12/17/04	15.05		0.25	13.73*	
	01/13/05	13.40		0.45	15.54*	
	04/28/05	15.31		2.43	15.21*	
	07/19/05	16.29		1.67	13.63*	
	10/03/05	16.10		1.47	13.66*	
	12/06/05	15.04	1.17	14.48*		
	03/15/06	12.65	2.41	15.49*		
	06/28/06	13.55	2.61	16.16*		
	08/31/06	14.85	2.20	15.49*		
	11/21/06	16.05	1.10	13.41*		
	02/12/07	15.96	0.35	12.90*		
	05/02/07	15.11	0.09	13.54*		
08/09/07	15.83	0.09	12.82*			
12/06/07	18.10	0.50	10.88*			
02/26/08	16.47	0.22	12.29*			
05/30/08	17.90	0.70	11.24*			
08/28/08	18.05	0.54	10.96*			
12/11/08	18.57	0.46	10.38*			
03/31/09	16.89	0.23	11.87*			
12/31/09	17.64	sheen	10.94*			
06/03/10	16.58	0.56	12.45*			
12/20/10	17.20	0.45	11.74*			
06/30/11	15.92		12.66			
06/22/12	16.64	0.69	12.48*			
12/13/12	16.24	None	12.34			
06/18/13	17.01		11.57			
12/23/13	18.29		10.29			
<b>06/30/14</b>		<b>NOT MEASURED - PROBE MALFUNCTION</b>				

**TABLE ONE**  
 Groundwater Elevation Data  
 Lim Family Property  
 250 8th Street  
 Oakland, CA

Well I.D.	Date of Measurement	Top of Casing Elevation (msl)	Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation (msl)	
<b>MW-4</b>	01/12/00	23.71	17.24		6.47	
	04/24/00		16.18		7.53	
	07/20/00		16.18		7.53	
	10/24/00		17.03		6.68	
	01/18/01		16.87		6.84	
	04/05/01		15.28		8.43	
	07/17/01		15.92		7.79	
	10/25/01		16.23		7.48	
	01/21/01		14.14		9.57	
	04/11/02		14.43		9.28	
	06/11/02		28.61	14.72		13.89
	09/17/02			15.29		13.32
	12/18/02			15.20		13.41
	03/25/03			15.53		13.08
	06/23/03			15.35		13.26
	09/26/03	15.91			12.70	
	12/18/03	15.63			12.98	
	03/12/04	13.88			14.73	
	06/17/04	15.03			13.58	
	09/17/04	15.61			13.00	
	12/17/04	15.32			13.29	
	04/28/05	13.82			14.79	
	07/19/05	15.44			13.17	
	10/03/05	15.91			12.70	
	12/06/05	15.71			12.90	
	03/15/06	13.05			15.56	
	06/28/06	14.49			14.12	
	08/31/06	15.75			12.86	
	11/21/06	16.70		11.91		
	02/12/07	16.51		12.10		
	05/02/07	16.51		12.10		
	08/09/07	17.17		11.44		
	12/06/07	18.08		10.53		
02/26/08	16.57		12.04			
05/30/08	17.66		10.95			
08/28/08	17.98		10.63			
12/11/08	18.61		10.00			
03/31/09	18.75		2.00	11.46*		
<b>MW-4R</b>	12/31/09	28.78	19.85	2.30	10.77*	
	06/03/10		18.67	2.57	12.17*	
	12/20/10		18.95	2.00	11.43*	
	06/30/11		16.45		12.33	
	06/22/12		16.69		12.09	
	12/13/12		16.61		12.17	
	06/18/13		17.60		11.18	
	12/23/13		19.07		9.71	
<b>06/30/14</b>	<b>18.77</b>			<b>10.01</b>		

**TABLE ONE**  
 Groundwater Elevation Data  
 Lim Family Property  
 250 8th Street  
 Oakland, CA

Well I.D.	Date of Measurement	Top of Casing Elevation (msl)	Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation (msl)
<b>MW-5</b>	06/11/02	28.40	14.23		14.17
	09/17/02		14.80		13.60
	12/18/02		15.08		13.32
	03/25/03		15.31		13.09
	06/23/03		15.16		13.24
	09/26/03		15.72		12.68
	12/18/03		15.47		12.93
	03/12/04		13.44		14.96
	06/17/04		14.90		13.50
	09/17/04		15.45		12.95
	12/17/04		15.12		13.28
	04/28/05		13.63		14.77
	07/19/05		15.67		12.73
	10/03/05		15.81		12.59
	12/06/05		15.60		12.80
	03/15/06		12.81		15.59
	06/28/06		15.21		13.19
	08/31/06		15.55		12.85
	11/21/06		17.09		11.31
	02/12/07		16.29		12.11
	05/02/07		16.21		12.19
	08/09/07		16.97		11.43
	12/06/07		18.35		10.05
	02/26/08		16.35		12.05
	05/30/08		17.62		10.78
	08/28/08		17.72		10.68
	12/11/08		18.62		9.78
	03/31/09		16.94		11.46
	12/31/09		17.73		10.67
	06/03/10		16.20		12.20
	12/20/10		17.72		10.68
	06/30/11		16.75		11.65
06/22/12	16.41		11.99		
12/13/12	16.46		11.94		
06/18/13	17.48		10.92		
12/23/13	18.62		9.78		
<b>06/30/14</b>			<b>18.11</b>		<b>10.29</b>

**TABLE ONE**  
 Groundwater Elevation Data  
 Lim Family Property  
 250 8th Street  
 Oakland, CA

Well I.D.	Date of Measurement	Top of Casing Elevation (msl)	Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation (msl)	
<b>MW-6</b>	06/11/02	29.20	14.95		14.25	
	09/17/02		15.47		13.73	
	12/18/02		15.43		13.77	
	03/25/03		15.67		13.53	
	06/23/03		15.48		13.72	
	09/26/03		NOT MEASURED - SOUNDER MALFUNCTION			
	12/18/03		15.79		13.41	
	03/12/04		14.04		15.16	
	06/17/04		15.13		14.07	
	09/17/04		15.74		13.46	
	12/17/04		15.54		13.66	
	04/28/05		13.91		15.29	
	07/19/05		15.30		13.90	
	10/03/05		15.35		13.85	
	12/06/05		15.69		13.51	
	03/15/06		13.14		16.06	
	06/28/06		14.44		14.76	
	08/31/06		16.25		12.95	
	11/21/06		16.69		12.51	
	02/12/07		16.63		12.57	
	05/02/07		16.57		12.63	
	08/09/07		17.19		12.01	
	12/06/07		17.95		11.25	
	02/26/08		16.66		12.54	
	05/30/08		17.64		11.56	
	08/28/08		18.03		11.17	
	12/11/08		18.54		10.66	
	03/31/09		17.10		12.10	
	12/31/09		18.00		11.20	
	06/03/10		16.58		12.62	
	12/20/10		17.40		11.80	
	06/30/11		17.02		12.18	
06/22/12	16.70		12.50			
12/13/12	16.77		12.43			
06/18/13	17.69		11.51			
12/23/13	18.74		10.46			
<b>06/30/14</b>	<b>No Longer measured</b>					

**TABLE ONE**  
 Groundwater Elevation Data  
 Lim Family Property  
 250 8th Street  
 Oakland, CA

Well I.D.	Date of Measurement	Top of Casing Elevation (msl)	Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation (msl)
<b>MW-7</b>	06/11/02	28.95	15.19		13.76
	09/17/02		15.73		13.22
	12/18/02		NOT MEASURED - CAR PARKED OVER WELL		
	03/25/03		15.96		12.99
	06/23/03		15.75		13.20
	09/26/03		16.29		12.66
	12/18/03		16.03		12.92
	03/12/04		14.28		14.67
	06/17/04		15.42		13.53
	09/17/04		16.02		12.93
	12/17/04		15.45		13.50
	04/28/05		14.15		14.80
	07/19/05		15.30		13.65
	10/03/05		16.25		12.70
	12/06/05		16.05		12.90
	03/15/06		13.36		15.59
	06/28/06		14.81		14.14
	08/31/06		16.13		12.82
	11/21/06		17.06		11.89
	02/12/07		16.97		11.98
	05/02/07		16.93		12.02
	08/09/07		17.56		11.39
	12/06/07		18.32		10.63
	02/26/08		16.93		12.02
	05/30/08		17.97		10.98
	08/28/08		18.33		10.62
	12/11/08		18.86		10.09
	03/31/09		17.37		11.58
	12/31/09		18.26		10.69
	06/03/10		16.86		12.09
12/20/10	17.70		11.25		
06/30/11	17.36		11.59		
06/22/12	17.03		11.92		
12/13/12	17.01		11.94		
06/18/13	18.02		10.93		
12/23/13	19.77		9.18		
<b>06/30/14</b>			<b>18.36</b>	<b>10.59</b>	
<b>MW-8</b>	02/26/08	30.14	21.50		8.64
	05/30/08		22.52		7.62
	08/28/08		23.27		6.87
	12/11/08		23.15		6.99
	03/31/09		21.46		8.68
	12/31/09		22.75		7.39
	06/03/10		21.06		9.08
	12/20/10		22.18		7.96
	06/30/11		21.95		8.19
	06/22/12		21.23		8.91
	12/13/12		21.89		8.25
	06/18/13		22.44		7.70
12/23/13	23.22		6.92		
<b>06/30/14</b>		<b>No Longer measured</b>			

**Notes:**

\* = Adjusted for the presence of free-floating oil by the equation: Top of Casing Elevation - Depth to Water + (0.8 x Floating Hydrocarbon Thickness) = Groundwater Elevation (Adjusted).

Top of casing elevations resurveyed by Mid Coast Engineers on 6/27/02 and 7/11/02.







**TABLE TWO**

Summary of Chemical Analysis of Groundwater Samples  
 Petroleum Hydrocarbon Concentrations  
 All results are in parts per billion

Well/ Date Sampled	TPH Gasoline	TPH Diesel	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE	DIFE	TBA	Other Oxys	EDC	EDB
<u>MW-3</u>												
01/12/00	140,000	13,000*	22,000	19,000	2,400	11,000	< 500	---	---	---	---	---
04/24/00	240,000	700,000*	33,000/	52,000/	5,700/	28,000/	< 5,000	---	---	---	---	---
			35,000	87,000	18,000	84,000						
07/20/00	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
10/24/00	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
01/18/01	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
04/05/01	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
07/17/01	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
10/25/01	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
01/22/02	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
04/11/02	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
06/11/02	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
09/17/02	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
12/18/02	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
03/25/03	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
06/23/03	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
09/26/03	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
12/18/03	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
03/12/04	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
06/17/04	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
09/17/04	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
11/10/04	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
12/17/04	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
04/28/05	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
07/19/05	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
10/03/05	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
12/10/05	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
03/15/06	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
06/28/06	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
8/31/06	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
11/21/06	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
02/23/07	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
05/02/07	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
08/09/07	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
12/06/07	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
02/26/08	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
05/30/08	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
08/28/08	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
12/11/08	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
03/31/09	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
12/31/09	60,000	< 25,000	7,500	6,500	1,000	6,600	< 20	< 20	< 90	< 20	< 20	< 20
06/03/10	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
12/20/10	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
06/30/11	140,000	< 40,000	12,000	21,000	4,000	17,000	< 20	< 20	< 90	< 20	< 20	< 20
06/22/12	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS (0.69-feet)											
12/13/12	99,000	< 12,000	5,800	5,800	2,100	11,000	< 10	< 10	60	< 10	< 10	< 10
06/18/13	100,000	220,000	6,700	7,900	2,000	15,000	< 10	< 10	< 50	< 10	< 10	< 10
12/23/13	80,000	4,700	4,800	2,100	860	11,000	< 15	< 15	110	< 15	< 15	< 15
<b>06/30/14</b>	<b>97,000</b>	<b>5,900</b>	<b>4,600</b>	<b>6,200</b>	<b>1,300</b>	<b>11,000</b>	<b>&lt; 15</b>	<b>&lt; 15</b>	<b>500</b>	<b>&lt; 15</b>	<b>&lt; 15</b>	<b>&lt; 15</b>

TABLE TWO

Summary of Chemical Analysis of Groundwater Samples  
 Petroleum Hydrocarbon Concentrations  
 All results are in parts per billion

Well/ Date Sampled	TPH Gasoline	TPH Diesel	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE	DIFE	TBA	Other Oxys	EDC	EDB
<b>MW-4</b>												
01/12/00	99,000	7,900*	16,000	20,000	2,100	12,000	<2,500	---	---	---	<50	<50
04/24/00	54,000	44,000*	3,400/ 4,500	13,000/ 20,000	1,800/ 2,800	8,800/ 14,000	<1,300	---	---	---	<250	<250
07/20/00	8,000	3,500	9,200/ 11,000	20,000/ 22,000	2,500/ 3,400	12,000/ 13,000	<1,000	---	---	---	<200	<200
10/24/00	98,000	8,000*	21,000	29,000	2,700	15,000	<1,000	---	---	---	<250	<250
01/18/01	91,000	12,000	17,000/ 15,000	21,000/ 21,000	2,500/ 2,800	13,000/ 11,000	<1,000	---	---	---	<250	<250
04/05/01	88,000	7,500*	6,900/ 3,200	18,000/ 9,000	2,500/ 1,300	12,000/ 6,400	<1,000	---	---	---	<50	<50
07/17/01	95,000	<3,000	8,000	16,000	2,900	11,000	49	---	---	---	69	---
10/25/01	89,000	<2,200	9,300	18,000	2,400	12,000	66	---	---	---	72	<50
01/22/02	80,000	<2,300	4,600	15,000	2,500	11,000	<50	---	---	---	<50	<50
04/11/02	90,000	<900	6,600	18,000	2,800	12,000	55	---	---	---	---	---
06/25/02	110,000	<3,000	10,000	20,000	2,900	13,000	<100	---	---	---	<100	<100
09/17/02	110,000	<3,000	9,600	21,000	2,800	13,000	<100	---	---	---	<100	<100
12/18/02	97,000	<4,000	8,000	20,000	2,600	12,000	<50	---	---	---	<50	<50
03/25/03	97,000	<7,500	7,600	22,000	2,500	12,000	<100	---	---	---	<100	<100
06/23/03	100,000	<3,000	9,600	22,000	3,300	15,000	<100	---	---	---	<100	<100
09/26/03	110,000	<4,000	9,300	17,000	2,100	10,000	<50	---	---	---	87	<50
12/18/03	110,000	<2,000	8,900	19,000	2,500	12,000	<25	---	---	---	46	<25
03/12/04	96,000	<4,000	6,500	18,000	2,700	12,000	<40	---	---	---	<40	<40
06/17/04	110,000	<4,000	10,000	20,000	2,900	13,000	<50	---	---	---	93	<50
09/17/04	78,000	--	9,300	15,000	2,400	11,000	<50	---	---	---	---	---
11/10/04***	87,000	4,300	15,000	21,000	3,000	16,000	<1300	---	---	---	---	---
12/17/04	88,000	<3,000	8,500	16,000	2,800	12,000	<25	---	---	---	53	<25
04/28/05	110,000	<3,000	7,800	14,000	2,200	10,000	<25	<25	<25	<25	46	<25
07/19/05	90,000	na	10,000	13,000	2,300	10,000	<40	<20	<20	<20	73	<40
10/03/05	68,000	<800	9,400	4,000	1,800	8,700	23	23	<5.0	<20	62	<20
12/06/05	81,000	<1,500	8,900	7,200	2,200	9,500	<20	---	---	---	---	---
03/15/06	68,000	<3,000	7,300	14,000	2,500	10,000	<20	<20	<20	<20	<20	<20
06/28/06	61,000	<3,000	8,500	4,100	2,600	11,000	<20	<20	<5.0	<20	20	<20
08/31/06	68,000	<2,000	9,500	9,600	2,500	12,000	<20	<20	<5.0	<20	36	<20
11/21/06	68,000	<1,500	9,000	5,000	2,000	9,300	<20	<20	230	<20	42	<20
02/23/07	90,000	<2,000	11,000	11,000	2,800	12,000	<20	<20	290	<20	36	<20
05/02/07	56,000	<2,000	7,300	6,300	2,500	11,000	<15	<15	160	<15	20	<15
08/09/07	52,000	<2,000	7,600	2,600	2,100	8,400	<15	15	170	<15	31	<15
12/06/07	60,000	<2,000	13,000	2,000	2,800	11,000	<15	22	150	<15	<15	<15
02/26/08	42,000	<2,000	3,700	2,300	2,300	8,900	<15	<15	90	<15	<15	<15
05/30/08	64,000	<3,000	9,200	5,100	3,000	12,000	<15	<15	83	<15	19	<15
08/28/08	73,000	<5,000	9,700	5,500	3,300	12,000	<15	<15	<70	<15	---	---
12/11/08	120,000	<40,000	14,000	12,000	4,400	19,000	<25	<25	<150	<25	---	---
03/31/09	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
<b>MW-4R</b>												
12/31/09	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
06/03/10	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
12/20/10	NOT SAMPLED DUE TO FREE-FLOATING HYDROCARBONS											
06/30/11	190,000	<30,000	3,800	11,000	2,900	20,000	<25	<25	<150	<25	<25	<25
06/22/12	4,500	<200	31	53	5.0	500	6.3	6.1	180	<0.5	21	<0.5
12/13/12	3,700	<200	97	76	50	590	<0.50	1.0	41	<0.50	2.5	<0.50
06/18/13	3,800	110	37	33	10	400	1.5	2.5	120	<0.50	7.2	<0.50
12/23/13	240	100	<0.50	<0.50	<0.50	5.4	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50
<b>06/30/14</b>	<b>3,600</b>	<b>340</b>	<b>1,300</b>	<b>6.3</b>	<b>1.3</b>	<b>16</b>	<b>&lt;0.50</b>	<b>0.93</b>	<b>22</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>

TABLE TWO

Summary of Chemical Analysis of Groundwater Samples  
 Petroleum Hydrocarbon Concentrations  
 All results are in parts per billion

Well/ Date Sampled	TPH Gasoline	TPH Diesel	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE	DIFE	TBA	Other Oxys	EDC	EDB
<u>MW-5</u>												
06/11/02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	2.8	---	---	---	< 0.5	< 0.5
09/17/02	< 50	110	< 0.5	< 0.5	< 0.5	< 0.5	4.8	---	---	---	< 0.5	< 0.5
12/18/02	< 50	140	< 0.5	< 0.5	< 0.5	< 0.5	1.8	---	---	---	< 0.5	< 0.5
03/25/03	< 50	130	< 0.5	< 0.5	< 0.5	< 0.5	7.4	---	---	---	< 0.5	< 0.5
06/23/03	< 50	390	< 0.5	< 0.5	< 0.5	< 0.5	17	---	---	---	< 0.5	< 0.5
09/26/03	< 50	700	< 0.5	< 0.5	< 0.5	< 0.5	21	---	---	---	< 0.5	< 0.5
12/18/03	< 50	550	< 0.5	< 0.5	< 0.5	< 0.5	16	---	---	---	< 0.5	< 0.5
03/12/04	< 50	490	< 0.5	< 0.5	< 0.5	< 0.5	9.1	---	---	---	< 40	< 40
06/17/04	< 50	510	< 0.5	< 0.5	< 0.5	< 0.5	9.8	---	---	---	< 0.5	< 0.5
09/17/04	< 50	--	< 0.5	< 0.5	< 0.5	< 0.5	5.5	---	---	---	---	---
11/10/04***	< 50	370	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0	---	---	---	---	---
12/17/04	< 50	120	< 0.5	< 0.5	< 0.5	< 0.5	9.2	---	---	---	< 0.5	< 0.5
04/28/05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	2.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
07/19/05	< 50	na	< 0.5	< 0.5	< 0.5	< 0.5	6.1	2.1	< 5.0	< 0.5	< 0.5	< 0.5
10/03/05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	2.4	1.7	< 5.0	< 0.5	< 0.5	< 0.5
12/06/05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0	---	---	---	---	---
03/15/06	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	3.3	< 0.5	< 5.0	< 0.5	< 0.5	< 0.5
06/28/06	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	1.8	< 0.5	< 5.0	< 0.5	< 0.5	< 0.5
08/31/06	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	3.4	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
12/05/06	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	5.2	1.7	5.4	< 0.50	< 0.50	< 0.50
02/23/07	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	6.0	1.4	< 5.0	< 0.50	< 0.50	< 0.50
05/02/07	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	3.8	1.3	< 5.0	< 0.50	< 0.50	< 0.50
08/09/07	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	5.5	1.3	< 5.0	< 0.50	< 0.50	< 0.50
12/06/07	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	1.8	1.5	< 5.0	< 0.50	< 0.50	< 0.50
02/26/08	260	< 50	32	1.3	0.62	0.92	3.4	5.6	7.7	< 0.50	0.60	< 0.50
05/30/08	71	< 50	1.8	< 0.50	< 0.50	< 0.50	2.4	3.1	< 5.0	< 0.50	< 0.50	< 0.50
08/28/08	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	2.1	2.2	< 5.0	< 0.50	---	---
12/11/08	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	2.2	2.5	< 5.0	< 0.50	---	---
03/31/09	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	1.2	1.3	< 5.0	< 0.50	< 0.50	< 0.50
12/31/09	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	1.9	1.5	< 5.0	< 0.50	< 0.50	< 0.50
06/03/10	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	0.56	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
12/20/10	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	0.61	0.67	< 5.0	< 0.50	< 0.50	< 0.50
06/30/11	< 50	< 50	1.6	< 0.50	< 0.50	< 0.50	< 0.50	1.0	< 5.0	< 0.50	< 0.50	< 0.50
06/22/12	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
12/13/12	79	< 50	2.7	< 0.50	0.86	0.74	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
06/18/13	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
12/23/13	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.65	< 5.0	< 0.50	< 0.50	< 0.50
<b>06/30/14</b>	<b>&lt; 50</b>	<b>&lt; 50</b>	<b>&lt; 0.50</b>	<b>&lt; 0.50</b>	<b>&lt; 0.50</b>	<b>&lt; 0.50</b>	<b>&lt; 0.50</b>	<b>0.70</b>	<b>&lt; 5.0</b>	<b>&lt; 0.50</b>	<b>&lt; 0.50</b>	<b>&lt; 0.50</b>

**TABLE TWO**

Summary of Chemical Analysis of Groundwater Samples  
 Petroleum Hydrocarbon Concentrations  
 All results are in parts per billion

Well/ Date Sampled	TPH Gasoline	TPH Diesel	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE	DIFE	TBA	Other Oxys	EDC	EDB
<u>MW-6</u>												
06/11/02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	1.2	---	---	---	< 0.5	< 0.5
09/17/02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	1.0	---	---	---	< 0.5	< 0.5
12/18/02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	0.90	---	---	---	< 0.5	< 0.5
03/25/03	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0	---	---	---	< 0.5	< 0.5
06/23/03	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	---	---	---	< 0.5	< 0.5
09/26/03	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	---	---	---	< 0.5	< 0.5
12/18/03	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	---	---	---	< 0.5	< 0.5
03/12/04	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	---	---	---	< 0.5	< 0.5
06/17/04	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	---	---	---	< 0.5	< 0.5
09/17/04	< 50	--	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	---	---	---	---	---
11/10/04***	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0	---	---	---	---	---
12/17/04	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	---	---	---	< 0.5	< 0.5
04/28/05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
07/19/05	< 50	na	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0	< 0.5	< 0.5	< 0.5
10/03/05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0	< 0.5	< 0.5	< 0.5
12/06/05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0	---	---	---	---	---
03/15/06	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
06/28/06	< 50	< 50	< 0.5	< 0.5	< 0.5	0.65	< 0.5	< 0.5	< 5.0	< 0.5	< 0.5	< 0.5
08/31/06	< 50	< 50	< 0.50	2.4	0.90	4.0	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
11/21/06	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
02/23/07	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
05/02/07	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
08/09/07	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
12/06/07	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
02/26/08	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
05/30/08	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
08/28/08	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	---	---
12/11/08	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	---	---
03/31/09	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
12/31/09	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
06/03/10	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
12/20/10	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
06/30/11	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
06/22/12	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
12/13/12	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
06/18/13	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
12/23/13	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
<b>06/30/14</b>												

No Longer Sampled

**TABLE TWO**

Summary of Chemical Analysis of Groundwater Samples  
 Petroleum Hydrocarbon Concentrations  
 All results are in parts per billion

Well/ Date Sampled	TPH Gasoline	TPH Diesel	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE	DIFE	TBA	Other Oxys	EDC	EDB
<u>MW-7</u>												
06/25/02	38,000	<2,000	890	5,100	1,200	5,200	<20	---	---	---	<20	<20
09/17/02	26,000	<2,000	590	3,600	880	4,000	<20	---	---	---	<20	<20
12/18/02	NOT SAMPLED - CAR PARKED OVER WELL											
03/25/03	39,000	<2,900	410	7,700	1,000	6,400	<5.0	---	---	---	<2.5	<2.5
06/23/03	17,000	<1,000	440	2,600	630	2,600	<10	---	---	---	<10	<10
09/26/03	17,000	<1,000	230	1,800	470	2,200	<5.0	---	---	---	<5.0	<5.0
12/18/03	20,000	<1,000	290	2,500	590	2,900	<5.0	---	---	---	<5.0	<5.0
03/12/04	20,000	<1,500	300	3,000	760	3,200	<10	---	---	---	<10	<10
06/17/04	12,000	<800	250	1,800	450	1,900	<5.0	---	---	---	<5.0	<5.0
09/17/04	9,900	--	200	1,500	450	1,800	<5.0	---	---	---	---	---
11/10/04***	20,000	1,900	550	4,200	920	4,000	<500	---	---	---	---	---
12/17/04	14,000	<800	220	1,700	530	2,000	<3.0	---	---	---	<3.0	<3.0
04/28/05	13,000	<300	84	1,000	660	2,200	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
07/19/05	16,000	na	170	1,800	540	2,200	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5
10/03/05	7,400	<200	140	710	350	1,100	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50
12/06/05	22,000	<600	240	2,300	800	3,400	<5.0	---	---	---	---	---
03/15/06	3,800	<200	4.6	160	120	620	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50
06/28/06	6,400	<500	19.0	340	490	940	<0.90	<0.50	<5.0	<0.50	<0.90	<0.90
08/31/06	20,000	<600	160	2,200	1,300	3,500	<2.5	1.4	<15	<5.0	<2.5	<2.5
11/21/06	21,000	<1,000	240	2,500	880	3,400	<5.0	<5.0	<25	<5.0	<5.0	<5.0
02/23/07	10,000	<200	150	1,300	580	2,400	<2.5	<2.5	<15	<2.5	<2.5	<2.5
05/02/07	26,000	<1,000	300	2,400	1,800	6,700	<2.5	<2.5	<50	<2.5	<2.5	<2.5
08/09/07	13,000	<800	250	800	1,000	3,000	<2.5	<2.5	<15	<2.5	<2.5	<2.5
12/06/07	9,600	<1,000	160	850	530	2,000	<2.5	<2.5	45	<2.5	<2.5	<2.5
02/26/08	14,000	<800	190	1,000	740	3,000	<2.5	<2.5	69	<2.5	<2.5	<2.5
05/30/08	9,900	<200	160	620	590	2,300	<2.5	<2.5	<15	<2.5	<2.5	<2.5
08/28/08	11,000	<800	180	500	650	2,400	<2.5	<2.5	<15	<2.5	---	---
12/11/08	8,000	<500	160	300	540	1,600	<2.5	<2.5	<15	<2.5	---	---
03/31/09	5,600	<300	82	190	360	1,000	<1.5	<1.5	<7.0	<1.5	<1.5	<1.5
12/31/09	16,000	<800	140	1,200	750	2,800	<0.5	<0.50	10	<0.50	<0.50	<0.50
06/03/10	22,000	<2,000	160	1,000	1,300	3,500	<5.0	<5.0	<25	<5.0	<5.0	<5.0
12/20/10	23,000	<1,000	230	820	1,500	4,900	<5.0	<5.0	<25	<5.0	<5.0	<5.0
06/30/11	26,000	<4,000	190	310	1,800	3,900	<5.0	<5.0	<25	<5.0	<5.0	<5.0
06/22/12	10,000	<600	120	52	1,100	310	<2.0	<2.0	43	<2.0	<2.0	<2.0
12/13/12	16,000	610	78	80	1,000	940	<2.5	<2.5	<15	<2.5	<2.5	<2.5
06/18/13	6,000	250	19	22	310	390	<0.90	<0.90	6.3	<0.90	<0.90	<0.90
12/23/13	2,200	290	6.8	5.2	15	78	<0.50	<0.50	10	<0.50	<0.50	<0.50
<b>06/30/14</b>	<b>2,700</b>	<b>380</b>	<b>12</b>	<b>7.3</b>	<b>83</b>	<b>63</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>32</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>

## TABLE TWO

### Summary of Chemical Analysis of Groundwater Samples Petroleum Hydrocarbon Concentrations All results are in parts per billion

Well/ Date Sampled	TPH Gasoline	TPH Diesel	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE	DIFE	TBA	Other Oxys	EDC	EDB
<b>MW-8</b>												
02/26/08	< 50	< 50	0.51	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
05/30/08	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
08/28/08	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	---	---
12/11/08	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	---	---
03/31/09	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
12/31/09	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
06/03/10	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
12/20/10	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
06/30/11	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
06/22/12	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
12/13/12	< 50	56	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
06/18/13	< 50	83	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
12/23/13	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 0.50	< 0.50	< 0.50
<b>06/30/14</b>	<b>No Longer Sampled</b>											
ESL	100	100	1	40	30	20	5	NE	12	NE	0.5	0.05

**Notes:**

\* = Hydrocarbons reported are in the early diesel range, and do not match the laboratory standards.

\*\* = Hydrocarbons reported do not match the laboratory gasoline standard.

\*\*\* = Grab sample - Not purged

# = Estimated concentration reported due to overlapping fuel patterns.

/ = Results separated by a slash represent results from two different laboratory methods (8020/8260)

na = not analyzed

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

Most recent data in bold.

ESL = Environmental screening levels presented in the "Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater (December 2013)" document prepared by the California Regional Water Quality Control Board, San Francisco Bay Region.

TPH = Total petroleum hydrocarbons

EDC = 1,2-Dichloroethane

MTBE = Methyl tertiary butyl ether

EDB = 1,2-Dibromoethane

DIFE = Diisopropyl ether

TBA = Tery-butanol

Oxy = Oxygenates





Aqua Science Engineers, Inc. 55 Oak Court, Danville, CA 94526  
(925) 820-9391 - Fax (925) 837-4853 - [www.aquascienceengineers.com](http://www.aquascienceengineers.com)

## **APPENDIX A**

Certified Analytical Report  
and  
Chain of Custody Documentation  
for  
Air Bag Sample



# McC Campbell Analytical, Inc.

"When Quality Counts"

## Analytical Report

**WorkOrder:** 1408645

**Report Created for:** Aqua Science Engineers, Inc.  
55 Oak Court Suite 220  
Danville, CA 94526

**Project Contact:** Dave Allen

**Project P.O.:**

**Project Name:** #2808; LIM, 250 8th Street, Oakland

**Project Received:** 08/19/2014

Analytical Report reviewed & approved for release on 08/25/2014 by:

*Question about  
your data?*

[Click here to email  
McC Campbell](#)

Angela Rydelius,  
Laboratory Manager

***The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.***





## Glossary of Terms & Qualifier Definitions

**Client:** Aqua Science Engineers, Inc.  
**Project:** #2808; LIM, 250 8th Street, Oakland  
**WorkOrder:** 1408645

### Glossary Abbreviation

95% Interval	95% Confident Interval
DF	Dilution Factor
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not detected at or above the indicated MDL or RL
NR	Matrix interferences, or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix; or sample diluted due to high matrix or analyte content.
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
TEQ	Toxicity Equivalence

### Analytical Qualifiers

H	samples were analyzed out of holding time
S	spike recovery outside accepted recovery limits
c4	surrogate recovery outside of the control limits due to coelution with another peak(s) / cluttered chromatogram.
d1	weakly modified or unmodified gasoline is significant



## Analytical Report

**Client:** Aqua Science Engineers, Inc.  
**Project:** #2808; LIM, 250 8th Street, Oakland  
**Date Received:** 8/19/14 14:34  
**Date Prepared:** 8/20/14

**WorkOrder:** 1408645  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** µg/m<sup>3</sup>

### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
INF-VF-8.19.14	1408645-001A	Air	08/19/2014 11:15	GC19	94261

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
TPH(g)	640,000	H	25,000	1	08/20/2014 12:51
MTBE	ND	H	2500	1	08/20/2014 12:51
Benzene	5700	H	250	1	08/20/2014 12:51
Toluene	10,000	H	250	1	08/20/2014 12:51
Ethylbenzene	ND	H	250	1	08/20/2014 12:51
Xylenes	6600	H	250	1	08/20/2014 12:51
Surrogates	REC (%)	Qualifiers	Limits	Analytical Comments: d1,c4	
aaa-TFT_2	310	SH	70-130	08/20/2014 12:51	



## Analytical Report

**Client:** Aqua Science Engineers, Inc.  
**Project:** #2808; LIM, 250 8th Street, Oakland  
**Date Received:** 8/19/14 14:34  
**Date Prepared:** 8/20/14

**WorkOrder:** 1408645  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8021B/8015Cm  
**Unit:** µg/L

### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
INF-VF-8.19.14	1408645-001A	Air	08/19/2014 11:15	GC19	94261

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
TPH(g)	640	H	25	1	08/20/2014 12:51
MTBE	ND	H	2.5	1	08/20/2014 12:51
Benzene	5.7	H	0.25	1	08/20/2014 12:51
Toluene	10	H	0.25	1	08/20/2014 12:51
Ethylbenzene	ND	H	0.25	1	08/20/2014 12:51
Xylenes	6.6	H	0.25	1	08/20/2014 12:51
Surrogates	REC (%)	Qualifiers	Limits	Analytical Comments: d1,c4	
aaa-TFT	310	SH	70-130		08/20/2014 12:51



## Quality Control Report

**Client:** Aqua Science Engineers, Inc.  
**Date Prepared:** 8/19/14  
**Date Analyzed:** 8/19/14  
**Instrument:** GC3  
**Matrix:** Water  
**Project:** #2808; LIM, 250 8th Street, Oakland

**WorkOrder:** 1408645  
**BatchID:** 94261  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** µg/L  
**Sample ID:** MB/LCS-94261  
 1408596-001AMS/MSD

### QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH(btex)	ND	60.1	40	60	-	100	70-130
MTBE	ND	10.4	5.0	10	-	104	70-130
Benzene	ND	10.2	0.50	10	-	102	70-130
Toluene	ND	10.3	0.50	10	-	103	70-130
Ethylbenzene	ND	10.4	0.50	10	-	104	70-130
Xylenes	ND	31.4	0.50	30	-	105	70-130

**Surrogate Recovery**

aaa-TFT_2	10.0	9.60		10	100	96	70-130
-----------	------	------	--	----	-----	----	--------

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	59.6	60.2	60	ND	99.4	100	70-130	0.919	20
MTBE	9.34	9.80	10	ND	93.4	98.1	70-130	4.85	20
Benzene	10.1	10.2	10	ND	101	102	70-130	0.994	20
Toluene	10.2	10.3	10	ND	102	103	70-130	1.05	20
Ethylbenzene	10.3	10.4	10	ND	103	104	70-130	0.918	20
Xylenes	31.3	31.5	30	ND	104	105	70-130	0.759	20

**Surrogate Recovery**

aaa-TFT_2	9.62	9.72	10		96	97	70-130	1.03	20
-----------	------	------	----	--	----	----	--------	------	----



1534 Willow Pass Rd  
Pittsburg, CA 94565-1701  
(925) 252-9262

# CHAIN-OF-CUSTODY RECORD

WorkOrder: 1408645

ClientCode: ASED

WaterTrax   
  WriteOn   
  EDF   
  Excel   
  EQulS   
  Email   
  HardCopy   
  ThirdParty   
  J-flag

**Report to:**

Dave Allen  
Aqua Science Engineers, Inc.  
55 Oak Court Suite 220  
Danville, CA 94526  
(925) 820-9391    FAX: (925) 837-4853

Email: dallen@aquascienceengineers.com  
cc/3rd Party:  
PO:  
ProjectNo: #2808; LIM, 250 8th Street, Oakland

**Bill to:**

Diane Schiell  
Aqua Science Engineers, Inc.  
217 Wild Flower Drive  
Roseville, CA 95678  
deezthng22@yahoo.com

**Requested TAT:**

**5 days**

*Date Received:*    **08/19/2014**

*Date Printed:*    **08/19/2014**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)													
					1	2	3	4	5	6	7	8	9	10	11	12		
1408645-001	INF-VF-8.19.14	Air	8/19/2014 11:15	<input type="checkbox"/>	A													

**Test Legend:**

1	G-MBTEX_A	2		3		4		5	
6		7		8		9		10	
11		12							

The following SampID: 001A contains testgroup.

**Prepared by: Ana Venegas**

**Comments:**

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).  
Hazardous samples will be returned to client or disposed of at client expense.



## WORK ORDER SUMMARY

**Client Name:** AQUA SCIENCE ENGINEERS, INC.

**QC Level:** LEVEL 2

**Work Order:** 1408645

**Project:** #2808; LIM, 250 8th Street, Oakland

**Client Contact:** Dave Allen

**Date Received:** 8/19/2014

**Comments:**

**Contact's Email:** dallen@aquascienceengineers.com

WaterTrax   
  WriteOn   
  EDF   
  Excel   
  Fax   
 Email   
 HardCopy   
 ThirdParty   
 J-flag

Lab ID	Client ID	Matrix	Test Name	Number of Containers	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1408645-001A	INF-VF-8.19.14	Air	TPH(g) + MBTEX	1	Tedlar	<input type="checkbox"/>	8/19/2014 11:15	5 days		<input type="checkbox"/>	

**\* NOTE: STLC and TCLP extractions require 48 hrs to complete; therefore, all TATs begin after the extraction is completed (i.e., 24hr TAT yields results in 72 hrs from sample submission).**

**Bottle Legend:**

Tedlar = Tedlar Air Bag



# Chain of Custody

1408045

PAGE 1 of 1



SAMPLER (SIGNATURE)  


PROJECT NAME LIM JOB NO. 2508  
 ADDRESS 250 8th Street, Oakland

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:

SAMPLE ID.	DATE	TIME	MATRIX	QUANTITY	TPH-GAS / MTBE & BTEX (EPA 5030/8015-8020)	TPH-DIESEL (EPA 3510/8015)	TPH-DIESEL & MOTOR OIL (EPA 3510/8015)	CAM 17 METALS (EPA 6010-7000)	SEMI-VOLATILE ORGANICS (EPA 625/8270)	Pb (TOTAL or DISSOLVED) (EPA 6010)	PESTICIDES (EPA 8081)	FUEL OXYGENATES (EPA 8260)	PURGEABLE HALOCARBONS (EPA 601/8010)	TPH-G/BTEX/5 OXYS (EPA METHOD 8260)	MULTIRANGE HYDROCARBONS WITH SILICA GEL CLEANUP (EPA 8015)	VOLATILE ORGANICS (EPA 824/8240/8260)	LUFT METALS (5) (EPA 6010-7000)	COMPOSITE 4:1	EDF

RELINQUISHED BY:  (signature) (time)	RECEIVED BY:  (signature) (time)	RELINQUISHED BY:  (signature) (time)	RECEIVED BY LABORATORY:  (signature) (time)
DAVID AUER 8/19/14 (printed name) (date)	Maria Venegas (printed name) (date)	 (printed name) (date)	 (printed name) (date)
Company-ASE, INC.	Company- <u>MAI</u> 8/19/14 1217	Company-	Company-

COMMENTS:

TURN AROUND TIME  
 STANDARD 24Hr 48Hr 72Hr

OTHER:



### Sample Receipt Checklist

Client Name: **Aqua Science Engineers, Inc.** Date and Time Received: **8/19/2014 2:34:18 PM**  
 Project Name: **#2808; LIM, 250 8th Street, Oakland** Login Reviewed by: **Ana Venegas**  
 WorkOrder No: **1408645** Matrix: Air Carrier: Client Drop-In

#### Chain of Custody (COC) Information

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   
 Sample IDs noted by Client on COC? Yes  No   
 Date and Time of collection noted by Client on COC? Yes  No   
 Sampler's name noted on COC? Yes  No

#### Sample Receipt Information

Custody seals intact on shipping container/cooler? Yes  No  NA   
 Shipping container/cooler in good condition? Yes  No   
 Samples in proper containers/bottles? Yes  No   
 Sample containers intact? Yes  No   
 Sufficient sample volume for indicated test? Yes  No

#### Sample Preservation and Hold Time (HT) Information

All samples received within holding time? Yes  No   
 Container/Temp Blank temperature Cooler Temp: NA   
 Water - VOA vials have zero headspace / no bubbles? Yes  No  NA   
 Sample labels checked for correct preservation? Yes  No   
 pH acceptable upon receipt (Metal: pH<2; 522: pH<4)? Yes  No  NA   
 Samples Received on Ice? Yes  No

\* NOTE: If the "No" box is checked, see comments below.

-----  
 Comments:



Aqua Science Engineers, Inc. 55 Oak Court, Danville, CA 94526  
(925) 820-9391 - Fax (925) 837-4853 - [www.aquascienceengineers.com](http://www.aquascienceengineers.com)

## **APPENDIX B**

### Remediation Systems Field Logs

**LIM PROPERTY - 250 8TH STREET, OAKLAND, CALIFORNIA  
VAPOR-EXTRACTION SYSTEM LOG**

DATE	CAT-OX SYSTEM		VAPOR-EXTRACTION WELLS OVM CONCENTRATION IN PPMV*										
	FLOW IN CFM	INFLUENT IN PPMV*C35	VE-1	VE-2	VE-3	VE-4	VE-5	VE-6	VE-7	VE-8	VE-9	MW-3	MW-4
4/22/11	130	1096	240	34	119	125	440					465	570
4/25/11	130	986	185	28	95	130	400					390	565
4/25/11	100	923	210	26	100	100	350					450	442
4/26/11	90	912	230	25	98	86	410					422	388
4/27/11	78	747	210	32	112	56	360					364	224
4/29/11	65	790	320	30	90	45	320					320	312
5/2/11	58	879	350	28	88	66	400					420	246
5/4/11	52	916	520	25	98	48	365					310	300
5/6/11	52	892	590	26	119	30	328					263	265
5/9/11	52	1079	610	22	234	45	290	85	80	140	15	200	240
5/12/11	50	1016	556	40	185	40	265	80	84	135	11	216	235
5/16/11	48	1155	764	32	156	36	213	75	70	124	10	310	310
5/20/11	52	1158	810	26	164	38	312	92	88	156	14	186	220
5/23/11	50	1013	564	26	242	28	286	94	102	140	9	165	186
5/25/11	46	1169	686	28	310	42	310	90	95	125	15	220	205
5/27/11	52	1031	712	35	126	58	268	110	115	120	22	165	143
5/30/11	50	923	572	34	164	29	345	102	99	133	13	120	68
6/3/11	48	948	660	30	135	20	320	86	95	144	11	110	112
6/6/11	43	981	742	25	133	14	285	95	90	126	8	123	142
6/8/11	48	983	762	26	142	25	246	84	84	139	7	120	152
6/10/11	48	944	688	22	139	28	288	116	96	120	8	105	106
6/13/11	52	1152	884	24	115	32	296	125	102	144	9	134	229
6/16/11	50	1183	920	24	135	18	305	102	114	152	5	130	245
6/20/11	46	1277	1122	28	128	22	308	96	84	132	11	125	266
6/22/11	42	1180	952	18	130	24	264	85	98	130	6	128	310
6/24/11	55	1105	878	20	134	26	277	118	102	148	5	106	195
6/27/11	52	1141	765	26	127	26	263	102	100	122	6	144	393
7/8/11	49	926	555	25	130	18	298	99	90	130	9	132	222
7/12/11	45	788	500	24	125	15	287	101	89	133	8	124	252
7/18/11	46	745	541	21	124	14	302	85	88	125	8	142	244
7/25/11	47	688	488	22	124	17	278	87	95	126	7	133	232

Continued on Next Page

**LIM PROPERTY - 250 8TH STREET, OAKLAND, CALIFORNIA**  
**VAPOR-EXTRACTION SYSTEM LOG**

DATE	CAT-OX SYSTEM		VAPOR-EXTRACTION WELLS OVM CONCENTRATION IN PPMV*										
	FLOW IN CFM	INFLUENT IN PPMV*C84	VE-1	VE-2	VE-3	VE-4	VE-5	VE-6	VE-7	VE-8	VE-9	MW-3	MW-4
8/1/11	52	655	600	26	132	12	273	96	93	144	6	125	235
8/9/11	51	725	553	21	111	14	263	80	93	112	5	126	226
8/15/11	53	718	523	21	110	13	255	75	92	132	5	131	212
8/24/11	45	802	514	24	141	14	264	68	88	123	6	134	238
8/29/11	46	644	506	21	123	15	270	88	89	130	4	129	230
9/7/11	56	640	488	26	111	11	266	99	96	112	6	111	211
9/12/11	55	636	478	25	100	10	255	90	95	11	5	110	212
9/20/11	52	632	465	24	102	12	254	88	95	123	4	122	210
9/27/11	50	622	412	25	101	14	232	87	96	120	6	114	223
10/3/11	55	612	400	22	98	9	211	96	90	119	5	100	232
10/10/11	50	621	412	21	114	11	224	92	90	11	3	98	216
10/18/11	51	602	388	23	121	12	222	98	91	114	6	103	222
10/25/11	51	611	377	22	102	15	200	87	91	102	7	110	232
11/1/11	49	598	366	20	100	8	214	78	88	90	6	105	208
11/7/11	48	588	365	13	98	8	211	74	88	90	5	106	214
11/14/11	48	586	385	19	97	7	225	78	88	95	5	105	210
11/22/11	48	574	364	17	106	11	223	89	87	92	5	99	211
11/30/11	47	545	344	22	97	10	208	95	88	81	4	98	219
12/5/11	47	588	355	20	99	9	211	95	85	81	3	100	203
12/12/11	49	541	323	18	111	9	195	90	83	83	4	111	200
12/20/11	48	540	311	17	105	7	196	91	81	75	4	99	201
12/30/11	48	532	302	18	101	7	188	83	76	78	5	92	199
1/5/12	49	485	302	11	99	6	174	88	77	85	6	92	199
1/10/12	51	487	311	14	99	6	175	84	74	77	5	92	203
1/16/12	50	465	312	15	98	8	165	85	77	74	3	95	195
1/23/12	48	455	310	14	98	7	166	87	78	78	4	94	188
1/31/12	47	444	311	11	95	7	152	78	75	86	5	99	187
2/7/12	47	420	299	9	93	8	140	70	77	85	6	95	177
2/13/12	44	388	290	8	90	7	141	66	71	88	5	96	165
2/20/12	41	355	295	9	77	8	133	62	71	81	4	95	158
2/27/12	45	356	295	9	75	8	132	63	71	84	6	88	145

Continued on Next Page

**LIM PROPERTY - 250 8TH STREET, OAKLAND, CALIFORNIA  
VAPOR-EXTRACTION SYSTEM LOG**

DATE	CAT-OX SYSTEM		VAPOR-EXTRACTION WELLS OVM CONCENTRATION IN PPMV*										
	FLOW IN CFM	INFLUENT IN PPMV*C121	VE-1	VE-2	VE-3	VE-4	VE-5	VE-6	VE-7	VE-8	VE-9	MW-3	MW-4
3/6/12	42	354	288	11	77	OFF	125	61	68	84	6	87	165
3/12/12	40	338	290	9	74	OFF	125	60	68	81	5	87	157
3/19/12	41	334	290	7	75	OFF	111	55	71	78	5	85	180
3/26/12	43	321	277	9	77	OFF	105	58	70	77	7	84	174
4/2/12	45	333	255	8	68	OFF	99	61	59	78	5	81	166
4/9/12	41	311	255	8	68	OFF	95	61	59	72	4	80	165
4/16/12	39	310	241	7	74	OFF	95	62	58	71	4	86	184
4/25/12	39	300	243	OFF	73	OFF	96	60	57	74	4	77	177
5/4/12	40	288	225	OFF	71	OFF	88	60	56	74	4	78	174
5/8/12	40	275	233	OFF	65	OFF	87	55	55	75	5	78	175
5/14/12	40	280	241	OFF	58	OFF	95	57	58	74	6	79	181
5/22/12	41	256	211	OFF	55	OFF	75	58	61	69	5	95	166
5/29/12	41	255	205	OFF	54	OFF	77	51	62	69	4	94	158
6/4/12	40	241	195	OFF	54	OFF	81	51	60	63	4	99	144
6/12/12	38	222	188	OFF	52	OFF	66	50	60	62	4	103	158
6/18/12	38	232	175	OFF	51	OFF	63	52	61	60	4	102	180
6/28/12	38	195	170	OFF	46	OFF	51	48	55	58	4	111	165
7/9/12	37	180	150	OFF	36	OFF	44	44	50	55	4	99	144
7/18/12	35	175	144	OFF	41	OFF	43	39	44	54	5	94	128
7/26/12	37	165	143	OFF	29	OFF	29	40	41	49	4	96	180
8/2/12	35	152	129	OFF	44	OFF	32	44	41	48	4	102	119
8/10/12	38	144	111	OFF	34	OFF	25	38	37	44	3	101	120
8/15/12	40	141	113	OFF	38	OFF	19	29	32	47	4	92	87
8/23/12	41	129	109	OFF	29	OFF	21	31	29	36	3	88	83
9/7/12	38	116	65	OFF	33	OFF	13	22	18	28	4	101	81
9/13/12	41	96	71	OFF	28	OFF	11	24	16	22	3	95	75
9/21/12	40	79	58	OFF	26	OFF	9	19	12	20	4	93	73
9/28/12	39	58	44	OFF	24	OFF	10	15	14	18	5	102	68

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**LIM PROPERTY - 250 8TH STREET, OAKLAND, CALIFORNIA**  
**VAPOR-EXTRACTION SYSTEM LOG**

DATE	ASE VE SYSTEM		VAPOR-EXTRACTION WELLS OVM CONCENTRATION IN PPMV*D167										
	FLOW IN CFM	INFLUENT IN PPMV*	VE-1	VE-2	VE-3	VE-4	VE-5	VE-6	VE-7	VE-8	VE-9	MW-3	MW-4
11/12/12	50	12	33	4	20	5	8	15	11	22	6	111	75
11/28/12	50	14	29	4	18	2	6	12	15	19	4	109	72
12/5/12	50	11	27	6	18	2	7	13	15	17	4	99	64
12/13/12	50	11	23	3	15	2	5	19	18	21	5	87	62
12/20/12	50	9	19	3	11	4	8	12	21	17	4	113	66
1/7/13	50	19	17	2	9	2	7	11	12	16	3	101	71
1/14/13	50	11	16	5	9	3	5	16	13	15	4	99	66
1/24/13	50	8	12	3	10	2	6	18	13	15	4	97	69
1/29/13	50	12	11	4	9	3	5	17	15	12	3	96	70
2/6/13	50	16	12	3	6	3	5	9	9	12	3	94	68
2/15/13	50	18	13	5	6	3	6	7	9	10	4	89	66
2/21/13	50	17	13	4	7	2	6	9	8	12	4	93	62
2/28/13	50	14	14	5	7	3	5	8	8	11	3	99	70
3/4/13	50	15	13	5	12	4	11	8	7	9	5	111	71
3/8/13	50	15	14	5	12	4	14	7	7	10	5	123	74
3/15/13	50	15	11	11	14	5	15	7	7	11	5	128	75
3/19/13	50	16	10	4	14	5	21	6	6	8	6	135	66
3/22/13	50	16	8	7	15	7	28	5	6	7	4	144	68
4/5/13	50	17	8	8	14	9	28	5	3	7	7	175	60
4/12/13	50	14	12	8	16	11	26	6	4	7	5	199	65
4/19/13	50	12	11	9	18	10	24	5	5	6	7	167	64
4/26/30	50	18	11	11	17	9	27	6	4	5	5	188	62
5/3/13	50	18	10	10	20	11	33	5	4	7	6	198	58
5/10/13	50	18	10	8	20	12	33	7	6	7	6	223	65
5/17/13	50	19	9	11	21	14	34	5	3	8	5	245	59
5/24/13	50	12	11	11	24	13	35	5	4	7	5	255	63
5/31/13	50	11	8	12	23	18	33	5	5	7	5	215	66
6/7/13	50	12	8	12	33	18	44	6	4	5	6	222	67
6/14/13	50	13	8	14	33	17	49	4	4	4	5	266	67
6/21/13	50	18	7	12	34	17	41	6	5	6	5	199	66
6/28/13	50	21	8	11	36	19	48	4	6	5	6	228	61

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## LIM PROPERTY - 250 8TH STREET, OAKLAND, CALIFORNIA VAPOR-EXTRACTION SYSTEM LOG

DATE	ASE VE SYSTEM		VAPOR-EXTRACTION WELLS OVM CONCENTRATION IN PPMV*										
	FLOW IN CFM	INFLUENT IN PPMV*	VE-1	VE-2	VE-3	VE-4	VE-5	VE-6	VE-7	VE-8	VE-9	MW-3	MW-4
7/5/13	50	22	7	10	44	20	50	4	6	7	6	265	65
7/12/13	50	21	7	11	38	21	57	5	7	5	7	281	62
7/19/13	50	26	5	11	39	24	55	4	8	6	7	244	63
7/26/13	50	24	6	12	49	28	49	6	8	7	7	254	66
7/31/13	50	25	5	11	56	19	50	7	9	6	7	310	59
8/2/13	50	27	7	11	57	22	59	7	7	6	8	315	60
8/8/13	50	27	6	13	68	27	55	8	9	7	8	330	67
9/6/13	50	30	5	9	60	25	49	5	8	7	9	350	43
10/2/13	50	29	4	11	44	20	48	4	8	9	6	345	40
11/1/13	50	32	4	10	49	20	49	4	7	6	4	365	38
12/6/13	50	28	5	12	51	17	42	5	7	5	4	360	39
1/6/14	50	27	3	8	43	16	43	3	5	5	4	365	38
2/5/14	50	29	5	9	40	17	48	3	6	4	4	350	36
3/7/14	50	26	4	7	38	18	44	2	5	3	3	325	30
4/4/14	50	24	4	7	39	15	39	2	5	2	3	320	32
5/2/14	50	24	3	6	33	11	35	3	5	2	1	310	28
6/6/14	50	22	3	5	32	12	37	2	4	2	1	315	26
7/11/14	50	21	3	4	34	14	41	2	3	2	1	310	24
8/19/14	50	21	1	6	32	14	40	3	3	2	1	325	22

**NOTE:**

The asterisk symbol (\*) denotes influent vapor concentrations using a photoionization detector.













# LIM PROPERTY - 250 8TH STREET, OAKLAND, CALIFORNIA

## HYDROCARBON VAPOR MEASUREMENT LOG

HYDROCARBON CONCENTRATIONS IN PPMV\* MEASURED WITH ORGANIC VAPOR METER

VAPOR MONITORING POINTS			METER BOXES (SITE SIDE OF 8TH STREET)			METER BOXES (OPPOSITE SIDE OF 8TH STREET)									
DATE	VMP-1	VMP-1	PIPING MANIFOLD	PG&E BOX	EBMUD BOX	GAS METER 1	GAS METER 2	GAS METER 3	EBMUD BOX 1	EBMUD BOX 2	OS-8/VE-6 WELL BOX	OS-9/VE-7 WELL BOX	OS-10/VE-8 WELL BOX	OS-11 WELL BOX	OS-12/VE-9 WELL BOX
1/18/11	0	0	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
1/19/11	0	0	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
1/20/11	0	0	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
1/21/11	11	21	NM	NM	NM	10	8	11	5	7	NM	NM	NM	NM	NM
1/22/11	3	7	NM	NM	NM	12	11	8	4	6	NM	NM	NM	NM	NM
1/23/11	0	0	NM	NM	NM	0	0	0	0	0	NM	NM	NM	NM	NM
1/28/11	0	0	NM	NM	NM	0	0	0	0	0	NM	NM	NM	NM	NM
2/15/11	0	0	NM	NM	NM	0	0	0	0	0	NM	NM	NM	NM	NM
2/28/11	0	0	NM	NM	NM	0	0	0	0	0	NM	NM	NM	NM	NM
3/8/11	0	0	NM	NM	NM	0	0	0	0	0	NM	NM	NM	NM	NM
3/29/11	0	0	NM	NM	NM	0	0	0	0	0	NM	NM	NM	NM	NM
4/12/11	0	0	NM	NM	NM	0	0	0	0	0	NM	NM	NM	NM	NM
4/25/11	0	0	NM	NM	NM	0	0	0	0	0	NM	NM	NM	NM	NM
5/13/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/16/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/20/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/23/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/25/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/27/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/30/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/3/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/6/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/8/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/10/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/13/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/16/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/20/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/24/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/27/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/8/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/12/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/18/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/25/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/1/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/9/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/15/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/24/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/29/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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# LIM PROPERTY - 250 8TH STREET, OAKLAND, CALIFORNIA

## HYDROCARBON VAPOR MEASUREMENT LOG

HYDROCARBON CONCENTRATIONS IN PPMV\* MEASURED WITH ORGANIC VAPOR METER

VAPOR MONITORING POINTS			METER BOXES (SITE SIDE OF 8TH STREET)			METER BOXES (OPPOSITE SIDE OF 8TH STREET)									
DATE	VMP-1	VMP-1	PIPING MANIFOLD	PG&E BOX	EBMUD BOX	GAS METER 1	GAS METER 2	GAS METER 3	EBMUD BOX 1	EBMUD BOX 2	OS-8/VE-6 WELL BOX	OS-9/VE-7 WELL BOX	OS-10/VE-8 WELL BOX	OS-11 WELL BOX	OS-12/VE-9 WELL BOX
9/7/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/12/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/20/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/27/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/3/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/10/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/18/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/25/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/1/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/7/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/14/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/22/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/30/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/5/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/12/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/20/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/30/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/5/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/10/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/16/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/23/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/31/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/7/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/13/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/20/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/27/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/6/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/12/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/19/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/26/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/2/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/9/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/16/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/25/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/4/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/8/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/14/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/22/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/29/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/4/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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# LIM PROPERTY - 250 8TH STREET, OAKLAND, CALIFORNIA

## HYDROCARBON VAPOR MEASUREMENT LOG

HYDROCARBON CONCENTRATIONS IN PPMV\* MEASURED WITH ORGANIC VAPOR METER

VAPOR MONITORING POINTS			METER BOXES (SITE SIDE OF 8TH STREET)			METER BOXES (OPPOSITE SIDE OF 8TH STREET)									
DATE	VMP-1	VMP-1	PIPING MANIFOLD	PG&E BOX	EBMUD BOX	GAS METER 1	GAS METER 2	GAS METER 3	EBMUD BOX 1	EBMUD BOX 2	OS-8/VE-6 WELL BOX	OS-9/VE-7 WELL BOX	OS-10/VE-8 WELL BOX	OS-11 WELL BOX	OS-12/VE-9 WELL BOX
6/12/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/18/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/28/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/9/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/18/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/26/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/2/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/10/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/15/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/23/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/7/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/13/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/21/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/28/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/12/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/28/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/5/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/13/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/20/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/7/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/14/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/24/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/29/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/6/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/15/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/21/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/28/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/4/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/8/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/15/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/19/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/22/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/5/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/12/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/19/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/26/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/3/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/10/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/17/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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# LIM PROPERTY - 250 8TH STREET, OAKLAND, CALIFORNIA

## HYDROCARBON VAPOR MEASUREMENT LOG

HYDROCARBON CONCENTRATIONS IN PPMV\* MEASURED WITH ORGANIC VAPOR METER

VAPOR MONITORING POINTS			METER BOXES (SITE SIDE OF 8TH STREET)			METER BOXES (OPPOSITE SIDE OF 8TH STREET)									
DATE	VMP-1	VMP-1	PIPING MANIFOLD	PG&E BOX	EBMUD BOX	GAS METER 1	GAS METER 2	GAS METER 3	EBMUD BOX 1	EBMUD BOX 2	OS-8/VE-6 WELL BOX	OS-9/VE-7 WELL BOX	OS-10/VE-8 WELL BOX	OS-11 WELL BOX	OS-12/VE-9 WELL BOX
5/24/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/31/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/7/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/14/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/28/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/5/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/12/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/19/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/26/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/31/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/2/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/6/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/2/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/1/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/6/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/6/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/5/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/7/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/4/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/2/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/6/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/11/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE:

NM = Not Measured

# GASOLINE EXTRACTION LOG

LIM FAMILY PROPERTY  
250 8th Street, Oakland, CA

DATE	TPH-G CONCENTRATION (ug/l) IN INFLUENT VAPOR SAMPLE	GALLONS OF GASOLINE EXTRACTED, PER DAY	NUMBER OF DAYS VE SYSTEM OPERATED IN MONTH	GALLONS OF GASOLINE EXTRACTED IN MONTH
4/28/11	4600	2.75	30	82.5
5/26/11	4100	2.45	31	75.95
6/30/11	4900	2.93	30	87.9
7/31/11	NA	2.75*	31	85.25
8/31/11	NA	2.57*	31	79.67
9/30/11	NA	2.39*	30	71.7
10/31/11	NA	2.21*	31	68.51
11/30/11	NA	2.03*	30	60.9
12/20/11	3100	1.85	31	57.38
1/31/12	NA	1.55*	31	48.05
2/29/12	NA	1.25*	29	36.25
3/31/12	NA	0.95*	31	29.45
4/30/12	NA	0.65*	30	19.5
5/31/12	NA	0.35*	31	10.85
6/20/12	38	0.02	30	0.6
TOTAL GALLONS OF GASOLINE REMOVED FROM VADOSE ZONE SINCE START-UP TO JUNE 2012				<b>814.46</b>

6/20/12	38	0.02		
1/29/13	190	0.11		
AVERAGE OF 6/20/12 AND 1/29/13 AIR BAG RESULTS	114*	0.07*	145	10.15
TOTAL GALLONS OF GASOLINE REMOVED FROM VADOSE ZONE BETWEEN JUNE 2012 AND JANUARY 2013				<b>10.15</b>

1/29/13	190	0.11		
8/8/13	1400	0.84		
AVERAGE OF 1/29/13 AND 8/8/13 AIR BAG RESULTS	795*	0.48*	189	90.72
TOTAL GALLONS OF GASOLINE REMOVED FROM VADOSE ZONE BETWEEN JANUARY 2013 AND AUGUST 2013				<b>90.72</b>

8/8/13	1400	0.84		
2/5/14	1700	1.02		
AVERAGE OF 8/8/13 AND 2/5/14 AIR BAG RESULTS	1550	0.93	179	166.47
TOTAL GALLONS OF GASOLINE REMOVED FROM VADOSE ZONE BETWEEN AUGUST 2013 AND FEBRUARY 2014				<b>166.47</b>

8/19/14	640	0.38	195	74.1
TOTAL GALLONS OF GASOLINE REMOVED FROM VADOSE ZONE BETWEEN FEBRUARY 2014 AND AUGUST 2014				<b>74.1</b>

GRAND TOTAL, TO DATE, OF GALLONS OF GASOLINE REMOVED FROM THE VADOSE ZONE				<b>1155.9</b>
---	--	--	--	---------------

NOTES:

1. NA means "not applicable." This is due to the fact that an air bag sample of the influent vapor stream was not collected on a monthly basis.
2. The asterisk symbol (\*) means this number is an estimate. Actual air bag TPH-G concentrations were not available due to lack of sampling
3. A flowrate of 50 cubic feet per minute was used to calculate daily extraction quantities



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## **APPENDIX C**

### Monitoring Well Sampling Logs

# AQUA SCIENCE ENGINEERS

## WELL SAMPLING FIELD LOG

PROJECT NAME LIM

JOB NUMBER 2808 DATE OF SAMPLING 6-30-14

WELL ID. MW-1 SAMPLER DA

TOTAL DEPTH OF WELL 26.8 WELL DIAMETER 2"

DEPTH TO WATER PRIOR TO PURGING 18.95 TIME OF MEASUREMENT

PRODUCT THICKNESS 0

DEPTH OF WELL CASING IN WATER 7.85

NUMBER OF GALLONS PER WELL CASING VOLUME 1.3

NUMBER OF WELL CASING VOLUMES TO BE REMOVED 3

REQUIRED VOLUME OF GROUNDWATER TO BE PURGED PRIOR TO SAMPLING 3.9 gal

EQUIPMENT USED TO PURGE WELL NEW DISPOSABLE BAILER

TIME EVACUATION STARTED 8:20 TIME EVACUATION COMPLETED 8:30

TIME SAMPLES WERE COLLECTED 8:30

DID WELL GO DRY No AFTER HOW MANY GALLONS —

VOLUME OF GROUNDWATER PURGED 3.9 gal

SAMPLING DEVICE NEW DISPOSABLE BAILER

SAMPLE COLOR light brown ODOR/SEDIMENT slight hc / slight silt

### CHEMICAL DATA

VOLUME PURGED	TEMPERATURE	PH	CONDUCTIVITY
1	20.3	7.1	470
2	20.4	7.1	520
3	20.4	7.1	520

### SAMPLES COLLECTED

SAMPLE	# OF CONTAINERS	SIZE AND TYPE OF CONTAINER	ANALYSIS	PRESERVED
MW-1	5	40 ML VOA'S	8015/8260B	✓

# AQUA SCIENCE ENGINEERS

## WELL SAMPLING FIELD LOG

PROJECT NAME	LIM		
JOB NUMBER	2808	DATE OF SAMPLING	6-30-14
WELL ID.	MW-2	SAMPLER	DA
TOTAL DEPTH OF WELL	26.8	WELL DIAMETER	2"
DEPTH TO WATER PRIOR TO PURGING	17.14	TIME OF MEASUREMENT	
PRODUCT THICKNESS			
DEPTH OF WELL CASING IN WATER	9.64		
NUMBER OF GALLONS PER WELL CASING VOLUME	1.4		
NUMBER OF WELL CASING VOLUMES TO BE REMOVED	3		
REQUIRED VOLUME OF GROUNDWATER TO BE PURGED PRIOR TO SAMPLING	4.9 gal		
EQUIPMENT USED TO PURGE WELL	NEW DISPOSABLE BAILER		
TIME EVACUATION STARTED	7:10	TIME EVACUATION COMPLETED	7:17
TIME SAMPLES WERE COLLECTED	7:17		
DID WELL GO DRY	No	AFTER HOW MANY GALLONS	—
VOLUME OF GROUNDWATER PURGED	4.9 gal		
SAMPLING DEVICE	NEW DISPOSABLE BAILER		
SAMPLE COLOR	ODOR/SEDIMENT		

### CHEMICAL DATA

VOLUME PURGED	TEMPERATURE	PH	CONDUCTIVITY
1	19.7	7.2	690
2	19.8	7.3	730
3	19.8	7.3	740

### SAMPLES COLLECTED

SAMPLE	# OF CONTAINERS	SIZE AND TYPE OF CONTAINER	ANALYSIS	PRESERVED
MW-2	5	40 ML VOA'S	8015/82600	✓

# AQUA SCIENCE ENGINEERS

## WELL SAMPLING FIELD LOG

PROJECT NAME LIM

JOB NUMBER 2808 DATE OF SAMPLING 6-30-14

WELL ID. MW-3 SAMPLER DA

TOTAL DEPTH OF WELL 30.0 WELL DIAMETER 2"

DEPTH TO WATER PRIOR TO PURGING \_\_\_\_\_ TIME OF MEASUREMENT \_\_\_\_\_

PRODUCT THICKNESS Sheen

DEPTH OF WELL CASING IN WATER \_\_\_\_\_

NUMBER OF GALLONS PER WELL CASING VOLUME \_\_\_\_\_

NUMBER OF WELL CASING VOLUMES TO BE REMOVED 3

REQUIRED VOLUME OF GROUNDWATER TO BE PURGED PRIOR TO SAMPLING \_\_\_\_\_

EQUIPMENT USED TO PURGE WELL NEW DISPOSABLE BAIER

TIME EVACUATION STARTED 850 TIME EVACUATION COMPLETED 900

TIME SAMPLES WERE COLLECTED 900

DID WELL GO DRY No AFTER HOW MANY GALLONS —

VOLUME OF GROUNDWATER PURGED 5 gal

SAMPLING DEVICE NEW DISPOSABLE BAIER

SAMPLE COLOR gray ODOR/SEDIMENT mod odor / mod silt (bacteria?)

### CHEMICAL DATA

VOLUME PURGED	TEMPERATURE	PH	CONDUCTIVITY
1	22.5	6.9	810
2	22.7	7.0	820
3	22.7	7.0	810

### SAMPLES COLLECTED

SAMPLE	# OF CONTAINERS	SIZE AND TYPE OF CONTAINER	ANALYSIS	PRESERVED
MW-3	5	40 ML VOA'S	8015/82600	✓

# AQUA SCIENCE ENGINEERS

## WELL SAMPLING FIELD LOG

PROJECT NAME	LIM		
JOB NUMBER	2808	DATE OF SAMPLING	6-30-14
WELL ID.	MW-4R	SAMPLER	DA
TOTAL DEPTH OF WELL	28.0	WELL DIAMETER	4"
DEPTH TO WATER PRIOR TO PURGING	18.77	TIME OF MEASUREMENT	
PRODUCT THICKNESS	0		
DEPTH OF WELL CASING IN WATER	9.23		
NUMBER OF GALLONS PER WELL CASING VOLUME	6.1		
NUMBER OF WELL CASING VOLUMES TO BE REMOVED	3		
REQUIRED VOLUME OF GROUNDWATER TO BE PURGED PRIOR TO SAMPLING	18.3 gal		
EQUIPMENT USED TO PURGE WELL	NEW DISPOSABLE BAILER		
TIME EVACUATION STARTED	740	TIME EVACUATION COMPLETED	810
TIME SAMPLES WERE COLLECTED	18.3 gal		
DID WELL GO DRY	No	AFTER HOW MANY GALLONS	—
VOLUME OF GROUNDWATER PURGED	18.3 gal		
SAMPLING DEVICE	NEW DISPOSABLE BAILER		
SAMPLE COLOR	light brown	ODOR/SEDIMENT	moderate hc / mod silt

### CHEMICAL DATA

VOLUME PURGED	TEMPERATURE	PH	CONDUCTIVITY
1	21.4	7.3	550
2	21.3	7.4	600
3	21.3	7.4	600

### SAMPLES COLLECTED

SAMPLE	# OF CONTAINERS	SIZE AND TYPE OF CONTAINER	ANALYSIS	PRESERVED
MW-4R	5	40 ML VOA'S	8015/82600	✓

# AQUA SCIENCE ENGINEERS

## WELL SAMPLING FIELD LOG

PROJECT NAME LIM

---

JOB NUMBER 2808 DATE OF SAMPLING 6-30-14

---

WELL ID. MW-5 SAMPLER DA

---

TOTAL DEPTH OF WELL 29.6 WELL DIAMETER 2"

---

DEPTH TO WATER PRIOR TO PURGING 18.1 TIME OF MEASUREMENT

---

PRODUCT THICKNESS 0

---

DEPTH OF WELL CASING IN WATER 11.49

---

NUMBER OF GALLONS PER WELL CASING VOLUME 1.9

---

NUMBER OF WELL CASING VOLUMES TO BE REMOVED 3

---

REQUIRED VOLUME OF GROUNDWATER TO BE PURGED PRIOR TO SAMPLING 5.8 gal

---

EQUIPMENT USED TO PURGE WELL NEW DISPOSABLE BAILER

---

TIME EVACUATION STARTED 6:40 TIME EVACUATION COMPLETED 6:50

---

TIME SAMPLES WERE COLLECTED 6:50

---

DID WELL GO DRY No AFTER HOW MANY GALLONS —

---

VOLUME OF GROUNDWATER PURGED 5.8 gal

---

SAMPLING DEVICE NEW DISPOSABLE BAILER

---

SAMPLE COLOR light brown ODOR/SEDIMENT no odor / slight silt

### CHEMICAL DATA

VOLUME PURGED	TEMPERATURE	PH	CONDUCTIVITY
1	19.1	7.5	530
2	18.5	7.5	530
3	18.7	7.5	530

### SAMPLES COLLECTED

SAMPLE	# OF CONTAINERS	SIZE AND TYPE OF CONTAINER	ANALYSIS	PRESERVED
MW-5	5	40 ML VOA'S	8015/8260B	✓



# AQUA SCIENCE ENGINEERS

## WELL SAMPLING FIELD LOG

PROJECT NAME LIM

JOB NUMBER 2808 DATE OF SAMPLING 6-30-14

WELL ID. MW-7 SAMPLER DA

TOTAL DEPTH OF WELL 28.0 WELL DIAMETER 2"

DEPTH TO WATER PRIOR TO PURGING 18.36 TIME OF MEASUREMENT

PRODUCT THICKNESS 0

DEPTH OF WELL CASING IN WATER 9.64

NUMBER OF GALLONS PER WELL CASING VOLUME 1.6

NUMBER OF WELL CASING VOLUMES TO BE REMOVED 3

REQUIRED VOLUME OF GROUNDWATER TO BE PURGED PRIOR TO SAMPLING 4.9 gal

EQUIPMENT USED TO PURGE WELL NEW DISPOSABLE BAILER

TIME EVACUATION STARTED 7:30 TIME EVACUATION COMPLETED 7:37

TIME SAMPLES WERE COLLECTED 1

DID WELL GO DRY No AFTER HOW MANY GALLONS —

VOLUME OF GROUNDWATER PURGED 4.9 gal

SAMPLING DEVICE NEW DISPOSABLE BAILER

SAMPLE COLOR light gray ODOR/SEDIMENT Slight hc / v. slight silt

### CHEMICAL DATA

VOLUME PURGED	TEMPERATURE	PH	CONDUCTIVITY
1	20.1	7.3	620
2	20.1	7.3	580
3	20.1	7.3	570

### SAMPLES COLLECTED

SAMPLE	# OF CONTAINERS	SIZE AND TYPE OF CONTAINER	ANALYSIS	PRESERVED
MW-	5	40 ML VOA'S	8015/82608	✓



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## **APPENDIX D**

Certified Analytical Report  
and  
Chain of Custody Documentation  
for  
Groundwater Samples



## Laboratory Results

Robert Kitay  
Aqua Science Engineers, Inc.  
55 Oak Court, Suite 220  
Danville, CA 94526

Subject : 6 Water Samples  
Project Name : Lim  
Project Number : 2808

Dear Mr. Kitay,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed. Testing procedures comply with the 2003 NELAC and TNI 2009 standards. Laboratory results relate only to the samples tested. This report may be freely reproduced in full, but may only be reproduced in part with the express permission of Kiff Analytical, LLC.

Kiff Analytical, LLC is certified by the State of California under the Environmental Laboratory Accreditation Program (ELAP), lab number 08263CA.

If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Troy Turpen

Subject : 6 Water Samples  
Project Name : Lim  
Project Number : 2808

## Case Narrative

Surrogate Recovery for sample MW-3 for test method Mod. EPA 8015 was outside of control limits. This may indicate a bias in the analysis due to the sample's matrix or an interference from compounds present in the sample.

Project Name : **Lim**

Project Number : **2808**

Sample : **MW-1**

Matrix : Water

Lab Number : 88588-01

Sample Date :06/30/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Benzene</b>	<b>6.9</b>	0.50	ug/L	EPA 8260B	07/02/14 09:53
Toluene	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 09:53
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 09:53
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 09:53
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 09:53
<b>Diisopropyl ether (DIPE)</b>	<b>1.4</b>	0.50	ug/L	EPA 8260B	07/02/14 09:53
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 09:53
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 09:53
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	07/02/14 09:53
<b>TPH as Gasoline</b>	<b>400</b>	50	ug/L	EPA 8260B	07/02/14 09:53
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 09:53
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 09:53
1,2-Dichloroethane-d4 (Surr)	97.4		% Recovery	EPA 8260B	07/02/14 09:53
Toluene - d8 (Surr)	97.6		% Recovery	EPA 8260B	07/02/14 09:53
<b>TPH as Diesel (Silica Gel)</b>	<b>140</b>	50	ug/L	M EPA 8015	07/09/14 03:36
(Note: Lower boiling hydrocarbons present, atypical for Diesel Fuel.)					
Octacosane (Silica Gel Surr)	112		% Recovery	M EPA 8015	07/09/14 03:36

Project Name : **Lim**

Project Number : **2808**

Sample : **MW-2**

Matrix : Water

Lab Number : 88588-02

Sample Date :06/30/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Benzene</b>	<b>8000</b>	25	ug/L	EPA 8260B	07/08/14 14:39
<b>Toluene</b>	<b>94</b>	4.0	ug/L	EPA 8260B	07/03/14 23:22
<b>Ethylbenzene</b>	<b>290</b>	4.0	ug/L	EPA 8260B	07/03/14 23:22
<b>Total Xylenes</b>	<b>400</b>	4.0	ug/L	EPA 8260B	07/03/14 23:22
Methyl-t-butyl ether (MTBE)	< 4.0	4.0	ug/L	EPA 8260B	07/03/14 23:22
<b>Diisopropyl ether (DIPE)</b>	<b>16</b>	4.0	ug/L	EPA 8260B	07/03/14 23:22
Ethyl-t-butyl ether (ETBE)	< 4.0	4.0	ug/L	EPA 8260B	07/03/14 23:22
Tert-amyl methyl ether (TAME)	< 4.0	4.0	ug/L	EPA 8260B	07/03/14 23:22
<b>Tert-Butanol</b>	<b>66</b>	20	ug/L	EPA 8260B	07/03/14 23:22
<b>TPH as Gasoline</b>	<b>21000</b>	400	ug/L	EPA 8260B	07/03/14 23:22
1,2-Dichloroethane	< 4.0	4.0	ug/L	EPA 8260B	07/03/14 23:22
1,2-Dibromoethane	< 4.0	4.0	ug/L	EPA 8260B	07/03/14 23:22
1,2-Dichloroethane-d4 (Surr)	101		% Recovery	EPA 8260B	07/03/14 23:22
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	07/03/14 23:22
<b>TPH as Diesel (Silica Gel)</b>	<b>200</b>	50	ug/L	M EPA 8015	07/09/14 03:07
(Note: Lower boiling hydrocarbons present, atypical for Diesel Fuel.)					
Octacosane (Silica Gel Surr)	115		% Recovery	M EPA 8015	07/09/14 03:07

Project Name : **Lim**

Project Number : **2808**

Sample : **MW-3**

Matrix : Water

Lab Number : 88588-03

Sample Date :06/30/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Benzene</b>	<b>4600</b>	15	ug/L	EPA 8260B	07/03/14 23:56
<b>Toluene</b>	<b>6200</b>	15	ug/L	EPA 8260B	07/03/14 23:56
<b>Ethylbenzene</b>	<b>1300</b>	15	ug/L	EPA 8260B	07/03/14 23:56
<b>Total Xylenes</b>	<b>11000</b>	15	ug/L	EPA 8260B	07/03/14 23:56
Methyl-t-butyl ether (MTBE)	< 15	15	ug/L	EPA 8260B	07/03/14 23:56
Diisopropyl ether (DIPE)	< 15	15	ug/L	EPA 8260B	07/03/14 23:56
Ethyl-t-butyl ether (ETBE)	< 15	15	ug/L	EPA 8260B	07/03/14 23:56
Tert-amyl methyl ether (TAME)	< 15	15	ug/L	EPA 8260B	07/03/14 23:56
<b>Tert-Butanol</b>	<b>500</b>	70	ug/L	EPA 8260B	07/03/14 23:56
<b>TPH as Gasoline</b>	<b>97000</b>	1500	ug/L	EPA 8260B	07/03/14 23:56
1,2-Dichloroethane	< 15	15	ug/L	EPA 8260B	07/03/14 23:56
1,2-Dibromoethane	< 15	15	ug/L	EPA 8260B	07/03/14 23:56
1,2-Dichloroethane-d4 (Surr)	104		% Recovery	EPA 8260B	07/03/14 23:56
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	07/03/14 23:56
<b>TPH as Diesel (Silica Gel)</b>	<b>5900</b>	50	ug/L	M EPA 8015	07/10/14 12:43
(Note: Lower boiling hydrocarbons present, atypical for Diesel Fuel.)					
Octacosane (Silica Gel Surr)	147		% Recovery	M EPA 8015	07/10/14 12:43

Project Name : **Lim**

Project Number : **2808**

Sample : **MW-4R**

Matrix : Water

Lab Number : 88588-04

Sample Date :06/30/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Benzene</b>	<b>1300</b>	2.5	ug/L	EPA 8260B	07/09/14 04:56
<b>Toluene</b>	<b>6.3</b>	0.50	ug/L	EPA 8260B	07/02/14 11:37
<b>Ethylbenzene</b>	<b>1.3</b>	0.50	ug/L	EPA 8260B	07/02/14 11:37
<b>Total Xylenes</b>	<b>16</b>	0.50	ug/L	EPA 8260B	07/02/14 11:37
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 11:37
<b>Diisopropyl ether (DIPE)</b>	<b>0.93</b>	0.50	ug/L	EPA 8260B	07/02/14 11:37
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 11:37
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 11:37
<b>Tert-Butanol</b>	<b>22</b>	5.0	ug/L	EPA 8260B	07/02/14 11:37
<b>TPH as Gasoline</b>	<b>3600</b>	50	ug/L	EPA 8260B	07/02/14 11:37
<b>1,2-Dichloroethane</b>	<b>0.85</b>	0.50	ug/L	EPA 8260B	07/02/14 11:37
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 11:37
1,2-Dichloroethane-d4 (Surr)	96.8		% Recovery	EPA 8260B	07/02/14 11:37
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	07/02/14 11:37
<b>TPH as Diesel (Silica Gel)</b>	<b>340</b>	50	ug/L	M EPA 8015	07/08/14 20:17
(Note: Lower boiling hydrocarbons present, atypical for Diesel Fuel.)					
Octacosane (Silica Gel Surr)	128		% Recovery	M EPA 8015	07/08/14 20:17



Project Name : **Lim**

Project Number : **2808**

Sample : **MW-5**

Matrix : Water

Lab Number : 88588-05

Sample Date :06/30/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 09:53
Toluene	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 09:53
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 09:53
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 09:53
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 09:53
<b>Diisopropyl ether (DIPE)</b>	<b>0.70</b>	0.50	ug/L	EPA 8260B	07/02/14 09:53
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 09:53
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 09:53
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	07/02/14 09:53
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	07/02/14 09:53
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 09:53
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 09:53
1,2-Dichloroethane-d4 (Surr)	99.7		% Recovery	EPA 8260B	07/02/14 09:53
Toluene - d8 (Surr)	103		% Recovery	EPA 8260B	07/02/14 09:53
TPH as Diesel (Silica Gel)	< 50	50	ug/L	M EPA 8015	07/08/14 23:13
Octacosane (Silica Gel Surr)	112		% Recovery	M EPA 8015	07/08/14 23:13

Project Name : **Lim**

Project Number : **2808**

Sample : **MW-7**

Matrix : Water

Lab Number : 88588-06

Sample Date :06/30/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
<b>Benzene</b>	<b>12</b>	0.50	ug/L	EPA 8260B	07/02/14 12:09
<b>Toluene</b>	<b>7.3</b>	0.50	ug/L	EPA 8260B	07/02/14 12:09
<b>Ethylbenzene</b>	<b>83</b>	0.50	ug/L	EPA 8260B	07/02/14 12:09
<b>Total Xylenes</b>	<b>63</b>	0.50	ug/L	EPA 8260B	07/02/14 12:09
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 12:09
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 12:09
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 12:09
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 12:09
<b>Tert-Butanol</b>	<b>32</b>	5.0	ug/L	EPA 8260B	07/02/14 12:09
<b>TPH as Gasoline</b>	<b>2700</b>	50	ug/L	EPA 8260B	07/02/14 12:09
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 12:09
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	07/02/14 12:09
1,2-Dichloroethane-d4 (Surr)	98.7		% Recovery	EPA 8260B	07/02/14 12:09
Toluene - d8 (Surr)	98.7		% Recovery	EPA 8260B	07/02/14 12:09
<b>TPH as Diesel (Silica Gel)</b>	<b>380</b>	50	ug/L	M EPA 8015	07/08/14 13:08
(Note: Some hydrocarbons lower-boiling, some higher-boiling than Diesel.)					
Octacosane (Silica Gel Surr)	129		% Recovery	M EPA 8015	07/08/14 13:08

## QC Report : Method Blank Data

Project Name : Lim

Project Number : 2808

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed	Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Diesel (Silica Gel)	< 50	50	ug/L	M EPA 8015	07/07/2014	Benzene	< 0.50	0.50	ug/L	EPA 8260B	07/08/2014
Octacosane (Silica Gel Surr)	107		%	M EPA 8015	07/07/2014	Benzene	< 0.50	0.50	ug/L	EPA 8260B	07/08/2014
Benzene	< 0.50	0.50	ug/L	EPA 8260B	07/03/2014	Benzene	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	07/03/2014	Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014
Toluene	< 0.50	0.50	ug/L	EPA 8260B	07/03/2014	Toluene	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	07/03/2014	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	07/03/2014	Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	07/03/2014	Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	07/03/2014	Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	07/03/2014	Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	07/02/2014
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	07/03/2014	Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	07/03/2014	TPH as Gasoline	< 50	50	ug/L	EPA 8260B	07/02/2014
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	07/03/2014	1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	07/03/2014	1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014
1,2-Dichloroethane-d4 (Surr)	104		%	EPA 8260B	07/03/2014	1,2-Dichloroethane-d4 (Surr)	99.4		%	EPA 8260B	07/02/2014
Toluene - d8 (Surr)	102		%	EPA 8260B	07/03/2014	Toluene - d8 (Surr)	102		%	EPA 8260B	07/02/2014
Benzene	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014						
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014						
Toluene	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014						
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014						
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014						
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014						
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014						
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	07/02/2014						
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014						
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	07/02/2014						
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014						
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	07/02/2014						
1,2-Dichloroethane-d4 (Surr)	98.4		%	EPA 8260B	07/02/2014						
Toluene - d8 (Surr)	98.0		%	EPA 8260B	07/02/2014						

## QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **Lim**Project Number : **2808**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
1,2-Dibromoethane	88580-01	<0.50	39.7	39.9	43.8	43.8	ug/L	EPA 8260B	7/3/14	110	110	0.320	70.0-130	25
1,2-Dichloroethane	88580-01	<0.50	39.4	39.6	46.9	47.5	ug/L	EPA 8260B	7/3/14	119	120	0.830	70.0-130	25
Benzene	88580-01	<0.50	39.4	39.6	43.6	43.2	ug/L	EPA 8260B	7/3/14	110	109	1.25	70.0-130	25
Diisopropyl ether	88580-01	<0.50	39.4	39.6	46.1	46.2	ug/L	EPA 8260B	7/3/14	117	117	0.0912	70.0-130	25
Ethyl-tert-butyl ether	88580-01	<0.50	39.4	39.6	45.6	45.9	ug/L	EPA 8260B	7/3/14	116	116	0.245	70.0-130	25
Ethylbenzene	88580-01	<0.50	39.4	39.6	39.3	39.1	ug/L	EPA 8260B	7/3/14	99.7	98.8	0.967	70.0-130	25
Methyl-t-butyl ether	88580-01	<0.50	39.6	39.7	47.1	48.4	ug/L	EPA 8260B	7/3/14	119	122	2.25	70.0-130	25
P + M Xylene	88580-01	<0.50	39.4	39.6	39.1	38.0	ug/L	EPA 8260B	7/3/14	99.0	96.0	3.13	70.0-130	25
Tert-Butanol	88580-01	<5.0	197	198	213	204	ug/L	EPA 8260B	7/3/14	108	103	4.71	70.0-130	25
Tert-amyl-methyl ether	88580-01	<0.50	39.4	39.6	46.8	46.8	ug/L	EPA 8260B	7/3/14	119	118	0.393	70.0-130	25

## QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **Lim**Project Number : **2808**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Toluene	88580-01	<0.50	39.4	39.6	43.5	42.8	ug/L	EPA 8260B	7/3/14	110	108	2.17	70.0-130	25
1,2-Dibromoethane	88588-01	<0.50	40.3	40.3	40.9	41.8	ug/L	EPA 8260B	7/2/14	102	104	2.02	70.0-130	25
1,2-Dichloroethane	88588-01	<0.50	40.0	40.0	38.8	39.6	ug/L	EPA 8260B	7/2/14	97.0	98.9	1.93	70.0-130	25
Benzene	88588-01	6.9	40.0	40.0	44.7	45.7	ug/L	EPA 8260B	7/2/14	94.5	97.0	2.60	70.0-130	25
Diisopropyl ether	88588-01	1.4	40.0	40.0	41.0	42.1	ug/L	EPA 8260B	7/2/14	99.0	102	2.80	70.0-130	25
Ethyl-tert-butyl ether	88588-01	<0.50	40.0	40.0	42.1	43.8	ug/L	EPA 8260B	7/2/14	105	109	3.91	70.0-130	25
Ethylbenzene	88588-01	<0.50	40.0	40.0	39.8	40.9	ug/L	EPA 8260B	7/2/14	99.6	102	2.70	70.0-130	25
Methyl-t-butyl ether	88588-01	<0.50	40.1	40.1	41.8	43.2	ug/L	EPA 8260B	7/2/14	104	108	3.46	70.0-130	25
P + M Xylene	88588-01	<0.50	40.0	40.0	39.5	40.8	ug/L	EPA 8260B	7/2/14	98.8	102	3.34	70.0-130	25

## QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **Lim**Project Number : **2808**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Tert-Butanol	88588-01	<5.0	200	200	203	208	ug/L	EPA 8260B	7/2/14	102	104	2.35	70.0-130	25
Tert-amyl-methyl ether	88588-01	<0.50	40.0	40.0	41.7	43.7	ug/L	EPA 8260B	7/2/14	104	109	4.67	70.0-130	25
Toluene	88588-01	<0.50	40.0	40.0	39.5	40.4	ug/L	EPA 8260B	7/2/14	98.8	101	2.32	70.0-130	25
Benzene	88565-04	<0.50	40.0	40.0	41.1	39.5	ug/L	EPA 8260B	7/8/14	103	98.7	4.04	70.0-130	25
Benzene	88641-06	<0.50	40.0	40.0	39.8	40.5	ug/L	EPA 8260B	7/8/14	99.6	101	1.69	70.0-130	25
1,2-Dibromoethane	88588-05	<0.50	40.3	40.3	45.6	45.9	ug/L	EPA 8260B	7/2/14	113	114	0.628	70.0-130	25
1,2-Dichloroethane	88588-05	<0.50	40.0	40.0	44.8	45.1	ug/L	EPA 8260B	7/2/14	112	113	0.498	70.0-130	25
Benzene	88588-05	<0.50	40.0	40.0	43.4	43.6	ug/L	EPA 8260B	7/2/14	108	109	0.632	70.0-130	25
Diisopropyl ether	88588-05	0.70	40.0	40.0	41.1	41.5	ug/L	EPA 8260B	7/2/14	101	102	1.07	70.0-130	25

## QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **Lim**Project Number : **2808**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Ethyl-tert-butyl ether	88588-05	<0.50	40.0	40.0	42.3	42.8	ug/L	EPA 8260B	7/2/14	106	107	1.23	70.0-130	25
Ethylbenzene	88588-05	<0.50	40.0	40.0	43.8	44.3	ug/L	EPA 8260B	7/2/14	109	111	1.10	70.0-130	25
Methyl-t-butyl ether	88588-05	<0.50	40.1	40.1	42.2	43.2	ug/L	EPA 8260B	7/2/14	105	108	2.54	70.0-130	25
P + M Xylene	88588-05	<0.50	40.0	40.0	41.5	41.4	ug/L	EPA 8260B	7/2/14	104	103	0.296	70.0-130	25
Tert-Butanol	88588-05	<5.0	200	200	210	213	ug/L	EPA 8260B	7/2/14	105	106	1.17	70.0-130	25
Tert-amyl-methyl ether	88588-05	<0.50	40.0	40.0	44.8	45.7	ug/L	EPA 8260B	7/2/14	112	114	2.08	70.0-130	25
Toluene	88588-05	<0.50	40.0	40.0	44.9	45.1	ug/L	EPA 8260B	7/2/14	112	113	0.449	70.0-130	25
TPH-D (Si Gel)	88568-04	500	1000	1000	1680	1540	ug/L	M EPA 8015	7/7/14	118	104	12.2	70-130	25

## QC Report : Laboratory Control Sample (LCS)

Project Name : **Lim**Project Number : **2808**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
TPH-D (Si Gel)	1000	ug/L	M EPA 8015	7/7/14	73.9	70-130
1,2-Dibromoethane	40.3	ug/L	EPA 8260B	7/3/14	112	70.0-130
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	7/3/14	120	70.0-130
Benzene	40.0	ug/L	EPA 8260B	7/3/14	111	70.0-130
Diisopropyl ether	40.0	ug/L	EPA 8260B	7/3/14	115	70.0-130
Ethyl-tert-butyl ether	40.0	ug/L	EPA 8260B	7/3/14	115	70.0-130
Ethylbenzene	40.0	ug/L	EPA 8260B	7/3/14	100	70.0-130
Methyl-t-butyl ether	40.1	ug/L	EPA 8260B	7/3/14	112	70.0-130
P + M Xylene	40.0	ug/L	EPA 8260B	7/3/14	97.9	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	7/3/14	104	70.0-130
Tert-amyl-methyl ether	40.0	ug/L	EPA 8260B	7/3/14	116	70.0-130
Toluene	40.0	ug/L	EPA 8260B	7/3/14	111	70.0-130
1,2-Dibromoethane	40.4	ug/L	EPA 8260B	7/2/14	98.2	70.0-130
1,2-Dichloroethane	40.1	ug/L	EPA 8260B	7/2/14	94.5	70.0-130
Benzene	40.1	ug/L	EPA 8260B	7/2/14	93.9	70.0-130
Diisopropyl ether	40.1	ug/L	EPA 8260B	7/2/14	99.0	70.0-130
Ethyl-tert-butyl ether	40.1	ug/L	EPA 8260B	7/2/14	108	70.0-130
Ethylbenzene	40.1	ug/L	EPA 8260B	7/2/14	96.1	70.0-130
Methyl-t-butyl ether	40.2	ug/L	EPA 8260B	7/2/14	108	70.0-130
P + M Xylene	40.1	ug/L	EPA 8260B	7/2/14	96.0	70.0-130



**QC Report : Laboratory Control Sample (LCS)**Project Name : **Lim**Project Number : **2808**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
TPH as Gasoline	482	ug/L	EPA 8260B	7/2/14	88.5	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	7/2/14	99.6	70.0-130
Tert-amyl-methyl ether	40.1	ug/L	EPA 8260B	7/2/14	103	70.0-130
Toluene	40.1	ug/L	EPA 8260B	7/2/14	95.8	70.0-130
Benzene	39.8	ug/L	EPA 8260B	7/8/14	97.3	70.0-130
Benzene	39.8	ug/L	EPA 8260B	7/8/14	93.4	70.0-130
1,2-Dibromoethane	40.1	ug/L	EPA 8260B	7/2/14	112	70.0-130
1,2-Dichloroethane	39.8	ug/L	EPA 8260B	7/2/14	111	70.0-130
Benzene	39.8	ug/L	EPA 8260B	7/2/14	107	70.0-130
Diisopropyl ether	39.8	ug/L	EPA 8260B	7/2/14	98.2	70.0-130
Ethyl-tert-butyl ether	39.8	ug/L	EPA 8260B	7/2/14	102	70.0-130
Ethylbenzene	39.8	ug/L	EPA 8260B	7/2/14	109	70.0-130
Methyl-t-butyl ether	39.9	ug/L	EPA 8260B	7/2/14	102	70.0-130
P + M Xylene	39.8	ug/L	EPA 8260B	7/2/14	103	70.0-130
TPH as Gasoline	483	ug/L	EPA 8260B	7/2/14	95.8	70.0-130
Tert-Butanol	199	ug/L	EPA 8260B	7/2/14	105	70.0-130
Tert-amyl-methyl ether	39.8	ug/L	EPA 8260B	7/2/14	110	70.0-130
Toluene	39.8	ug/L	EPA 8260B	7/2/14	112	70.0-130

# Chain of Custody

88588

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SAMPLER (SIGNATURE)

PROJECT NAME Lim

JOB NO. 2808

ADDRESS 250 8th Street, Oakland, CA

## ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:

SAMPLE ID.	DATE	TIME	MATRIX	QUANTITY	TPH-GAS /MTBE & BTEX (EPA 5030/8015-8020)	TPH-DIESEL w/ S.O. (EPA 3510/8015) <i>cleaning</i>	TPH-DIESEL & MOTOR OIL (EPA 3510/8015)	VOLATILE ORGANICS (EPA 624/8240/8260)	SEMI-VOLATILE ORGANICS (EPA 625/8270)	OIL & GREASE (EPA 5520)	LUFT METALS (5) (EPA 6010+7000)	CAM 17 METALS (EPA 6010+7000)	PCBS (EPA 8082)	ORGANOCHLORINATED PESTICIDES (EPA 8081A)	FUEL OXYGENATES (EPA 8260)	Pb (TOTAL or DISSOLVED) (EPA 6010)	TPH-G, BTEX & 5 OXY's (EPA 8260) <i>+ Pb S.O.V.</i>	COMPOSITE	EDF	HOLD	
MW-1	6-30-14	830	W	5		X															
MW-2		717				X														X	
MW-3		900				X														X	
MW-4R		810				X														X	
MW-5		650				X														X	
MW-7		737				X														X	

01  
02  
03  
04  
05  
06

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY LABORATORY

COMMENTS:

*R. C. Kelly* 7-1-14  
 (signature) (time)

*Robert E. Kelly* 1215  
 (printed name) (date)

Company-ASE, INC.

(signature) (time)

(printed name) (date)

Company-

(signature) (time)

(printed name) (date)

Company-

*Harold Brown* 1220  
 (signature) (time)

*Harold Brown*  
 (printed name) (date)

Company- *Hill* 07014

TURN AROUND TIME  
 STANDARD 24Hr 48Hr 72Hr

OTHER:

(For Ho)

**SAMPLE RECEIPT CHECKLIST**

SRG #: 88588

Sample Receipt	Initials/Date: <u>Egy 070114</u>	Storage Time: <u>1417</u>	Sample Login	Initials/Date: <u>TJB 070114</u>
TAT: <input checked="" type="checkbox"/> Standard <input type="checkbox"/> Rush <input type="checkbox"/> Split <input type="checkbox"/> None		Method of Receipt: <input checked="" type="checkbox"/> Courier <input type="checkbox"/> Over-the-counter <input type="checkbox"/> Shipped		
Temp °C <u>2.8</u> <input type="checkbox"/> N/A	Therm ID <u>IR1</u>	Time <u>1414</u>	Coolant present <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Water <input type="checkbox"/> Temp Excursion
For Shipments Only: Cooler Receipt Initials/Date/Time:	Custody Seals <input type="checkbox"/> N/A <input type="checkbox"/> Intact <input type="checkbox"/> Broken			

Chain-of-Custody:	Yes	No
Is COC present?	/	
Is COC signed by relinquisher?	/	
Is COC dated by relinquisher?	/	
Is the sampler's name on the COC?	/	
Are there analyses or hold for all samples?	/	

Documented on	COC	Labels	Discrepancies:
Sample ID	X	X	
Project ID	X	X	
Sample Date	X	X	
Sample Time	X	X	
Does COC match project history?		<input type="checkbox"/> N/A <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Samples:	N/A	Yes	No
Are sample custody seals intact?	/		
Are sample containers intact?		/	
Is preservation documented?		/	
In-house Analysis:	N/A	Yes	No
Are preservatives acceptable?		/	
Are samples within holding time?		/	
Are sample container types correct?		/	
Is there adequate sample volume?			/

**Comments:** Only 5 containers per sample. Egy 070114 1417  
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**Receipt Details:**

Matrix	Container Type	# of Containers
<u>WA</u>	<u>Voa</u>	<u>30</u>

**CS Required:**

Proceed With Analysis:  YES  NO      Init/Date: \_\_\_\_\_  
 Client Communication: \_\_\_\_\_