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Allterra Environmental, Inc.  
849 Almar Avenue, Suite C  
No. 281  
Santa Cruz, California 95060

**Client:** Manwel and Samira Shuwayhat  
**Project Location:** 160 Holmes Street, Livermore, California  
**Subject:** First Quarter 2011 Groundwater Monitoring Report  
**Report Date:** March 18, 2011

To Whom It May Concern:

I have reviewed the report referenced above and approve its distribution to the necessary regulatory agencies. Should any of the regulatory agencies require it, "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached proposal or report is true and correct to the best of my knowledge."

Sincerely,



Manwel Shuwayhat



**First Quarter 2011 Groundwater Monitoring Report  
Fuel Leak Case No. RO0000324, Livermore Gas and Mini Mart  
160 Holmes Street, Livermore, California**

*Date:*  
March 18, 2011

*Project No.:*  
160

*Prepared For:*  
Livermore Gas and Mini mart  
Attention: Manwel and Samira Shuwayhat  
54 Wolfe Canyon Road  
Kentfield, California 94904

**Allterra Environmental, Inc.**  
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March 18, 2011

*Project No.: 160*

Manwel and Samira Shuwayhat  
Livermore Gas and Mini Mart  
54 Wolfe Canyon Road  
Kentfield, California 94904

**SUBJECT: First Quarter 2011 Groundwater Monitoring Report for Fuel Leak  
Case No. RO0000324, Livermore Gas and Mini Mart, 160 Holmes  
Street, Livermore, California**

Dear Mr. and Mrs. Shuwayhat:

On your behalf, Allterra Environmental, Inc. (Allterra) has prepared this First Quarter 2011 Groundwater Monitoring Report for the property located at 160 Holmes Street in Livermore, California (Site). This report describes the field and analytical methods, provides a summary of groundwater monitoring results, and presents conclusions and recommendations regarding groundwater conditions at the Site. Monitoring activities were completed in accordance with Alameda County Environmental Health Services (ACEHS) and Regional Water Quality Control Board (RWQCB) guidelines, and Allterra protocols presented in Appendix A.

### **Site Location and Description**

The Site is located on the southwest corner of Holmes Street and Second Street at 160 Holmes Street in Livermore, California (Figure 1). The Site currently operates as a service station and convenience store. The Site is paved with concrete (over USTs) and asphalt, and a canopy covers the fuel dispensers. Pertinent site features, such as monitoring well locations, are presented on Figure 2.

### **Groundwater Monitoring for First Quarter 2011**

#### Field Activities

On January 19 through 21, 2011, Allterra conducted groundwater monitoring at fifteen on- and off-site monitoring wells (MW-1A through MW-9B) and three on-site extraction wells (EW-1 through EW-3). Groundwater monitoring activities included the measurement of static groundwater levels, an evaluation of groundwater in the wells for the presence of petroleum hydrocarbons, field parameter testing, and groundwater quality sampling. Prior to sampling, all groundwater wells were purged using disposable bailers until temperature, color, specific conductance, and turbidity readings had stabilized or until at least three casing volumes had been removed. Groundwater sampling field logs are included in Appendix B.

### Laboratory Analysis

Groundwater samples from monitoring wells were submitted under chain-of-custody documentation to McCampbell Analytical, Inc. of Pittsburg, California, a State of California certified laboratory (ELAP #1644). The samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) by EPA method 8015C, and benzene, toluene, ethylbenzene, xylenes (BTEX) and methyl tert-butyl ether (MTBE) by EPA Method 8021B. Select samples were also analyzed for total petroleum hydrocarbons as diesel (TPHd) by EPA Method 8015B, and lead scavengers and 5-fuel oxygenates by EPA Method 8260B. A copy of the chain-of-custody documentation for the samples and the certified analytical report, including quality assurance and quality control (QA/QC) data, are included in Appendix C.

### Groundwater Gradient and Flow Direction

On January 19, 2011, Allterra personnel measured and recorded depths to groundwater from the tops of well casings (TOC) for each well. Recorded depths to groundwater ranged from 23.10 to 25.30 feet below TOC. The surveyed elevations of each well casing (measured in feet relative to mean sea level), depths to groundwater, and calculated groundwater elevations are presented in Table 1 and depicted on Figure 3 as groundwater elevation contours. For the January 2011 groundwater monitoring event, the general groundwater flow direction was to the west-northwest at a gradient of approximately 0.008 feet per foot (ft/ft).

### Analytical Results

Petroleum constituents were detected in five of the eighteen wells sampled during this event. A summary of current and historical groundwater analytical results is presented in Table 2. Additionally, concentrations of dissolved TPHg, benzene, and MTBE in monitoring wells are shown on Figure 4. A discussion of groundwater sample analytical results is presented below:

- TPHg was detected in five of eighteen wells at concentrations ranging from 150 micrograms per liter ( $\mu\text{g/L}$ ) in MW-1A to 15,000  $\mu\text{g/L}$  in EW-3.
- TPHd was detected in five of ten wells analyzed at concentrations ranging from 69  $\mu\text{g/L}$  in MW-7B to 5,200  $\mu\text{g/L}$  in EW-3.
- Benzene was detected in three of eighteen wells at concentrations ranging from 1.4  $\mu\text{g/L}$  in MW-1A to 230  $\mu\text{g/L}$  in EW-3.
- Toluene was detected in five of eighteen wells at concentrations ranging from 0.60  $\mu\text{g/L}$  in MW-1A to 93  $\mu\text{g/L}$  in MW-3.
- Ethylbenzene was detected in three of eighteen wells at concentrations ranging from 7.2  $\mu\text{g/L}$  in MW-7A to 1,100  $\mu\text{g/L}$  in EW-3.
- Xylenes were detected in five of eighteen wells at concentrations ranging from 0.77  $\mu\text{g/L}$  in MW-7B to 1,900  $\mu\text{g/L}$  in EW-3.
- MTBE was detected in eight of eighteen wells at concentrations ranging from 0.65  $\mu\text{g/L}$  in MW-9B to 150,000  $\mu\text{g/L}$  in EW-3.
- The highest levels of TPHg and MTBE were detected in extraction well EW-3, which has a screen interval from 25 to 30 feet bgs.

## Conclusions

Based on the data collected during first quarter 2011, Allterra concludes the following:

- Groundwater levels during this monitoring event remained at levels high enough to allow for the sampling of A-Zone wells.
- The overall groundwater flow direction was to the west-northwest with an estimated gradient of 0.008 ft/ft, which is consistent with previous monitoring events.
- For the January 2011 monitoring event, petroleum constituents were detected at or above laboratory detection limits in eight of the eighteen wells sampled.
- The highest concentrations of petroleum constituents remaining in shallow groundwater appears to be limited to the area around wells EW-1, EW-3, and MW-1A
- The vertical and lateral extent of dissolved petroleum constituents has been adequately characterized.

## Recommendations

Based on the conclusions presented above, Allterra recommends the following:

- Upon ACEHS-approval, expedite implementation of the Revised Work Plan for In-Situ Soil and Groundwater Remediation, dated March 10, 2011. During and following remedial activities at the Site, perform data collection and monitoring as indicated in the work plan to evaluate the effectiveness of the in-situ remedial efforts.
- Revise the current semi-annual groundwater monitoring at the Site to include quarterly groundwater monitoring for the purpose of closely monitoring potential contaminant rebound under varying seasonal conditions following the cessation of in-situ remedial efforts.
- All wells will be sampled and analyzed for TPHg, BTEX, and MTBE on a quarterly basis. Only select wells will be analyzed for TPHd, 5-fuel oxygenates, and lead scavengers on a quarterly basis.
- Quarterly sampling activities conducted during the second quarter 2011 will establish baseline conditions prior to remedial implementation. In addition to the analytes listed above, select wells will be tested for dissolved oxygen, methane, carbon dioxide, total dissolved solids (TDS), sulfate, sodium, ferrous iron, manganese, total iron, total chromium, hexavalent chromium, arsenic, and alkalinity during baseline and subsequent remedial monitoring events.



### **Limitations**

Allterra prepared this report for the use of Livermore Gas and Mini Mart, ACEHS and RWQCB in evaluating groundwater quality at selected locations at the time of this study. Statements, conclusions, and recommendations in this report are based solely on the field observations and analytical results related to work performed by Allterra and there is no warranty, expressed or implied. Site conditions and data can change over time; therefore, data presented in this report is only applicable to the timeframe of this study. Allterra's services have been performed in accordance with environmental principles generally accepted at this time and location.

Should you have any questions, please contact Allterra at (831) 425-2608.

Sincerely,  
Allterra Environmental, Inc.



Devon Owens  
Staff Scientist



Joe Magine, P.G. 8423  
Senior Geologist

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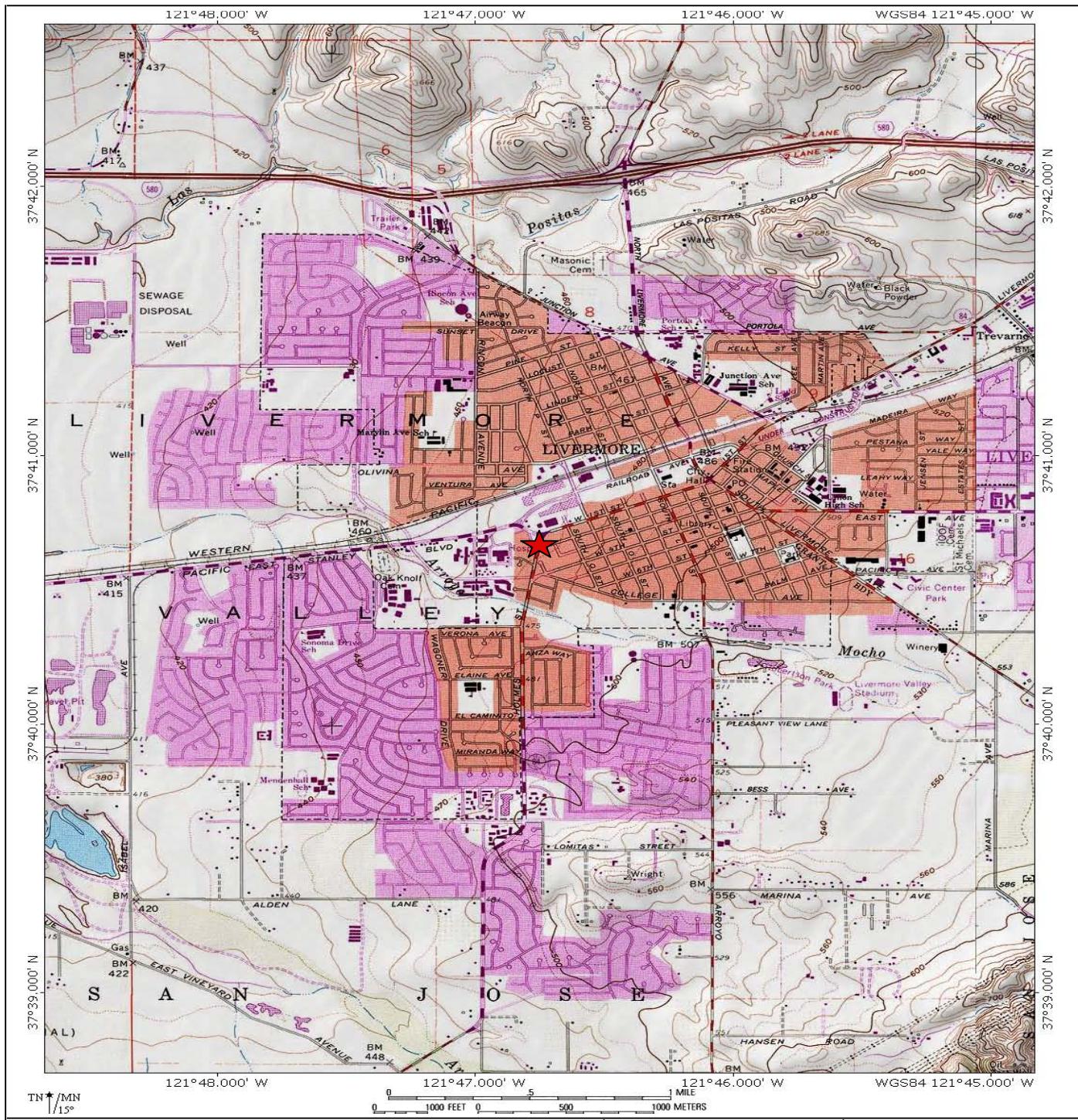
- Table 1, Groundwater Elevation Data
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### List of Appendices

- Appendix A, Groundwater Monitoring Field Protocol
- Appendix B, Groundwater Sampling Field Logs
- Appendix C, Certified Analytical Report and Chain-of-Custody

cc: Jerry Wickam, ACEHS

## FIGURES 1 - 4



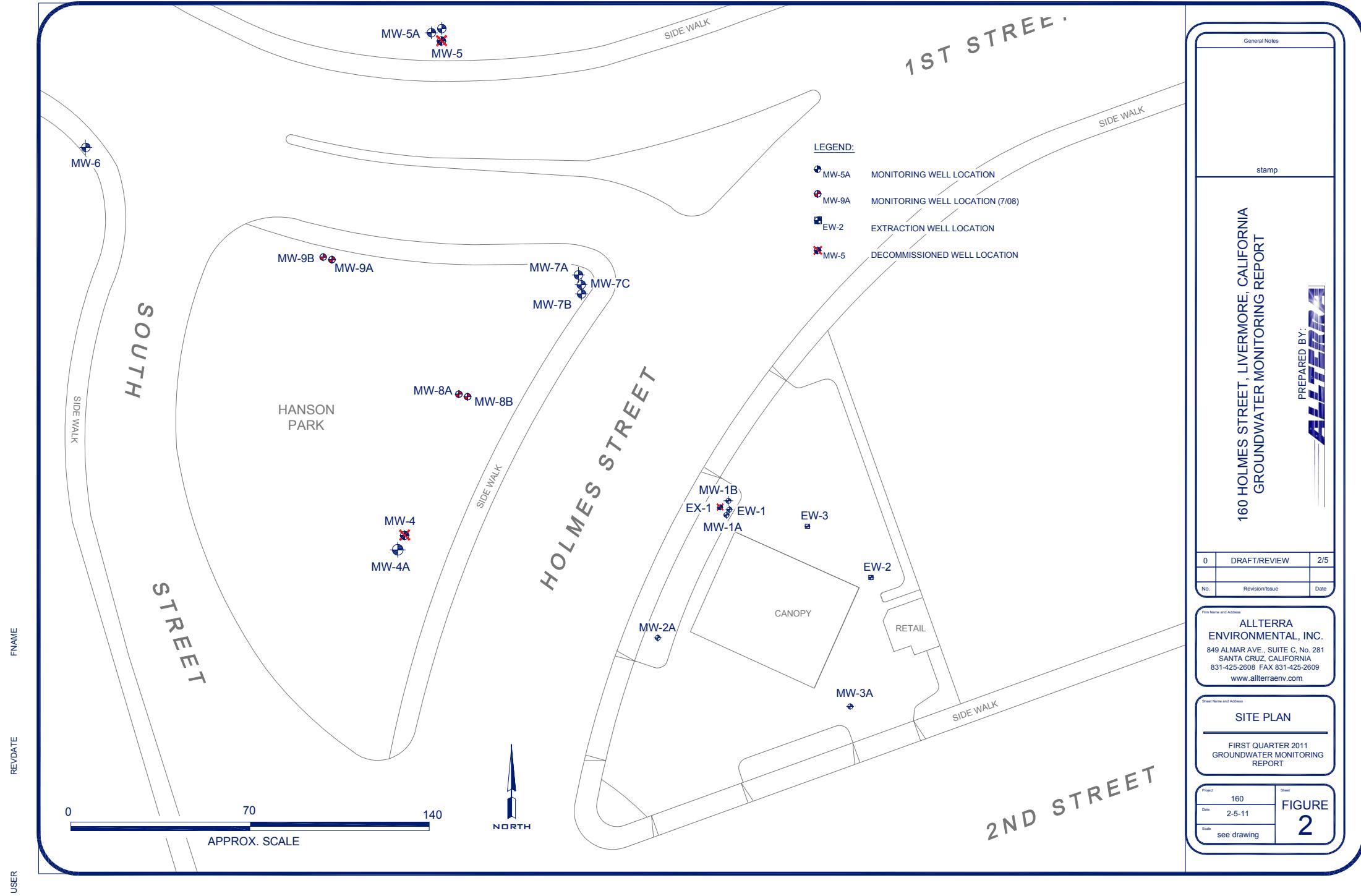
## Site Vicinity Map

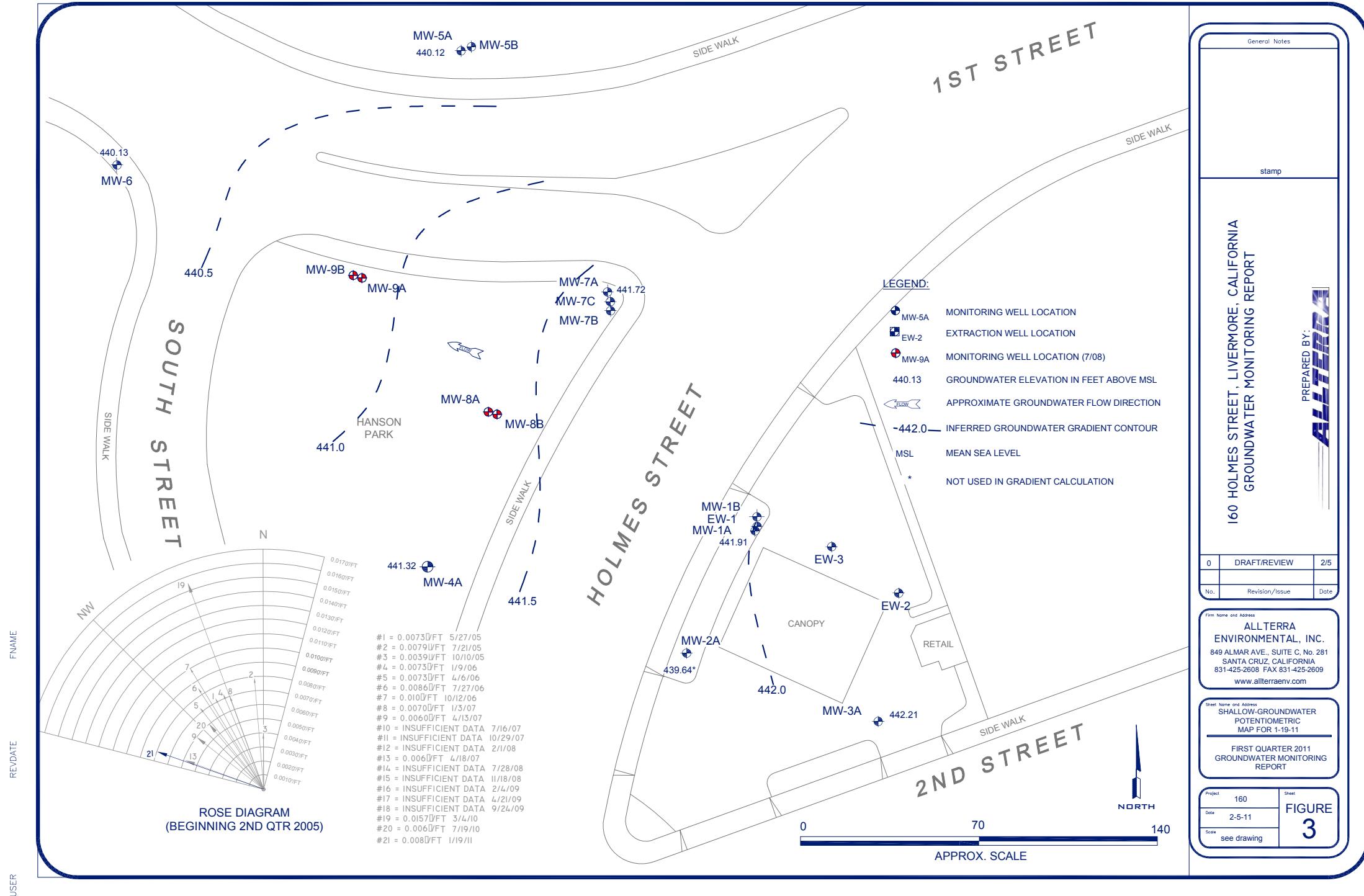
Livermore Gas and Minimart  
160 Holmes Street  
Livermore, California

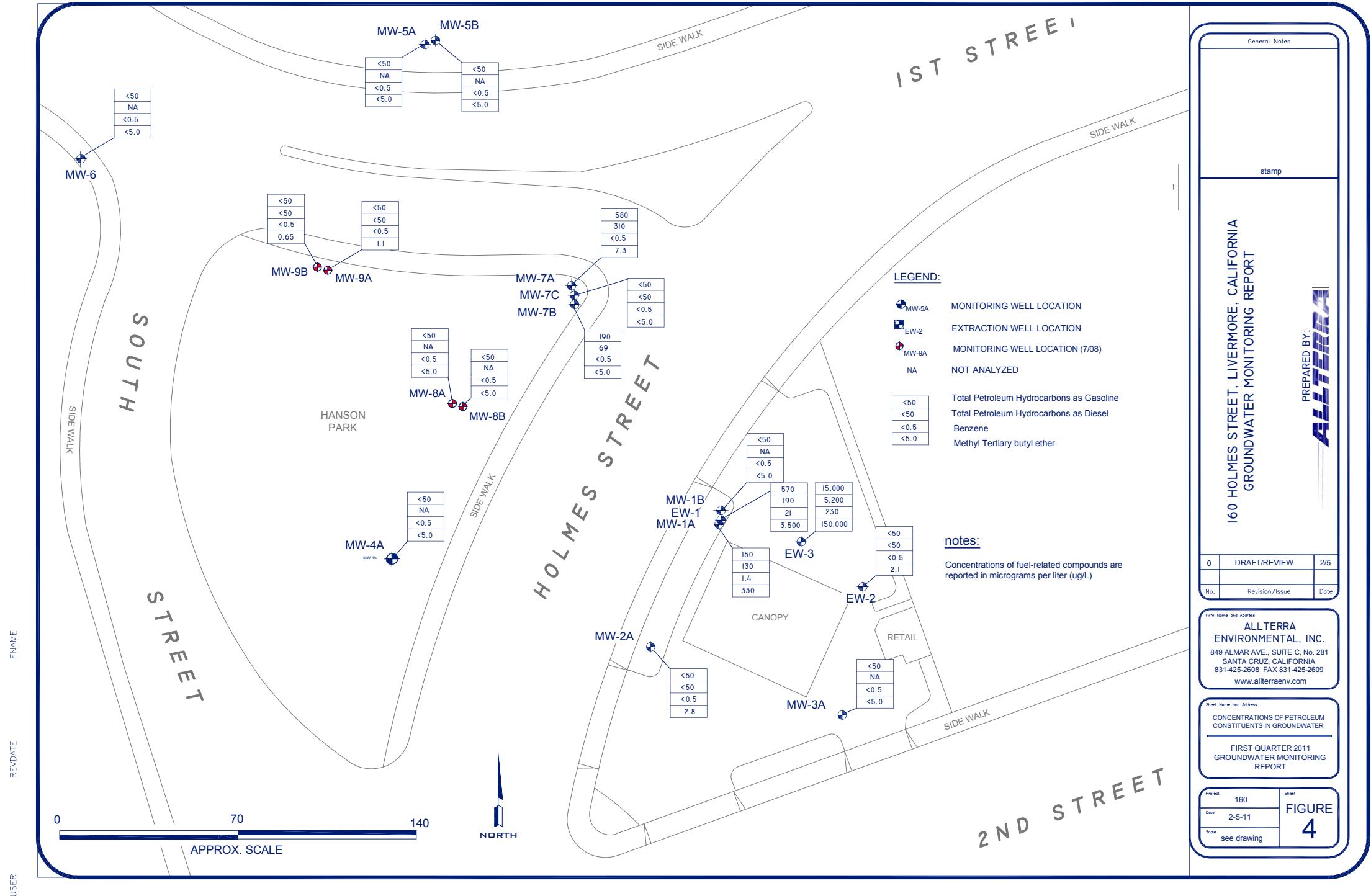
Figure 1

2/5/11

**ALLTERRA**  
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## TABLES 1 - 2

**Table 1**  
**Groundwater Elevation Data**  
160 Holmes Street, Livermore

Monitoring Well ID	Date	Top of Casing Elevation* (feet, msl)	Screen Interval (feet, bgs)	Depth to Groundwater (feet)	Groundwater Elevation (feet, msl)
MW-1*	8/11/00	465.03	15-30	NM	NC
	10/19/00	465.03		21.94	443.09
	2/22/01	465.03		22.91	442.12
	5/30/01	465.03		Dry	NC
	11/14/01	465.03		Dry	NC
	5/7/02	465.03		Dry	NC
	9/11/02	465.03		26.16	438.87
	12/1/02	465.03		27.55	437.48
	3/14/03	465.03		22.63	442.40
	6/25/03	465.03		22.10	442.93
	9/16/03	465.03		24.91	440.12
	12/22/03	465.03		21.75	443.28
	3/10/04	465.03		17.45	447.58
	6/15/04	465.03		22.38	442.65
	9/17/04	465.03		25.61	439.42
	12/10/04	465.03		22.18	442.85
	3/2/05	465.03		16.95	448.08
	5/27/05	465.03		18.42	446.61
	7/21/05	465.03		21.38	443.65
	10/10/05	465.03		22.49	442.54
	1/9/06	465.03		18.05	446.98
MW-1A*	4/6/06	465.03	15-30	15.60	449.43
	7/27/06	465.03		22.42	442.61
	10/12/06	465.03		23.46	441.57
	1/3/07	465.03		21.00	444.03
	4/13/07	465.03		23.24	441.79
	7/16/07	465.03		Dry	NC
	10/29/07	465.03		Dry	NC
	2/1/08	465.03		Dry	NC
	4/18/08	465.03		27.34	437.69
	7/28/08	465.03		Dry	NC
	11/18/08	465.03		Dry	NC
	2/4/09	465.03		Dry	NC
	4/21/09	465.03		Dry	NC
	9/24/09	465.03		35.00	430.03
	3/4/10	465.03		28.05	436.98
	7/19/10	465.03		23.85	441.18
	1/19/11	<b>465.03</b>		<b>23.12</b>	<b>441.91</b>
MW-1B**	4/6/06	465.02	50-55	15.59	449.43
	7/27/06	465.02		22.47	442.55
	10/12/06	465.02		23.51	441.51
	1/3/07	465.02		21.04	443.98
	4/13/07	465.02		23.30	441.72
	7/16/07	465.02		35.57	429.45
	10/29/07	465.02		47.32	417.70
	2/1/08	465.02		33.90	431.12
	4/18/08	465.02		27.35	437.67
	7/28/08	465.02		44.03	420.99
	11/18/08	465.02		48.50	416.52
	2/4/09	465.02		46.83	418.19
	4/21/09	465.02		37.10	427.92
	9/24/09	465.02		37.76	427.26
	3/4/10	465.02		27.41	437.61
	7/19/10	465.02		NM	NC
	1/19/11	<b>466.02</b>		<b>23.10</b>	<b>442.92</b>
MW-2	8/11/00	464.94	15-30	NM	NC
	10/19/00	464.94		21.80	443.14
	2/22/01	464.94		22.87	442.07
	5/30/01	464.94		Dry	NC
	11/14/01	464.94		Dry	NC
	5/7/02	464.94		26.70	438.24
	9/11/02	464.94		25.96	438.98
	12/11/02	464.94		27.56	437.38
	3/14/03	464.94		22.41	442.53
	6/25/03	464.94		21.97	442.97
	9/16/03	464.94		24.70	440.24
	12/22/03	464.94		21.58	443.36

**Table 1**  
**Groundwater Elevation Data**  
160 Holmes Street, Livermore

Monitoring Well ID	Date	Top of Casing Elevation* (feet, msl)	Screen Interval (feet, bgs)	Depth to Groundwater (feet)	Groundwater Elevation (feet, msl)
MW-2 (cont.)	3/10/04	464.94		17.31	447.63
	6/15/04	464.94		22.18	442.76
	9/17/04	464.94		25.44	439.50
	12/10/04	464.94		22.00	442.94
	3/2/05	464.94		16.75	448.19
	5/27/05	464.94		18.29	446.65
	7/21/05	464.94		20.46	444.48
	10/10/05	464.94		22.30	442.64
	1/9/06	464.94		17.67	447.27
MW-2A	4/6/06	464.94	15-30	15.47	449.47
	7/27/06	464.94		22.27	442.67
	10/12/06	464.94		23.35	441.59
	1/3/07	464.94		20.90	444.04
	4/13/07	464.94		23.16	441.78
	7/16/07	464.94		Dry	NC
	10/29/07	464.94		Dry	NC
	2/1/08	464.94		Dry	NC
	4/18/08	464.94		27.26	437.68
	7/28/08	464.94		Dry	NC
	11/18/08	464.94		Dry	NC
	2/4/09	464.94		Dry	NC
	4/21/09	464.94		Dry	NC
	9/24/09	464.94		Dry	NC
	3/4/10	464.94		25.12	439.82
	7/20/10	464.94		25.90	439.04
	<b>1/19/11</b>	<b>464.94</b>		<b>25.30</b>	<b>439.64</b>
MW-3	8/11/00	465.84	15-30	NM	NC
	10/19/00	465.84		22.45	443.39
	2/22/01	465.84		23.51	442.33
	5/30/01	465.84		Dry	NC
	11/14/01	465.84		Dry	NC
	5/7/02	465.84		Dry	NC
	9/11/02	465.84		26.61	439.23
	12/11/02	465.84		28.18	437.66
	3/14/03	465.84		23.04	442.80
	6/25/03	465.84		22.59	443.25
	9/16/03	465.84		25.33	440.51
	12/22/03	465.84		22.37	443.47
	3/10/04	465.84		17.88	447.96
	6/15/04	465.84		22.82	443.02
	9/17/04	465.84		26.09	439.75
	12/10/04	465.84		22.65	443.19
	3/5/05	465.84		17.33	448.51
	5/27/05	465.84		18.89	446.95
	7/21/05	465.84		21.10	444.74
	10/10/05	465.84		22.94	442.90
	1/9/06	465.84		18.24	447.60
Well Destroyed					
MW-3A	4/6/06	465.84	15-30	16.02	449.82
	7/27/06	465.84		22.90	442.94
	10/12/06	465.84		23.99	441.85
	1/3/07	465.84		21.52	444.32
	4/13/07	465.84		23.78	442.06
	7/16/07	465.84		Dry	NC
	10/29/07	465.84		Dry	NC
	2/1/08	465.84		Dry	NC
	4/18/08	465.84		27.86	437.98
	7/28/08	465.84		Dry	NC
	11/18/08	465.84		Dry	NC
	2/4/09	465.84		Dry	NC
	4/21/09	465.84		Dry	NC
	9/24/09	465.84		Dry	NC
	3/4/10	465.84		27.95	437.89
	7/19/10	465.84		26.55	439.29
	<b>1/19/11</b>	<b>465.84</b>		<b>23.63</b>	<b>442.21</b>

**Table 1**  
**Groundwater Elevation Data**  
160 Holmes Street, Livermore

Monitoring Well ID	Date	Top of Casing Elevation* (feet, msl)	Screen Interval (feet, bgs)	Depth to Groundwater (feet)	Groundwater Elevation (feet, msl)
MW-4***	11/14/01	465.15	15-30	33.84	431.31
	5/7/02	465.15		26.75	438.40
	9/11/02	465.15		26.66	438.49
	12/11/02	465.15		28.39	436.76
	3/14/03	465.15		23.14	442.01
	6/25/03	465.15		22.72	442.43
	9/16/03	465.15		25.39	439.76
	12/22/03	465.15		22.42	442.73
	3/4/04	465.15		18.20	446.95
	6/15/04	465.15		22.95	442.20
	9/17/04	465.15		26.12	439.03
	12/10/04	465.15		22.73	442.42
	3/2/05	465.15		17.60	447.55
	5/27/05	465.15		19.14	446.01
	7/21/05	465.15		21.25	443.90
	10/10/05	465.15		22.85	442.30
	1/9/06	465.15		18.54	446.61
MW-4A**	4/6/06	464.96	15-30	16.19	448.77
	7/27/06	464.96		22.87	442.09
	10/12/06	464.96		23.90	441.06
	1/3/07	464.96		21.52	443.44
	4/13/07	464.96		23.78	441.18
	7/16/07	464.96		Dry	NC
	10/29/07	464.96		Dry	NC
	2/1/08	464.96		Dry	NC
	4/18/08	464.96		27.91	437.05
	7/28/08	464.96		Dry	NC
	11/18/08	464.96		Dry	NC
	2/4/09	464.96		Dry	NC
	9/24/09	464.96		Dry	NC
	4/21/09	464.96		Dry	NC
	3/4/10	464.96		25.66	439.30
	7/20/10	464.96		24.25	440.71
	<b>1/19/11</b>	<b>464.96</b>		<b>23.64</b>	<b>441.32</b>
MW-5***	11/14/01	464.65	20-50	34.94	429.71
	5/7/02	464.65		27.90	436.75
	9/11/02	464.65		27.99	436.66
	12/11/02	464.65		29.50	435.15
	3/14/03	464.65		24.26	440.39
	6/25/03	464.65		24.01	440.64
	9/16/03	464.65		26.83	437.82
	12/22/03	464.65		23.68	440.97
	3/10/04	464.65		19.22	445.43
	6/15/04	464.65		24.20	440.45
	9/17/04	464.65		27.68	436.97
	12/10/04	464.65		23.93	440.72
	3/2/05	464.65		18.56	446.09
	5/27/05	464.65		20.15	444.50
	7/21/05	464.65		22.55	442.10
	10/10/05	464.65		23.35	441.30
	1/9/06	464.65		19.53	445.12
MW-5A**	4/6/06	464.64	20-35	17.35	447.29
	7/27/06	464.64		24.40	440.24
	10/12/06	464.64		25.58	439.06
	1/3/07	464.64		22.53	442.11
	4/13/07	464.64		24.77	439.87
	7/16/07	464.64		Dry	NC
	10/29/07	464.64		Dry	NC
	2/1/08	464.64		34.03	430.61
	4/18/08	464.64		28.13	436.51
	7/28/08	464.64		Dry	NC
	11/18/08	464.64		33.82	430.82
	2/4/09	464.64		Dry	NC
	4/21/09	464.64		Dry	NC
	9/24/09	464.64		Dry	NC
	3/4/10	464.64		28.77	435.87
	7/20/10	464.64		24.57	440.07
	<b>1/19/11</b>	<b>464.64</b>		<b>24.52</b>	<b>440.12</b>

**Table 1**  
**Groundwater Elevation Data**  
160 Holmes Street, Livermore

Monitoring Well ID	Date	Top of Casing Elevation* (feet, msl)	Screen Interval (feet, bgs)	Depth to Groundwater (feet)	Groundwater Elevation (feet, msl)
MW-5B**	4/6/06	464.59	50-55	17.44	447.15
	7/27/06	464.59		24.09	440.50
	10/12/06	464.59		25.17	439.42
	1/3/07	464.59		22.44	442.15
	4/13/07	464.59		25.33	439.26
	7/16/07	464.59		36.50	428.09
	10/29/07	464.59		47.90	416.69
	2/1/08	464.59		33.25	431.34
	4/18/08	464.59		28.77	435.82
	7/28/08	464.59		44.76	419.83
	11/18/08	464.59		51.65	412.94
	2/4/09	464.59		47.63	416.96
	4/21/09	464.59		37.00	427.59
	9/24/09	464.59		39.73	424.86
	3/4/10	464.59		28.97	435.62
	7/19/10	464.59		25.40	439.19
	<b>1/19/11</b>	<b>464.59</b>		<b>24.52</b>	<b>440.07</b>
MW-6	11/14/01	464.13	20-50	33.88	430.25
	5/7/02	464.13		27.01	437.12
	9/11/02	464.13		27.03	437.10
	12/11/02	464.13		28.77	435.36
	3/14/03	464.13		23.46	440.67
	6/25/03	464.13		23.08	441.05
	9/16/03	464.13		25.77	438.36
	12/22/03	464.13		22.59	441.54
	3/10/04	464.13		18.65	445.48
	6/15/04	464.13		23.31	440.82
	9/17/04	464.13		26.56	437.57
	12/10/04	464.13		23.09	441.04
	3/2/05	464.13		18.04	446.09
	5/27/05	464.13		19.57	444.56
	7/21/05	464.13		21.60	442.53
	10/10/05	464.13		22.21	441.92
	1/9/06	464.13		18.99	445.14
	4/6/06	464.13		17.00	447.13
Well obstructed	7/27/06	464.13		23.45	440.68
	10/12/06	464.13		24.36	439.77
	1/3/07	464.13		22.03	442.10
	4/13/07	464.13		24.40	439.73
	7/16/07	464.13		NM	NC
	10/29/07	464.13		Dry	NC
	2/1/08	464.13		33.05	431.08
	4/18/08	464.13		28.20	435.93
	7/28/08	464.13		Dry	NC
	11/18/08	464.13		Dry	NC
	2/4/09	464.13		Dry	NC
	4/21/09	464.13		38.71	425.42
	9/24/09	464.13		38.26	425.87
MW-7A**	3/4/10	464.13		26.02	438.11
	7/19/10	464.13		24.65	439.48
	<b>1/19/11</b>	<b>464.13</b>		<b>24.00</b>	<b>440.13</b>
	4/6/06	465.32	15-30	16.61	448.71
	7/27/06	465.32		23.40	441.92
	10/12/06	465.32		24.50	440.82
	1/3/07	465.32		21.80	443.52
	4/13/07	465.32		24.05	441.27
	7/16/07	465.32		Dry	NC
	10/29/07	465.32		Dry	NC
	2/1/08	465.32		Dry	NC
	4/18/08	465.32		28.16	437.16
	7/28/08	465.32		Dry	NC
	11/18/08	465.32		Dry	NC
	2/4/09	465.32		Dry	NC
	4/21/09	465.32		Dry	NC
	9/24/09	465.32		Dry	NC
	3/4/10	465.32		26.30	439.02
	7/19/10	465.32		24.78	440.54
	<b>1/19/11</b>	<b>465.32</b>		<b>23.60</b>	<b>441.72</b>

**Table 1**  
**Groundwater Elevation Data**  
160 Holmes Street, Livermore

Monitoring Well ID	Date	Top of Casing Elevation* (feet, msl)	Screen Interval (feet, bgs)	Depth to Groundwater (feet)	Groundwater Elevation (feet, msl)
MW-7B**	4/6/06	465.39	45-50	16.85	448.54
	7/27/06	465.39		23.72	441.67
	10/12/06	465.39		24.74	440.65
	1/3/07	465.39		22.18	443.21
	4/13/07	465.39		24.41	440.98
	7/16/07	465.39		36.40	428.99
	10/29/07	465.39		Dry	NC
	2/1/08	465.39		33.84	431.55
	4/18/08	465.39		28.52	436.87
	7/28/08	465.39		44.92	420.47
	11/18/08	465.39		Dry	NC
	2/4/09	465.39		46.65	418.74
	4/21/09	465.39		36.83	428.56
	9/24/09	465.39		39.26	426.13
	3/4/10	465.39		28.63	436.76
	7/19/10	465.39		25.05	440.34
	<b>1/19/11</b>	<b>465.39</b>		<b>24.15</b>	<b>441.24</b>
MW-7C**	4/6/06	465.39	65-70	17.18	448.21
	7/27/06	465.39		24.15	441.24
	10/12/06	465.39		24.74	440.65
	1/3/07	465.39		22.53	442.86
	4/13/07	465.39		24.73	440.66
	7/16/07	465.39		36.70	428.69
	10/29/07	465.39		48.25	417.14
	2/1/08	465.39		34.00	431.39
	4/18/08	465.39		28.75	436.64
	7/28/08	465.39		45.00	420.39
	11/18/08	465.39		49.62	415.77
	2/4/09	465.39		47.89	417.50
	4/21/09	465.39		36.98	428.41
	9/24/09	465.39		39.49	425.90
	3/4/10	465.39		26.66	438.73
	7/19/10	465.39		25.38	440.01
	<b>1/19/11</b>	<b>465.39</b>		<b>24.50</b>	<b>440.89</b>
EW-1**	4/6/06	465.45	15-40	15.99	449.46
	7/27/06	465.45		23.85	441.60
	10/12/06	465.45		23.51	441.94
	1/3/07	465.45		21.45	444.00
	4/13/07	465.45		23.69	441.76
	10/29/07	465.45		NM	NC
	2/1/08	465.45		NM	NC
	4/18/08	465.45		27.83	437.62
	7/28/08	465.45		NM	NC
	11/18/08	465.45		Dry	NC
	2/4/09	465.45		Dry	NC
	4/21/09	465.45		Dry	NC
	9/24/09	465.45		Dry	NC
	3/4/10	465.45		27.87	NC
	7/20/10	465.45		24.35	441.10
	<b>1/19/11</b>	<b>465.45</b>		<b>23.58</b>	<b>441.87</b>
EW-2**	4/6/06	465.99	15-40	16.20	449.79
	7/27/06	465.99		23.10	442.89
	10/12/06	465.99		21.48	444.51
	1/3/07	465.99		21.66	444.33
	4/13/07	465.99		23.93	442.06
	10/29/07	465.99		Dry	NC
	2/1/08	465.99		NM	NC
	4/18/08	465.99		28.04	437.95
	7/28/08	465.99		NM	NC
	11/18/08	465.99		Dry	NC
	2/4/09	465.99		Dry	NC
	4/21/09	465.99		Dry	NC
	9/24/09	465.99		Dry	NC
	3/4/10	465.99		25.89	NC
	7/20/10	465.99		24.45	441.54
	<b>1/19/11</b>	<b>465.99</b>		<b>23.72</b>	<b>442.27</b>

**Table 1**  
**Groundwater Elevation Data**  
160 Holmes Street, Livermore

Monitoring Well ID	Date	Top of Casing Elevation* (feet, msl)	Screen Interval (feet, bgs)	Depth to Groundwater (feet)	Groundwater Elevation (feet, msl)
EW-3 <sup>(a)</sup>	11/18/08	NC	25-30	Dry	NC
	2/4/09	NC		33.80	NC
	4/21/09	NC		Dry	NC
	9/24/09	NC		Dry	NC
	3/4/10	NC		28.02	NC
	7/20/10	NC		NM	NC
	<b>1/19/11</b>	<b>NC</b>		<b>23.50</b>	<b>NC</b>
MW-8A	7/28/08	NC	16-36	Dry	NC
	11/18/08	NC		35.40	NC
	2/4/09	NC		Dry	NC
	4/21/09	NC		Dry	NC
	9/24/09	NC		Dry	NC
	3/4/10	NC		26.33	NC
	7/20/10	NC		25.00	NC
MW-8B	<b>1/19/11</b>	<b>NC</b>		<b>24.30</b>	<b>NC</b>
	7/28/08	NC	46-51	44.90	NC
	11/18/08	NC		49.85	NC
	2/4/09	NC		47.95	NC
	4/21/09	NC		38.75	NC
	9/24/09	NC		38.47	NC
	3/4/10	NC		28.24	NC
MW-9A	7/20/10	NC		24.70	NC
	<b>1/19/11</b>	<b>NC</b>		<b>24.05</b>	<b>NC</b>
	7/28/08	NC	14-36	Dry	NC
	11/18/08	NC		48.97	NC
	2/4/09	NC		Dry	NC
	4/21/09	NC		Dry	NC
	9/24/09	NC		Dry	NC
MW-9B	3/4/10	NC		27.86	NC
	7/20/10	NC		24.15	NC
	<b>1/19/11</b>	<b>NC</b>		<b>23.40</b>	<b>NC</b>
	7/28/08	NC	47-52	44.05	NC
	11/18/08	NC		38.28	NC
	2/4/09	NC		47.03	NC
	4/21/09	NC		35.94	NC
EX-1***	9/24/09	NC		37.93	NC
	3/4/10	NC		27.68	NC
	7/20/10	NC		24.30	NC
	<b>1/19/11</b>	<b>NC</b>		<b>23.55</b>	<b>NC</b>
	11/14/01	465.30	30-55	33.41	431.89
	5/7/02	465.30		27.58	437.72
	9/11/02	465.30		NM	NC
	12/11/02	465.30		27.98	437.32
	3/14/03	465.30		23.02	442.28
	6/25/03	465.30		22.41	442.89
	9/16/03	465.30		24.65	440.65
	3/10/04	465.30		17.99	447.31
	6/15/04	465.30		22.48	442.82
	9/17/04	465.30		25.91	439.39
	12/10/04	465.30		NM	NC
	3/2/05	465.30		NM	NC
	5/27/05	465.30		18.68	446.62
	7/21/05	465.30		21.55	443.75
	10/10/05	465.30		22.73	442.57
	1/9/06	465.30		18.05	447.25

Notes:

MSL: mean sea level

bgs: below ground surface

NA: well not accessible

NC: elevation not calculated

NM: well not measured

\* = Well MW-1 renamed MW-1A

\*\* = Well installed on 2/22/06-2/28/06

\*\*\* = Well destroyed on 2/22/06-2/28/06

(a) = Well EW-3 is 35 feet deep with a screen interval from 25 to 30 feet bgs.







**Table 2**  
**Groundwater Analytical Results**  
 160 Holmes Street, Livermore, California

Well ID	Date Collected	Groundwater Elevation (feet above MSL)	Total Petroleum Hydrocarbons (µg/L)		Aromatic Volatile Organic Compounds (µg/L)					Oxygenated Volatile Organics (µg/L)						Lead Scavengers (µg/L)		
			Gasoline	Diesel	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE (8021B)	TAME	TBA	DIPE	ETBE	MTBE	ethanol	methanol	EDB	1,2-DCA
MW-4** cont.	9/17/04	439.03	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/10/04	442.42	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/2/05	447.55	<50	<50	<0.5	<0.5	<0.5	<0.5	14	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/27/05	446.01	<50	<50	<0.5	<0.5	<0.5	<0.5	9.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
	7/21/05	443.90	<50	NS	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/10/05	442.30	<50	NS	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/9/06	446.61	<50	<50	<0.5	<0.5	<0.5	<0.5	0.86	<0.5	<5.0	<0.5	<5.0	0.86	<50	<500	<5.0	<5.0
MW-4A	3/13/06	445.87	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	<5.0	<0.5	<0.5	0.70	<50	<500	<0.5	<0.5
	4/7/06	448.77	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	<5.0	<0.5	<5.0	1.1	<50	<500	<0.5	<0.5
	7/28/06	442.09	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	<5.0	<0.5	<0.5	3.0	NA	NA	NA	NA
	10/13/06	441.06	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	<5.0	<0.5	<0.5	2.0	<50	<500	NA	NA
	1/4/07	443.44	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	<5.0	<0.5	<0.5	0.79	<50	<500	<0.5	<0.5
	4/16/07	441.18	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	<5.0	<0.5	<0.5	0.51	<50	<500	<0.5	<0.5
	7/16/07	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/29/07	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/1/08	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/18/08	437.05	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	7/28/08	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/18/08	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/4/09	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/21/09	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/24/09	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/4/10	439.30	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	NA	NA	NA	NA	NA	NA	NA
	7/20/10	440.71	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/20/11	441.32	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-5**	11/14/01	429.71	<50	<66	<0.5	<0.5	<0.5	<0.5	8.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/7/02	436.75	140	<50	<0.5	<0.5	<0.5	<0.5	110	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/11/02	436.66	<50	NA	<0.5	<0.5	<0.5	<0.5	6.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/1/02	435.15	73	<50	<0.5	<0.5	<0.5	<0.5	160	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/14/03	440.39	110	<50	<0.5	<0.5	<0.5	<0.5	170	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/25/03	440.64	<50	<50	<0.5	<0.5	<0.5	<0.5	89	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/16/03	437.82	630	<50	<0.5	3.5	<0.5	2.6	1500	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/22/03	440.97	<0.5	<50	<0.5	<0.5	<0.5	<0.5	630	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/10/04	445.43	57	<50	<0.5	<0.5	<0.5	<0.5	1100	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/15/04	440.45	<50	<50	<0.5	<0.5	<0.5	<0.5	750	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/04	436.97	<50	<50	<0.5	<0.5	<0.5	<0.5	780	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/10/04	440.72	<50	<50	<0.5	<0.5	<0.5	<0.5	120	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/2/05	446.09	<50	<50	<0.5	<0.5	<0.5	<0.5	320	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/27/05	444.50	<50	<50	<0.5	<0.5	<0.5	<0.5	120	NA	NA	NA	NA	NA	NA	NA	NA	NA
	7/21/05	442.10	<50	NS	<0.5	<0.5	<0.5	<0.5	97	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/10/05	441.30	<50	NS	<0.5	<0.5	<0.5	<0.5	41	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/9/06	445.12	<50	<50	<0.5	<0.5	<0.5	<0.5	37	<0.5	<5.0	<0.5	<5.0	<5.0	<50	<500	<0.5	<0.5









**Table 2**  
**Groundwater Analytical Results**  
 160 Holmes Street, Livermore, California

Well ID	Date Collected	Groundwater Elevation (feet above MSL)	Total Petroleum Hydrocarbons ( $\mu\text{g/L}$ )		Aromatic Volatile Organic Compounds ( $\mu\text{g/L}$ )					Oxygenated Volatile Organics ( $\mu\text{g/L}$ )						Lead Scavengers ( $\mu\text{g/L}$ )		
			Gasoline	Diesel	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE (8021B)	TAME	TBA	DIPE	ETBE	MTBE	ethanol	methanol	EDB	1,2-DCA
EW-1 cont.	4/13/07	441.76	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	7/16/07	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/29/07	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/1/08	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/18/08	437.62	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	7/28/08	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/18/08	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/4/09	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/21/09	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/24/09	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/4/10	NC	4,400	NA	460	<25	380	<25	31,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	7/20/10	441.10	400	NA	4.4	6.6	1.8	4.4	590	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/20/11	441.87	570	190	21	6.4	14	57	3,500	<50	15,000	<50	<50	3,400	NA	NA	<50	<50
EW-2	3/13/06	446.81	<250	69	<2.5	<2.5	<2.5	<2.5	5,400	<100	<1,000	<100	<100	5,100	<10,000	<100,000	<100	<100
	4/7/06	449.79	470	160	15	2.5	24	13	2,000	<50	<500	<50	<50	1,800	<5,000	<50,000	<50	<50
	7/27/06	442.89	260	350	2.2	1.7	6.1	3.0	8,700	<500	<5,000	<500	<500	12,000	NA	NA	NA	NA
	10/12/06	444.51	110	<50	2.0	1.0	3.1	3.9	620	<12	<120	<12	<12	680	<1200	<12,000	NA	NA
	1/4/07	444.33	<500	<50	5.3	<5.0	16	7.1	4,500	<50	<500	<50	<50	4,200	<5000	<50,000	<50	<50
	4/13/07	442.06	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	7/16/07	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/29/07	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/1/08	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/18/08	437.95	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	7/28/08	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/18/08	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/4/09	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/21/09	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/24/09	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/4/10	NC	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	NA	NA	NA	NA	NA	NA	NA
	7/20/10	441.54	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/21/11	442.27	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	2.8	<0.5	<0.5	2.1	NA	NA	<0.5	<0.5
EW-3 <sup>(a)</sup>	11/18/08	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/4/09	NC	<10,000	NA	<100	<100	<100	<100	420,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	4/21/09	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/24/09	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/4/10	NC	140,000	NA	240	900	320	28,000	340,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	7/20/10	NC	23,000	NA	240	940	760	3,100	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/21/11	NC	15,000	5,200	230	93	1,100	1,900	150,000	<2,500	72,000	<2,500	<2,500	150,000	NA	NA	<2,500	<2,500

**Notes:**

Samples analyzed for TPHg and TPHd by EPA Method 8015Cm, BTEX by EPA Method 8021B, MTBE by EPA Method 8021B and/or 8260B, and the fuel oxygenates by EPA Method 8260B.

$\mu\text{g/L}$  = micrograms per liter

NS = Not Sampled

MTBE = methyl tertiary butyl ether

1,2-DCA = 1,2-Dichloroethane

NA = Not Analyzed

EDB = 1,2-Dibromoether

TBA = tert-Butanol

(a) = Well EW-3 is 35 feet deep with a screen interval from 25 to 30 feet bgs.

DIPE = Di-isopropyl Ether

TAME - tert-Amyl Methyl Ether

\* = Well MW-1 renamed MW-1A, well MW-2 renamed MW-2A, Well MW-3 renamed MW-3A in February 2006

ETBE = Ethyl tert-Butyl Ether

\*\* = Well destroyed in February 2006

\*\*\* = Anomalous data observed in MW-7C from October 12, 2006 sample. Therfore, wells MW-7A, MW-7B, and MW-7C were resampled on November 21, 2006.

**APPENDIX A**  
**Groundwater Monitoring Field Protocol**

## **Appendix A**

### Groundwater Monitoring Protocol

#### Well Monitoring and Sample Collection

A Teflon bailer or submersible pump was used to purge a minimum of three well volumes of groundwater from each well. After each well volume is purged, field parameters such as pH, temperature, and conductivity are recorded. Wells are purged until field parameters have stabilized or a maximum of ten (10) well volumes of groundwater have been removed. When possible, purge rates will not exceed the recharge rate for the well. However, if the well yield is low and the well was dewatered, the well is allowed to recharge to 80% of its original volume prior to sample collection. Field parameter measurements and pertinent qualitative observations, such as groundwater color and odor, are recorded in Groundwater Sampling Field Logs. Groundwater samples are collected in appropriate bottles and stored on ice for delivery, under chain-of-custody documentation, to a state-certified laboratory for analysis.

#### Equipment Decontamination

All drilling, sampling, and well development equipment was cleaned in a solution of laboratory grade detergent and distilled water or steam cleaned before use at each sampling point.

#### Field Personnel

During groundwater sampling activities, sampling personnel will wear pertinent attire to minimize risks to health and safety. Field personnel will also use a pair of clean, powderless, surgical gloves for each successive sampling point. Used surgical gloves will be placed into waste barrels for future disposal.

#### Waste Disposal

Water generated during well purging and sampling activities will be placed into DOT-approved 55-gallon waste drums. Waste drums will be temporarily stored on-site pending proper disposal of wastewater to an approved transport, storage, and disposal (TSD) facility.

**APPENDIX B**  
**Groundwater Sampling Field Logs**

**ALLTERRA****Groundwater Sampling Field Log**

Site Address 160 Holmes

Date 1-21-11

Project Number 160

Field Personnel DO

**Monitoring Well Information**

Monitoring Well ID MW-2A

Monitoring Well Diameter (inches) 2"

Depth to Water (feet) 25.30 (1-20)

Water Column (feet) 3.10

Total Depth (feet) 28.40

80% Recharge Depth (feet)

Depth to Product (feet)

1 Well Volume (gallons) 527

Comments

**Field Measurements and Observations**

Time	Depth to Water	Purge Volume	Conductivity	Temperature	pH	Turbidity	Color	Odor
	.50	627us		19.7°C	6.85	High	Brown	None
	1.00	679us		19.4°C	6.78	↓	↓	↓
	1.50	640us		19.3°C	6.77	↓	↓	↓

Total Purge Volume 1.50

Comments

**Groundwater Sampling Information**

Sample ID

Sample Time 11:30

Sample Containers (Number/Type) 5 Vials / 1 Amber

Comments

**Groundwater Sampling Field Log**

Site Address 160

Date 1-20-11

Project Number

Field Personnel GA

**Monitoring Well Information**

Monitoring Well ID MW-3A

Monitoring Well Diameter (inches) 2.0

Depth to Water (feet) 23.63

Water Column (feet) 4.57

Total Depth (feet) 28.20

80% Recharge Depth (feet)

Depth to Product (feet)

1 Well Volume (gallons) 78

Comments

**Field Measurements and Observations**

Time	Depth to Water	Purge Volume	Conductivity	Temperature	pH	Turbidity	Color	Odor
	23.63	.78	543us	19.1°C	7.37	high	brn	none
			537	19.2	7.15	(		
			564	19.3	7.02			

Total Purge Volume

Comments

**Groundwater Sampling Information**

Sample ID MW-3A

Sample Time 11:00

Sample Containers (Number/Type) 4 Vials

Comments

**ALLTERRA****Groundwater Sampling Field Log**

Site Address	160 Holmes	Date	1-21-11
--------------	------------	------	---------

Project Number		Field Personnel	DO
----------------	--	-----------------	----

**Monitoring Well Information**

Monitoring Well ID	EW-2	Monitoring Well Diameter (inches)	4"
Depth to Water (feet)	23.72	Water Column (feet)	13.28
Total Depth (feet)	37.00	80% Recharge Depth (feet)	
Depth to Product (feet)		1 Well Volume (gallons)	9.29

Comments

**Field Measurements and Observations**

Time	Depth to Water	Purge Volume	Conductivity	Temperature	pH	Turbidity	Color	Odor
	10	641 ms	18.8°C	7.09	High	Gray	None	
	20	598 ms	18.5°C	6.87		↓	↓	
	30	587 ms	18.5°C	6.73		↓	↓	

Total Purge Volume	30.00	Comments
--------------------	-------	----------

**Groundwater Sampling Information**

Sample ID		Sample Time	11:15
Sample Containers (Number/Type)	5 Vials / 1 Amber		
Comments			

**Groundwater Sampling Field Log**

Site Address	160 Holmes	Date	1-21-11
--------------	------------	------	---------

Project Number		Field Personnel	DO
----------------	--	-----------------	----

**Monitoring Well Information**

Monitoring Well ID	EW-3	Monitoring Well Diameter (inches)	4"
Depth to Water (feet)	23.50	Water Column (feet)	10.50
Total Depth (feet)	34.00	80% Recharge Depth (feet)	
Depth to Product (feet)		1 Well Volume (gallons)	7.35

Comments

**Field Measurements and Observations**

Time	Depth to Water	Purge Volume	Conductivity	Temperature	pH	Turbidity	Color	Odor
	7.00	819 ms	18.8°C	6.93	High	Grey	Strong	
	14.00	813 ms	18.6°C	6.75		↓	↓	
	21.00	800 ms	18.7°C	6.59	↓	↓	↓	

Total Purge Volume	21.00	Comments
--------------------	-------	----------

**Groundwater Sampling Information**

Sample ID		Sample Time	10:40
Sample Containers (Number/Type)	5 Vials / 1 Amber		
Comments			

**ALLTERRA****Groundwater Sampling Field Log**

Site Address	160 Holmes	Date	1-20-11
Project Number	160	Field Personnel	DO

**Monitoring Well Information**

Monitoring Well ID	MW-9B	Monitoring Well Diameter (inches)	2"
Depth to Water (feet)	23.55	Water Column (feet)	15.95
Total Depth (feet)	39.50	80% Recharge Depth (feet)	
Depth to Product (feet)		1 Well Volume (gallons)	2.71
Comments			

**Field Measurements and Observations**

Time	Depth to Water	Purge Volume	Conductivity	Temperature	pH	Turbidity	Color	Odor
	2.50	721ms	18.2°C	7.78	low	clear	none	
	5.00	712ms	18.3°C	7.69	high	brown		
	7.50	675ms	18.4°C	7.53	↓	↓	↓	

Total Purge Volume	7.50	Comments
--------------------	------	----------

**Groundwater Sampling Information**

Sample ID	Sample Time
Sample Containers (Number/Type)	5 Vials / 1 Amber
Comments	

**Groundwater Sampling Field Log**

Site Address	Date
Project Number	Field Personnel

**Monitoring Well Information**

Monitoring Well ID	MW-1	Monitoring Well Diameter (inches)	4"
Depth to Water (feet)	23.58	Water Column (feet)	15.42
Total Depth (feet)	39.00	80% Recharge Depth (feet)	
Depth to Product (feet)		1 Well Volume (gallons)	10.79
Comments			

**Field Measurements and Observations**

Time	Depth to Water	Purge Volume	Conductivity	Temperature	pH	Turbidity	Color	Odor
	10.00	595ms	19.0°C	7.12	Nitrate	brown	weak	
	20.00	598ms	18.9°C	6.94	↓	↓	↓	
	30.00	603ms	18.8°C	6.77	↓	↓	↓	

Total Purge Volume	30.00	Comments
--------------------	-------	----------

**Groundwater Sampling Information**

Sample ID	Sample Time
Sample Containers (Number/Type)	5 Vials / 1 Amber
Comments	

**ALLTEC****Groundwater Sampling Field Log**

Site Address 160 Holmes

Date 1-20-10

Project Number 160

Field Personnel EA

**Monitoring Well Information**

Monitoring Well ID MW-1A

Monitoring Well Diameter (inches) 2.0

Depth to Water (feet) 23.12

Water Column (feet) 5.38

Total Depth (feet) 28.50

80% Recharge Depth (feet)

Depth to Product (feet)

1 Well Volume (gallons), 91

Comments

**Field Measurements and Observations**

Time	Depth to Water	Purge Volume	Conductivity	Temperature	pH	Turbidity	Color	Odor
	23.12	.91	634 μs	17.8 °C	7.73	high	grey	mild
			630 μs	18.1 °C	7.65	1	1	1
			702	17.7	7.58	1	1	1

Total Purge Volume

Comments

**Groundwater Sampling Information**

Sample ID MW-1A

Sample Time 10:30

Sample Containers (Number/Type) 5 vials / 12

Comments

**Groundwater Sampling Field Log**

Site Address 160

Date 1-20-11

Project Number

Field Personnel EA

**Monitoring Well Information**

Monitoring Well ID MW-1B

Monitoring Well Diameter (inches) 2.0

Depth to Water (feet) 23.10

Water Column (feet) 31.4

Total Depth (feet) 54.50

80% Recharge Depth (feet)

Depth to Product (feet)

1 Well Volume (gallons) 5.3

Comments

**Field Measurements and Observations**

Time	Depth to Water	Purge Volume	Conductivity	Temperature	pH	Turbidity	Color	Odor
	23.10	5.3	543 μs	18.4 °C	8.81	low	clear	mild
			496	18.2	8.57	low	clear	1
			539	18.1	8.31	low	brn	1

Total Purge Volume

Comments

**Groundwater Sampling Information**

Sample ID MW-1B

Sample Time 10:55

Sample Containers (Number/Type) 4 vials

Comments

**ALLTERRA****Groundwater Sampling Field Log**

Site Address	Date	1-20-11
Project Number	Field Personnel	DO

**Monitoring Well Information**

Monitoring Well ID	MW-4A	Monitoring Well Diameter (inches)	21
Depth to Water (feet)	23.64	Water Column (feet)	5.16
Total Depth (feet)	28.80	80% Recharge Depth (feet)	
Depth to Product (feet)		1 Well Volume (gallons)	.8772
Comments			

**Field Measurements and Observations**

Time	Depth to Water	Purge Volume	Conductivity	Temperature	pH	Turbidity	Color	Odor
	1.00	618ms	18.4°C	7.80	High	brown	None	
	2.00	641ms	18.3°C	7.66		↓	↓	↓
	3.00	590ms	18.3°C	7.59	↓	↓	↓	

Total Purge Volume	Comments
--------------------	----------

**Groundwater Sampling Information**

Sample ID	Sample Time	10:45
Sample Containers (Number/Type)	3 Vials	
Comments		

**Groundwater Sampling Field Log**

Site Address	160 Holmes	Date	1-19-11
Project Number	160	Field Personnel	DO

**Monitoring Well Information**

Monitoring Well ID	MW-54	Monitoring Well Diameter (inches)	2"
Depth to Water (feet)	24.52	Water Column (feet)	9.60
Total Depth (feet)	34.00	80% Recharge Depth (feet)	
Depth to Product (feet)		1 Well Volume (gallons)	1.632
Comments			

**Field Measurements and Observations**

Time	Depth to Water	Purge Volume	Conductivity	Temperature	pH	Turbidity	Color	Odor
	1.50	794ms	20.3°C	8.10	High	Brown	None	
	3.00	770ms	20.5°C	7.98		↓	↓	↓
	4.50	802ms	20.4°C	7.92	↓	↓	↓	

Total Purge Volume	Comments
--------------------	----------

**Groundwater Sampling Information**

Sample ID	Sample Time	8:30
Sample Containers (Number/Type)		
Comments		

**ALLTERRA****Groundwater Sampling Field Log**

Site Address	160 Holmes	Date	1-19-11
Project Number	160	Field Personnel	DO

**Monitoring Well Information**

Monitoring Well ID	MW-5B	Monitoring Well Diameter (inches)	2"
Depth to Water (feet)	24.52	Water Column (feet)	28.98
Total Depth (feet)	53.50	80% Recharge Depth (feet)	
Depth to Product (feet)		1 Well Volume (gallons)	4,926

Comments

**Field Measurements and Observations**

Time	Depth to Water	Purge Volume	Conductivity	Temperature	pH	Turbidity	Color	Odor
	5.00	560 ms	19.9 °C	8.14	low	clear	None	
	10.00	560 ms	19.6 °C	8.77	High	Brown		↓
	15.00	559 ms	19.4 °C	8.14	High	Brown		↓

Total Purge Volume

Comments

**Groundwater Sampling Information**

Sample ID

Sample Time 3:00

Sample Containers (Number/Type)

Comments

**Groundwater Sampling Field Log**

Site Address	160 Holmes	Date	1-19-11
Project Number	160	Field Personnel	DO

**Monitoring Well Information**

Monitoring Well ID	MW-6	Monitoring Well Diameter (inches)	2'
Depth to Water (feet)	24.00	Water Column (feet)	23
Total Depth (feet)	47.00	80% Recharge Depth (feet)	
Depth to Product (feet)		1 Well Volume (gallons)	3,91

Comments

**Field Measurements and Observations**

Time	Depth to Water	Purge Volume	Conductivity	Temperature	pH	Turbidity	Color	Odor
	4.00	638 ms	18.6 °C	8.70	High	Brown	None	
	8.00	600 ms	18.4 °C	8.60	↓	↓	↓	↓
	12.00	594 ms	18.3 °C	8.45	↓	↓	↓	↓

Total Purge Volume

Comments

**Groundwater Sampling Information**

Sample ID

Sample Time 2:30

Sample Containers (Number/Type)

Comments

**ALLTERRA****Groundwater Sampling Field Log**Site Address **160**Date **1-20-11**

Project Number

Field Personnel **JA****Monitoring Well Information**Monitoring Well ID **MW-7A**Monitoring Well Diameter (inches) **5.40**Depth to Water (feet) **23.60**

Water Column (feet)

Total Depth (feet) **29.00**

80% Recharge Depth (feet)

Depth to Product (feet)

1 Well Volume (gallons) **,92**

Comments

**Field Measurements and Observations**

Time	Depth to Water	Purge Volume	Conductivity	Temperature	pH	Turbidity	Color	Odor
	.9	79.25	19.5°C	8.09	high	brn	mild	
	1	822	19.3	7.86	1	1	1	
		874	19.3	7.63				

Total Purge Volume

Comments

**Groundwater Sampling Information**Sample ID **MW-7A**Sample Time **1:45**Sample Containers (Number/Type) **4 vca / 1 L**

Comments

**Groundwater Sampling Field Log**Site Address **160**Date **1-20-11**

Project Number

Field Personnel **JA****Monitoring Well Information**Monitoring Well ID **MW-7B**Monitoring Well Diameter (inches) **2.0**Depth to Water (feet) **24.15**Water Column (feet) **24.35**Total Depth (feet) **48.50**

80% Recharge Depth (feet)

Depth to Product (feet)

1 Well Volume (gallons) **4.1**

Comments

**Field Measurements and Observations**

Time	Depth to Water	Purge Volume	Conductivity	Temperature	pH	Turbidity	Color	Odor
	4.0	499.25	18.8°C	7.57	low	clear	none	
	1	571	18.6	7.36	1	brn		
		696	18.5	7.24				

Total Purge Volume

Comments

**Groundwater Sampling Information**Sample ID **MW-7B**Sample Time **2:30**Sample Containers (Number/Type) **4 vca / 1 L**

Comments

**ALLTERRA****Groundwater Sampling Field Log**

Site Address	160 Holmes	Date	1-20-11
Project Number		Field Personnel	EA

**Monitoring Well Information**

Monitoring Well ID	MW-7C	Monitoring Well Diameter (inches)	2"
Depth to Water (feet)	24.50	Water Column (feet)	44
Total Depth (feet)	68.50	80% Recharge Depth (feet)	
Depth to Product (feet)		1 Well Volume (gallons)	7.48
Comments			

**Field Measurements and Observations**

Time	Depth to Water	Purge Volume	Conductivity	Temperature	pH	Turbidity	Color	Odor
	7.00	336as	19.0°C	7.78	mod	brn	none	
	14.00	479	18.8	7.58	1	1	1	
	21.00	540	18.7	7.32				

Total Purge Volume	21.00	Comments
--------------------	-------	----------

**Groundwater Sampling Information**

Sample ID		Sample Time	1:00
Sample Containers (Number/Type)	5 vials / 1 Amber		
Comments			

**Groundwater Sampling Field Log**

Site Address	160 Holmes	Date	1-20-11
Project Number	160	Field Personnel	DO

**Monitoring Well Information**

Monitoring Well ID	MW-8A	Monitoring Well Diameter (inches)	2"
Depth to Water (feet)	24.30	Water Column (feet)	11.2
Total Depth (feet)	35.50	80% Recharge Depth (feet)	
Depth to Product (feet)		1 Well Volume (gallons)	6.90
Comments			

**Field Measurements and Observations**

Time	Depth to Water	Purge Volume	Conductivity	Temperature	pH	Turbidity	Color	Odor
	2.00	948us	18.7°C	7.31	High	brown	None	
	4.00	930us	18.7°C	7.25	↓	↓	↓	
	6.00	894us	18.8°C	7.16	↓	↓	↓	

Total Purge Volume	6.00	Comments
--------------------	------	----------

**Groundwater Sampling Information**

Sample ID		Sample Time	10:15
Sample Containers (Number/Type)	3 vials		
Comments			



**APPENDIX C**  
**Certified Analytical Report and Chain-of-Custody**



## McCampbell Analytical, Inc.

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701  
Web: [www.mccampbell.com](http://www.mccampbell.com) E-mail: [main@mccampbell.com](mailto:main@mccampbell.com)  
Telephone: 877-252-9262 Fax: 925-252-9269

Allterra Environmental  849 Almar Ave, Ste. C #281  Santa Cruz, CA 95060	Client Project ID: #160; 160 Holmes Livermore CA	Date Sampled: 01/19/10-01/21/11
		Date Received: 01/21/11
	Client Contact: James Allen	Date Reported: 01/27/11
	Client P.O.:	Date Completed: 01/26/11

**WorkOrder: 1101497**

January 27, 2011

Dear James:

Enclosed within are:

- 1) The results of the **18** analyzed samples from your project: **#160; 160 Holmes Livermore CA,**
- 2) A QC report for the above samples,
- 3) A copy of the chain of custody, and
- 4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing  
McCampbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius  
Laboratory Manager  
McCampbell Analytical, Inc.





# McCampbell Analytical, Inc.

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

# CHAIN-OF-CUSTODY RECORD

Page 1 of 1

WaterTrax  WriteOn  EDF  Excel  Fax  Email  HardCopy  ThirdParty  J-flag

Report to:	Email: allterraenvironmental@yahoo.com, micah cc: PO: ProjectNo: #160; 160 Holmes Livermore CA	Bill to: Accounts Payable Allterra Environmental 849 Almar Ave, Ste. C #281 Santa Cruz, CA 95060 micah@allterraenv.com	Requested TAT: 5 days
James Allen Allterra Environmental 849 Almar Ave, Ste. C #281 Santa Cruz, CA 95060 831-425-2608 FAX 831-425-2609			Date Received: 01/21/2011 Date Printed: 01/21/2011

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
1101497-015	MW-5B	Water	1/19/2011 15:00	<input type="checkbox"/>		A										
1101497-016	MW-6	Water	1/19/2011 14:30	<input type="checkbox"/>		A										
1101497-017	MW-8A	Water	1/20/2011 11:15	<input type="checkbox"/>		A										
1101497-018	MW-8B	Water	1/20/2011 11:45	<input type="checkbox"/>		A										

### Test Legend:

1	5-OXYS+PBSCV_W	2	G-MBTEX_W	3	PREDF REPORT	4	TPH(D)_W	5	
6		7		8		9		10	
11		12							

Prepared by: Maria 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.



# McCampbell Analytical, Inc.

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701  
 Web: www.mccampbell.com E-mail: main@mccampbell.com  
 Telephone: 877-252-9262 Fax: 925-252-9269

## Sample Receipt Checklist

Client Name: **Allterra Environmental**

Date and Time Received: **1/21/2011 1:28:24 PM**

Project Name: **#160; 160 Holmes Livermore CA**

Checklist completed and reviewed by: **Maria Venegas**

WorkOrder N°: **1101497** Matrix **Water**

Carrier: **Client Drop-In**

### Chain of Custody (COC) Information

- |                                                         |                                         |                             |
|---------------------------------------------------------|-----------------------------------------|-----------------------------|
| Chain of custody present?                               | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |
| Chain of custody signed when relinquished and received? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |
| Chain of custody agrees with sample labels?             | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |
| Sample IDs noted by Client on COC?                      | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |
| Date and Time of collection noted by Client on COC?     | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |
| Sampler's name noted on COC?                            | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |

### Sample Receipt Information

- |                                                    |                                         |                             |                                        |
|----------------------------------------------------|-----------------------------------------|-----------------------------|----------------------------------------|
| Custody seals intact on shipping container/cooler? | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/> |
| Shipping container/cooler in good condition?       | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |                                        |
| Samples in proper containers/bottles?              | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |                                        |
| Sample containers intact?                          | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |                                        |
| Sufficient sample volume for indicated test?       | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |                                        |

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

- |                                                     |                                         |                             |                                                 |
|-----------------------------------------------------|-----------------------------------------|-----------------------------|-------------------------------------------------|
| All samples received within holding time?           | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |                                                 |
| Container/Temp Blank temperature                    | Cooler Temp: 2.2°C                      |                             | NA <input type="checkbox"/>                     |
| Water - VOA vials have zero headspace / no bubbles? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | No VOA vials submitted <input type="checkbox"/> |
| Sample labels checked for correct preservation?     | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |                                                 |
| Metal - pH acceptable upon receipt (pH<2)?          | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/>          |
| Samples Received on Ice?                            | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |                                                 |

(Ice Type: **WET ICE** )

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

-----  
 Client contacted:

Date contacted:

Contacted by:

Comments:



# McCampbell Analytical, Inc.

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701  
 Web: www.mccampbell.com E-mail: main@mccampbell.com  
 Telephone: 877-252-9262 Fax: 925-252-9269

Allterra Environmental  849 Almar Ave, Ste. C #281  Santa Cruz, CA 95060	Client Project ID: #160; 160 Holmes Livermore CA	Date Sampled: 01/20/11-01/21/11
		Date Received: 01/21/11
	Client Contact: James Allen	Date Extracted: 01/25/11
	Client P.O.:	Date Analyzed: 01/25/11

## Oxygenated Volatile Organics + EDB and 1,2-DCA by P&T and GC/MS\*

Extraction Method: SW5030B

Analytical Method: SW8260B

Work Order: 1101497

Lab ID	1101497-001C	1101497-002C	1101497-003C	1101497-004C	Reporting Limit for DF =1	
Client ID	MW-1A	MW-2A	MW-7A	MW-7B		
Matrix	W	W	W	W	S	W
DF	500	1	5	50		
Compound	Concentration				ug/kg	μg/L
tert-Amyl methyl ether (TAME)	ND<250	ND	ND<2.5	ND<25	NA	0.5
t-Butyl alcohol (TBA)	40,000	11	490	4400	NA	2.0
1,2-Dibromoethane (EDB)	ND<250	ND	ND<2.5	ND<25	NA	0.5
1,2-Dichloroethane (1,2-DCA)	ND<250	ND	ND<2.5	ND<25	NA	0.5
Diisopropyl ether (DIPE)	ND<250	ND	ND<2.5	ND<25	NA	0.5
Ethyl tert-butyl ether (ETBE)	ND<250	ND	ND<2.5	ND<25	NA	0.5
Methyl-t-butyl ether (MTBE)	330	2.8	7.3	ND<25	NA	0.5

## Surrogate Recoveries (%)

%SS1:	99	97	104	100	
Comments					

\* water and vapor samples are reported in μg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in μg/wipe.

ND means not detected above the reporting limit/method detection limit; N/A means analyte not applicable to this analysis; %SS = Percent Recovery of Surrogate Standard; DF = Dilution Factor

# surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.



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1534 Willow Pass Road, Pittsburg, CA 94565-1701  
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 Telephone: 877-252-9262 Fax: 925-252-9269

Allterra Environmental  849 Almar Ave, Ste. C #281  Santa Cruz, CA 95060	Client Project ID: #160; 160 Holmes Livermore CA	Date Sampled: 01/20/11-01/21/11
		Date Received: 01/21/11
	Client Contact: James Allen	Date Extracted: 01/25/11
	Client P.O.:	Date Analyzed: 01/25/11

## Oxygenated Volatile Organics + EDB and 1,2-DCA by P&T and GC/MS\*

Extraction Method: SW5030B

Analytical Method: SW8260B

Work Order: 1101497

Lab ID	1101497-005C	1101497-006C	1101497-007C	1101497-008C	Reporting Limit for DF = 1	
Client ID	MW-7C	MW-9A	MW-9B	EW-1		
Matrix	W	W	W	W		
DF	1	1	1	100	S	W
Compound	Concentration				ug/kg	μg/L
tert-Amyl methyl ether (TAME)	ND	ND	ND	ND<50	NA	0.5
t-Butyl alcohol (TBA)	ND	74	8.9	15,000	NA	2.0
1,2-Dibromoethane (EDB)	ND	ND	ND	ND<50	NA	0.5
1,2-Dichloroethane (1,2-DCA)	ND	ND	ND	ND<50	NA	0.5
Diisopropyl ether (DIPE)	ND	ND	ND	ND<50	NA	0.5
Ethyl tert-butyl ether (ETBE)	ND	ND	ND	ND<50	NA	0.5
Methyl-t-butyl ether (MTBE)	ND	1.1	0.65	3400	NA	0.5

## Surrogate Recoveries (%)

%SS1:	102	100	99	96	
Comments					

\* water and vapor samples are reported in μg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in μg/wipe.

ND means not detected above the reporting limit/method detection limit; N/A means analyte not applicable to this analysis; %SS = Percent Recovery of Surrogate Standard; DF = Dilution Factor

# surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.



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Allterra Environmental  849 Almar Ave, Ste. C #281  Santa Cruz, CA 95060	Client Project ID: #160; 160 Holmes Livermore CA	Date Sampled: 01/20/11-01/21/11
		Date Received: 01/21/11
	Client Contact: James Allen	Date Extracted: 01/25/11
	Client P.O.:	Date Analyzed: 01/25/11

## Oxygenated Volatile Organics + EDB and 1,2-DCA by P&T and GC/MS\*

Extraction Method: SW5030B

Analytical Method: SW8260B

Work Order: 1101497

Lab ID	1101497-009C	1101497-010C			Reporting Limit for DF =1
Client ID	EW-2	EW-3			
Matrix	W	W			
DF	1	5000			S      W
Compound	Concentration				ug/kg      µg/L
tert-Amyl methyl ether (TAME)	ND	ND<2500			NA      0.5
t-Butyl alcohol (TBA)	2.8	72,000			NA      2.0
1,2-Dibromoethane (EDB)	ND	ND<2500			NA      0.5
1,2-Dichloroethane (1,2-DCA)	ND	ND<2500			NA      0.5
Diisopropyl ether (DIPE)	ND	ND<2500			NA      0.5
Ethyl tert-butyl ether (ETBE)	ND	ND<2500			NA      0.5
Methyl-t-butyl ether (MTBE)	2.1	150,000			NA      0.5

## Surrogate Recoveries (%)

%SS1:	82	90			
Comments					

\* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit/method detection limit; N/A means analyte not applicable to this analysis; %SS = Percent Recovery of Surrogate Standard; DF = Dilution Factor

# surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.







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 Telephone: 877-252-9262 Fax: 925-252-9269

Allterra Environmental  849 Almar Ave, Ste. C #281  Santa Cruz, CA 95060	Client Project ID: #160; 160 Holmes Livermore CA	Date Sampled: 01/20/11-01/21/11
		Date Received: 01/21/11
	Client Contact: James Allen	Date Extracted: 01/21/11
	Client P.O.:	Date Analyzed 01/21/11-01/24/11

## Total Extractable Petroleum Hydrocarbons\*

Extraction method SW3510C

Analytical methods: SW8015B

Work Order: 1101497

Lab ID	Client ID	Matrix	TPH-Diesel (C10-C23)	DF	% SS	Comments
1101497-001B	MW-1A	W	130	1	98	e4
1101497-002B	MW-2A	W	ND	1	97	
1101497-003B	MW-7A	W	310	1	97	e4
1101497-004B	MW-7B	W	69	1	98	e2,e4
1101497-005B	MW-7C	W	ND	1	98	
1101497-006B	MW-9A	W	ND	1	97	
1101497-007B	MW-9B	W	ND	1	97	
1101497-008B	EW-1	W	190	1	98	e4
1101497-009B	EW-2	W	ND	1	98	
1101497-010B	EW-3	W	5200	1	107	e4

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	µg/L
	S	NA	NA

\* water samples are reported in µg/L, wipe samples in µg/wipe, soil/solid/sludge samples in mg/kg, product/oil/non-aqueous liquid samples in mg/L, and all DISTLC / STLC / SPLP / TCLP extracts are reported in µg/L.

# cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

%SS = Percent Recovery of Surrogate Standard. DF = Dilution Factor

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

e2) diesel range compounds are significant; no recognizable pattern

e4) gasoline range compounds are significant.



## QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 55716

WorkOrder 1101497

EPA Method SW8021B/8015Bm		Extraction SW5030B								Spiked Sample ID: 1101472-001A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)				
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD	
TPH(btex) <sup>f</sup>	ND	60	96.6	97.8	1.24	96.7	94.6	2.22	70 - 130	20	70 - 130	20	
MTBE	ND	10	120	117	2.20	125	112	11.0	70 - 130	20	70 - 130	20	
Benzene	ND	10	118	121	2.51	116	116	0	70 - 130	20	70 - 130	20	
Toluene	ND	10	107	111	3.28	103	101	1.24	70 - 130	20	70 - 130	20	
Ethylbenzene	ND	10	105	109	3.13	102	100	1.48	70 - 130	20	70 - 130	20	
Xylenes	ND	30	119	117	1.45	116	114	2.28	70 - 130	20	70 - 130	20	
%SS:	100	10	104	106	1.50	103	103	0	70 - 130	20	70 - 130	20	

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
NONE

### BATCH 55716 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1101497-001A	01/20/11 10:30 AM	01/24/11	01/24/11 8:21 PM	1101497-002A	01/21/11 11:30 AM	01/21/11	01/21/11 11:37 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

<sup>f</sup> TPH(btex) = sum of BTEX areas from the FID.

# cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = matrix interference and/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, or inconsistency in sample containers.



## QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 55719

WorkOrder 1101497

EPA Method SW8260B			Extraction SW5030B								Spiked Sample ID: 1101491-001A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)					
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD		
tert-Amyl methyl ether (TAME)	ND	10	99.7	94.6	5.05	98.5	98.9	0.379	70 - 130	30	70 - 130	30		
t-Butyl alcohol (TBA)	ND	50	98	104	5.49	95.4	95.3	0.111	70 - 130	30	70 - 130	30		
1,2-Dibromoethane (EDB)	ND	10	111	114	2.33	111	109	1.54	70 - 130	30	70 - 130	30		
1,2-Dichloroethane (1,2-DCA)	1.4	10	111	111	0	114	114	0	70 - 130	30	70 - 130	30		
Diisopropyl ether (DIPE)	ND	10	118	119	0.202	119	119	0	70 - 130	30	70 - 130	30		
Ethyl tert-butyl ether (ETBE)	ND	10	115	116	1.21	113	113	0	70 - 130	30	70 - 130	30		
Methyl-t-butyl ether (MTBE)	ND	10	124	124	0	117	117	0	70 - 130	30	70 - 130	30		
%SS1:	85	25	100	101	0.968	82	83	1.54	70 - 130	30	70 - 130	30		

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
NONE

### BATCH 55719 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1101497-001C	01/20/11 10:30 AM	01/25/11	01/25/11 2:11 AM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = 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.

Laboratory extraction solvents such as methylene chloride and acetone may occasionally appear in the method blank at low levels.



**QC SUMMARY REPORT FOR SW8021B/8015Bm**

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 55739

WorkOrder 1101497

EPA Method SW8021B/8015Bm		Extraction SW5030B									Spiked Sample ID: 1101497-018A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)					
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD		
TPH(btex) <sup>f</sup>	ND	60	83	83.8	0.998	83.9	87.6	4.36	70 - 130	20	70 - 130	20		
MTBE	ND	10	121	114	6.31	115	117	2.09	70 - 130	20	70 - 130	20		
Benzene	ND	10	111	104	6.41	106	108	1.66	70 - 130	20	70 - 130	20		
Toluene	ND	10	98.4	92.1	6.69	93.5	96.5	3.20	70 - 130	20	70 - 130	20		
Ethylbenzene	ND	10	96.5	90.6	6.28	92.1	94.9	3.03	70 - 130	20	70 - 130	20		
Xylenes	ND	30	108	103	5.26	105	108	2.69	70 - 130	20	70 - 130	20		
#SS:	111	10	111	103	7.85	104	103	1.34	70 - 130	20	70 - 130	20		

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

**BATCH 55739 SUMMARY**

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1101497-003A	01/20/11 1:45 PM	01/22/11	01/22/11 2:16 AM	1101497-004A	01/20/11 2:30 PM	01/22/11	01/22/11 2:47 AM
1101497-005A	01/20/11 1:00 PM	01/22/11	01/22/11 3:19 AM	1101497-006A	01/20/11 11:00 AM	01/22/11	01/22/11 3:50 AM
1101497-007A	01/20/11 1:45 PM	01/22/11	01/22/11 4:22 AM	1101497-008A	01/20/11 2:15 PM	01/22/11	01/22/11 4:53 AM
1101497-008A	01/20/11 2:15 PM	01/24/11	01/24/11 9:51 PM	1101497-009A	01/21/11 11:15 AM	01/24/11	01/24/11 2:20 PM
1101497-010A	01/21/11 10:40 AM	01/24/11	01/24/11 2:51 PM	1101497-010A	01/21/11 10:40 AM	01/26/11	01/26/11 4:34 AM
1101497-011A	01/20/11 10:55 AM	01/24/11	01/24/11 11:20 AM	1101497-012A	01/20/11 11:00 AM	01/24/11	01/24/11 12:27 PM
1101497-013A	01/20/11 10:45 AM	01/24/11	01/24/11 1:00 PM	1101497-014A	01/19/10 3:30 PM	01/24/11	01/24/11 2:07 PM
1101497-015A	01/19/11 3:00 PM	01/24/11	01/24/11 3:14 PM	1101497-016A	01/19/11 2:30 PM	01/25/11	01/25/11 1:50 AM
1101497-017A	01/20/11 11:15 AM	01/25/11	01/25/11 3:19 AM	1101497-018A	01/20/11 11:45 AM	01/25/11	01/25/11 4:48 AM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

<sup>f</sup> TPH(btex) = sum of BTEX areas from the FID.

# cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = matrix interference and/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, or inconsistency in sample containers.



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## QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 55741

WorkOrder 1101497

EPA Method SW8260B			Extraction SW5030B								Spiked Sample ID: 1101497-009C			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)					
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD		
tert-Amyl methyl ether (TAME)	ND	10	96.7	98.5	1.83	87	87.5	0.496	70 - 130	30	70 - 130	30		
t-Butyl alcohol (TBA)	2.8	50	122	112	8.19	88.1	89.6	1.66	70 - 130	30	70 - 130	30		
1,2-Dibromoethane (EDB)	ND	10	123	120	3.13	102	103	1.37	70 - 130	30	70 - 130	30		
1,2-Dichloroethane (1,2-DCA)	ND	10	101	99.6	1.39	105	106	0.888	70 - 130	30	70 - 130	30		
Diisopropyl ether (DIPE)	ND	10	123	121	1.32	104	105	0.363	70 - 130	30	70 - 130	30		
Ethyl tert-butyl ether (ETBE)	ND	10	109	111	1.60	101	101	0	70 - 130	30	70 - 130	30		
Methyl-t-butyl ether (MTBE)	2.1	10	125	124	1.05	111	110	0.662	70 - 130	30	70 - 130	30		
%SS1:	82	25	88	90	2.45	83	82	1.81	70 - 130	30	70 - 130	30		

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
NONE

### BATCH 55741 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1101497-002C	01/21/11 11:30 AM	01/25/11	01/25/11 2:53 AM	1101497-003C	01/20/11 1:45 PM	01/25/11	01/25/11 3:35 AM
1101497-004C	01/20/11 2:30 PM	01/25/11	01/25/11 4:16 AM	1101497-005C	01/20/11 1:00 PM	01/25/11	01/25/11 4:58 AM
1101497-006C	01/20/11 11:00 AM	01/25/11	01/25/11 5:40 AM	1101497-007C	01/20/11 1:45 PM	01/25/11	01/25/11 6:22 AM
1101497-008C	01/20/11 2:15 PM	01/25/11	01/25/11 7:03 AM	1101497-009C	01/21/11 11:15 AM	01/25/11	01/25/11 4:58 AM
1101497-010C	01/21/11 10:40 AM	01/25/11	01/25/11 11:15 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = 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.

Laboratory extraction solvents such as methylene chloride and acetone may occasionally appear in the method blank at low levels.



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## QC SUMMARY REPORT FOR SW8015B

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 55668

WorkOrder 1101497

EPA Method SW8015B		Extraction SW3510C								Spiked Sample ID: N/A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)				
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD	
TPH-Diesel (C10-C23)	N/A	1000	N/A	N/A	N/A	118	124	4.62	N/A	N/A	70 - 130	30	
%SS:	N/A	625	N/A	N/A	N/A	102	100	2.15	N/A	N/A	70 - 130	30	

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

### BATCH 55668 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1101497-008B	01/20/11 2:15 PM	01/21/11	01/22/11 9:09 AM	1101497-009B	01/21/11 11:15 AM	01/21/11	01/22/11 10:21 AM
1101497-010B	01/21/11 10:40 AM	01/21/11	01/24/11 6:36 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery =  $100 * (\text{MS-Sample}) / (\text{Amount Spiked})$ ; RPD =  $100 * (\text{MS} - \text{MSD}) / ((\text{MS} + \text{MSD}) / 2)$ .

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = 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.

DHS ELAP Certification 1644

 QA/QC Officer



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## QC SUMMARY REPORT FOR SW8015B

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 55730

WorkOrder 1101497

EPA Method SW8015B		Extraction SW3510C								Spiked Sample ID: N/A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)				
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD	
TPH-Diesel (C10-C23)	N/A	1000	N/A	N/A	N/A	89.5	86.9	2.95	N/A	N/A	70 - 130	30	
%SS:	N/A	625	N/A	N/A	N/A	80	81	0.370	N/A	N/A	70 - 130	30	

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

### BATCH 55730 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1101497-001B	01/20/11 10:30 AM	01/21/11	01/21/11 8:22 PM	1101497-002B	01/21/11 11:30 AM	01/21/11	01/21/11 9:33 PM
1101497-003B	01/20/11 1:45 PM	01/21/11	01/21/11 10:43 PM	1101497-004B	01/20/11 2:30 PM	01/21/11	01/22/11 3:21 AM
1101497-005B	01/20/11 1:00 PM	01/21/11	01/22/11 4:30 AM	1101497-006B	01/20/11 11:00 AM	01/21/11	01/22/11 5:38 AM
1101497-007B	01/20/11 1:45 PM	01/21/11	01/22/11 7:58 AM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery =  $100 * (\text{MS-Sample}) / (\text{Amount Spiked})$ ; RPD =  $100 * (\text{MS} - \text{MSD}) / ((\text{MS} + \text{MSD}) / 2)$ .

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = 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.

DHS ELAP Certification 1644

 QA/QC Officer