

RECEIVED

7:41 am, May 30, 2007

Alameda County  
Environmental Health



ENVIRONMENTAL ENGINEERING, INC  
6620 Owens Drive, Suite A • Pleasanton, CA 94588-3334  
TEL (925) 734-6400 • FAX (925) 734-6401

May 29, 2007

Mr. Jerry Wickham  
Alameda County Department of  
Environmental Health  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502-6577

Subject: Fuel Leak Case No. RO0002585, Wente Winery  
Site Located at 5565 Tesla Road, Livermore, California

Dear Mr. Wickham:

SOMA's "Second Quarter 2007 Groundwater Monitoring Report" for the subject site has been uploaded to the State's GeoTracker database and Alameda County's FTP site for your review.

Thank you for your time in reviewing our report. Please do not hesitate to call me at (925) 734-6400, if you have any questions or comments.

Sincerely,

A handwritten signature in black ink, appearing to read 'Mansour Sepehr', written over a horizontal line.

Mansour Sepehr, Ph.D., PE  
Principal Hydrogeologist

cc: Mr. Aris Krimetz w/report enclosure



# **Second Quarter 2007 Groundwater Monitoring Report**

**Wente Winery  
5565 Tesla Road  
Livermore, California**

**May 29, 2007**

**Project 2841**

**Prepared for:**

**Mr. Aris Krimetz  
5565 Tesla Road  
Livermore, California**

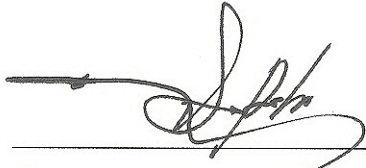


**ENVIRONMENTAL ENGINEERING, INC.**

6620 Owens Drive Suite A Pleasanton CA 94550 Ph: 925.734.6400 F: 925.734-6401 [www.somaenv.com](http://www.somaenv.com)

## CERTIFICATION

SOMA Environmental Engineering, Inc. has prepared this report on behalf of Mr. Aris Krimetz for Wente Winery, located at 5565 Tesla Road, Livermore, California, to comply with the requirements of the Alameda County Environmental Health Services and the California Regional Water Quality Control Board for the Second Quarter 2007 groundwater monitoring event.



Mansour Sepehr, Ph.D., P.E.  
Principal Hydrogeologist



# TABLE OF CONTENTS

CERTIFICATION .....	i
TABLE OF CONTENTS .....	ii
LIST OF FIGURES .....	iii
LIST OF TABLES .....	iii
LIST OF APPENDICES .....	iii
1. INTRODUCTION.....	1
1.1 Site Description .....	1
1.2 Previous Activities and Investigations .....	1
1.3 Regional Hydrogeologic Features .....	2
2. RESULTS.....	3
2.1 Field Measurements.....	3
2.2 Sampling of the Supply Wells.....	3
2.3 Laboratory Analysis.....	4
3. CONCLUSIONS AND RECOMMENDATIONS .....	5

## **LIST OF FIGURES**

- Figure 1: Site vicinity map
- Figure 2: Map showing locations of newly installed wells, temporary well boreholes, and previous soil borings installed by Clayton Group

## **LIST OF TABLES**

- Table 1: Historical Groundwater Elevation Data and Analytical Results for Hydrocarbons, BTEX, and MtBE
- Table 2: Historical Groundwater Analytical Results for Gasoline Oxygenates and Lead Scavengers
- Table 3: Historical Analytical Results for Volatile Organic Compounds Analyses in Groundwater Samples
- Table 4: Historical Groundwater Analytical Results for Metals

## **LIST OF APPENDICES**

- Appendix A: SOMA's Groundwater Monitoring Procedures
- Appendix B: Field Measurements of Physical, Chemical and Biodegradation Parameters of the Groundwater Samples at Time of Sampling
- Appendix C: Specifications for Off-site Well at 5443 Tesla Road
- Appendix D: Chain of Custody Form and Laboratory Report

# 1. INTRODUCTION

SOMA Environmental Engineering, Inc. (SOMA) has prepared this report on behalf of Mr. Aris Krimetz for Wente Winery, located at 5565 Tesla Road, Livermore, California (the Site). Figure 1 shows the location of the Site.

This report summarizes the results of the Second Quarter 2007 groundwater monitoring event conducted at the Site on April 30, 2007, and includes the laboratory analytical results of the groundwater samples.

A natural attenuation study was conducted during this monitoring event, to evaluate whether the petroleum hydrocarbons found in the groundwater were biodegrading.

These activities were performed in accordance with the general guidelines of the California Regional Water Quality Control Board (CRWQCB) and the Alameda County Environmental Health Services (ACEHS). Appendix A details the groundwater monitoring procedures used during this monitoring event.

## 1.1 Site Description

West of the winery buildings is an enclosed maintenance and agricultural storage area with a former underground storage tank (UST) pit that contained one gasoline and one diesel UST. The USTs were replaced with three aboveground storage tanks (ASTs), with a total capacity of 4,000 gallons. An on-site potable water supply well provides backup potable drinking water and processed water for the winery facility. This water supply well is located south of, and presumably upgradient from, the former UST area.

## 1.2 Previous Activities and Investigations

1987: Two fuel USTs were removed from the Site. There is no information regarding the condition of the tank or evidence of leakage. In 1990, the ACEHS issued a notice of violation for discharging waste sludge into an open ditch adjacent to a former steam-cleaning bay.

Clayton Environmental Consultants (Clayton) conducted a Phase I Environmental Site Assessment of the maintenance and storage areas. The Phase I study revealed the existence of the former USTs, former waste discharge area, and a number of agricultural storage areas.

2003: Clayton performed a subsurface investigation at the Site to implement the recommendations of the Phase I report. As shown in Figure 2, boreholes were advanced near the ASTs and near other recognized environmental concerns. The study indicated that a fuel release in the former UST area impacted the groundwater. In the former steam-cleaning bay, gasoline- and motor-oil-range

petroleum hydrocarbons were detected in the groundwater. Figure 2 illustrates the locations of the soil borings.

Wente then retained SOMA to review Clayton's report. SOMA subsequently submitted a workplan that included a vicinity well survey, a regional hydrogeologic study, and an additional site characterization. The site characterization included sampling and evaluating the water quality of the on-site water supply well, installing monitoring wells, and additional lithologic characterization to better define the shallow/perched water-bearing zone.

May 2005: On May 5, 2005, SOMA oversaw drilling by Woodward Drilling (Woodward) of three monitoring wells, MW-1 through MW-3, as shown in Figure 2. On May 20, 2005, Woodward developed the newly installed wells.

June 24, 2005: SOMA oversaw drilling by Woodward of two confirmatory boreholes, B-9 and B-10. The purpose of this investigation was to confirm the presence of petroleum hydrocarbons in the soil and groundwater next to the former USTs and to evaluate the current soil and groundwater conditions in close proximity to the former steam-cleaning area. The results of this investigation are presented in SOMA's report entitled "Phase I: Soil and Groundwater Investigation, Wente Winery, at 5565 Tesla Road, Livermore, California," dated July 25, 2005.

### **1.3 Regional Hydrogeologic Features**

The Site is located in the Livermore Valley Groundwater Basin (LVGB). The LVGB consists of a structural trough that is an important source of irrigation water for the Livermore Valley. In the western part of the basin up to 40 feet of clay caps these water-bearing sediments. The water-bearing zone is a predominantly permeable unit consisting of sand and gravel in a clayey sand matrix. The potentiometric surface of valley-fill groundwater near the Site is at approximately 20 to 30 feet below ground surface (bgs).

The groundwater flow in the valley-fill and underlying Livermore Formations is to the northwest/north. The nearby water supply wells west of, and presumably downgradient from, the Site are potentially exposed to the on-site contaminant plume.

One on-site well and five wells are in the properties immediately west of, and presumably downgradient from, the Site. North/northeast of, and presumably up/cross gradient from, the Site are seven wells within 2,000 feet of the investigation area. Approximately 1,800 feet south of the Site is another water supply well. Available records indicate that six of the seven wells located north/northeast of, and within 2,000 feet of, the Site may be used as drinking water wells.

## **2. RESULTS**

The following sections provide results of the field measurements and laboratory analyses for the April 30, 2007 groundwater monitoring event. Based on the directive of the ACEHS contained in a letter dated March 26, 2007, sampling has been revised to include supply wells on a quarterly basis and sampling of the existing monitoring wells has been temporarily discontinued. This report details sampling of the supply wells.

### **2.1 Field Measurements**

Depths to groundwater at the supply wells were not measured due to the inaccessibility of these wells. Existing pumps and caps prevented the measurements of the groundwater elevations.

The field notes in Appendix B show the detailed measurements of physical and chemical parameters of the groundwater for each well during this monitoring event. The more positive the redox potential of an electron acceptor, the more energetically favorable is the reaction utilizing that electron acceptor. The most energetically preferred electron acceptor for redox reactions is dissolved oxygen (DO). Evaluating the distribution of electron acceptors can provide evidence of where, and to what extent, hydrocarbon biodegradation is occurring.

Upon equalization of the surrounding aquifer at the well locations and termination of the purge cycle, DO concentrations at the on and off-site supply wells were 3.22 mg/L and 3.52 mg/L, respectively. Oxygen reduction potential (ORP) showed positive redox potentials in both supply wells. Positive redox potentials are more energetically favorable in utilizing electron acceptors during chemical reactions. This promotes the removal of organic mass from the contaminated groundwater by indigenous bacteria in the subsurface during the release of the transfer of electrons.

### **2.2 Sampling of the Supply Wells**

SOMA's field personnel extracted groundwater from both the on and off-site supply wells, using the downhole pump within each well. The off-site supply well is located at 5443 Tesla Road. During purging activities, the groundwater was measured for parameters such as DO, pH, temperature, electrical conductivity (EC), and ORP using a Hanna HI-9828 multi-parameter instrument. Turbidity was measured using a Hanna HI-98703 portable turbidimeter. The equipment was calibrated at the Site using standard solutions and procedures provided by the manufacturer.

Approximately 75 gallons of groundwater were purged from the off-site well before the field parameters stabilized; approximately 70 gallons were extracted from the onsite supply well. Upon stabilization, a groundwater sample was collected. The



field measurements taken from each supply well during the purging activities are shown in Appendix B.

Based on the information supplied by Wentz, the total depth of the off-site supply well is 125 feet bgs. SOMA is in the process of obtaining information for the on-site supply well. In 1972, the pump was installed at 100 feet bgs. The water from this well is used solely for irrigation of the vineyards. The letter referencing the off-site supply well and piping diagram of the pump are included in Appendix C.

### **2.3 Laboratory Analysis**

The historical groundwater analytical results are shown in Table 1 for the following: total petroleum hydrocarbons as gasoline (TPH-g); total petroleum hydrocarbons as diesel (TPH-d); total petroleum hydrocarbons as motor oil (TPH-mo); benzene, toluene, ethylbenzene, and total xylenes (BTEX); and methyl tertiary-butyl ether (MtBE).

During this monitoring event, all TPH-g, TPH-d, TPH-mo, BTEX, and MtBE constituents were below the laboratory-reporting limit in the groundwater samples collected from the supply wells.

Table 2 shows the analytical results for gasoline oxygenates and lead scavengers. During this monitoring event, all gasoline oxygenates and lead scavengers were below the laboratory reporting limit in the groundwater samples collected from the supply wells.

Table 3 shows the historical concentrations of volatile organic compounds (VOCs) in the groundwater. Tetrachloroethene, 1,1,1-Trichloroethane, Cis-1,2-dichloroethene, Trans-1,2-dichloroethene, vinyl chloride, 1,2-Dichloropropane, and 1,1-Dichloroethene were all below the laboratory-reporting limit in the groundwater samples collected from the supply wells during this monitoring event. All other VOCs were also below the laboratory-reporting limit in the supply wells.

Table 4 shows the historical concentrations of metals in the groundwater. The table shows the following for the supply wells:

1. In the on-site supply well, all cadmium, chromium, lead, nickel, and zinc analytes were below the laboratory-reporting limit.
2. In the off-site supply well, all of the above mentioned metal analytes were below the laboratory-reporting limit with the exception of zinc, which was detected at 720 µg/L.

Appendix D includes the laboratory report and chain-of-custody (COC) form for this monitoring event.

### 3. CONCLUSIONS AND RECOMMENDATIONS

The results of the Second Quarter 2007 groundwater monitoring event are summarized below.

- Based on the results of the bioattenuation study, indigenous bacteria have effectively removed organic mass from the impacted groundwater in the subsurface. This is evidenced by the positive redox potentials observed in the supply wells.
- All tested analytes were below the laboratory-reporting limit in the supply wells, with the exception of zinc. Zinc was detected at 720 µg/L in the off-site supply well and non-detectable in the on-site supply well.
- Based on the Cal DHS secondary MCL level for drinking water screening levels for human toxicity, zinc has a rating of 5,000 µg/L. According to this criteria, the zinc level detected in the off-site well appears to be well below this standard.
- In the past, chlorinated solvents including chloromethane and chloroethane were detected in the groundwater. During the last couple of monitoring events, no chlorinated solvents were detected.
- Based on the previous detection of tetrahydrofuran in the off-site supply well, on August 23, 2006 the ACEHS requested analysis of this compound to be continued. Since no tetrahydrofuran was detected during the last couple of monitoring events, SOMA recommends discontinuing monitoring of water supply wells.

Based on the ACEHS letter dated March 26, 2007:

- Line item 4: SOMA is planning to install groundwater monitoring wells next to the former steam-cleaning area. Once these wells have been installed, SOMA will conduct quarterly groundwater sampling on the wells.
- Line item 7: SOMA concurs with the increase in purge volume for the supply wells during the quarterly groundwater monitoring events, to more accurately define the groundwater concentrations at these wells. During the Second Quarter 2007 monitoring event, a significant volume of groundwater was extracted from the supply wells.

# FIGURES

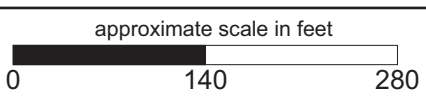
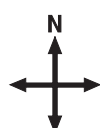
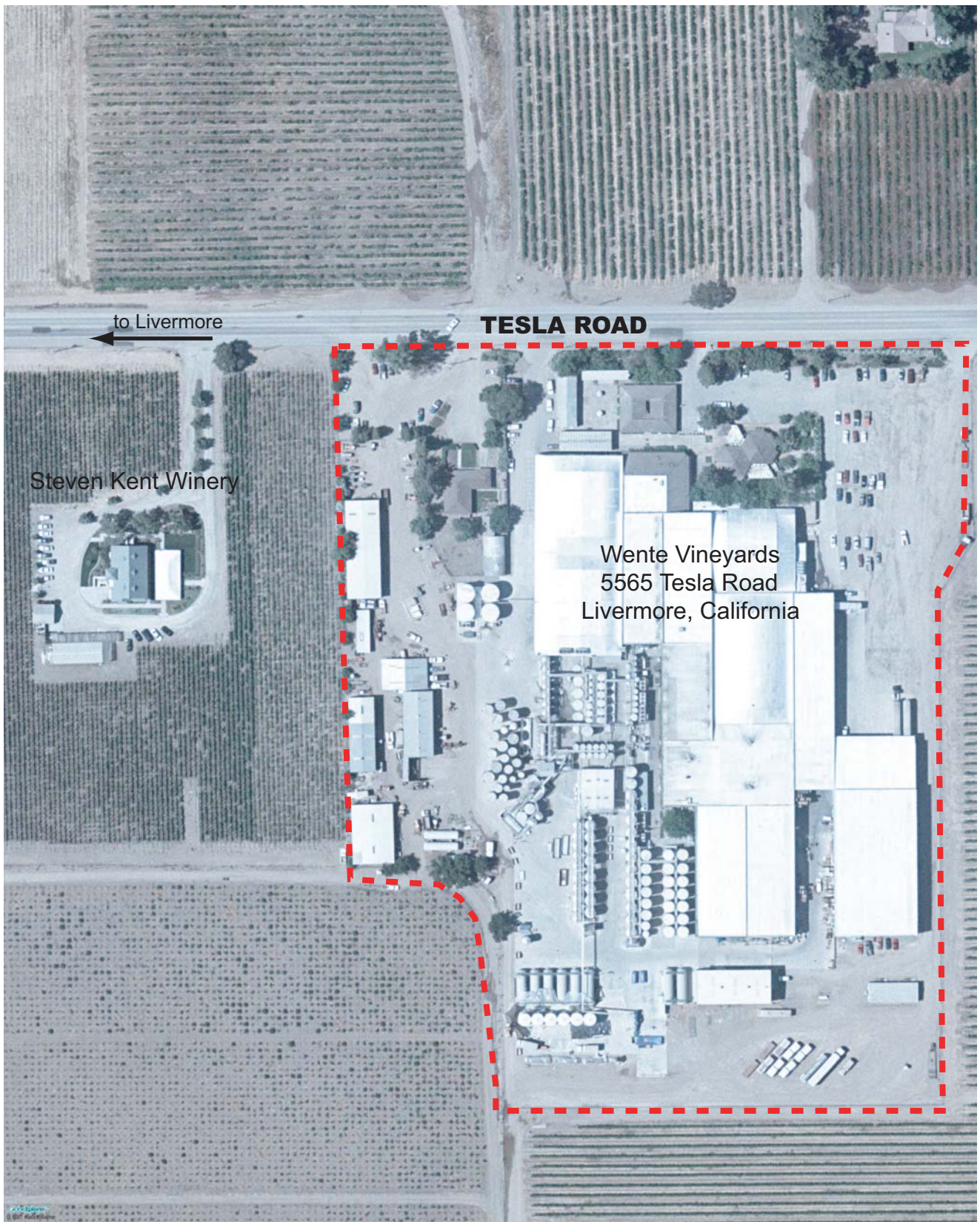







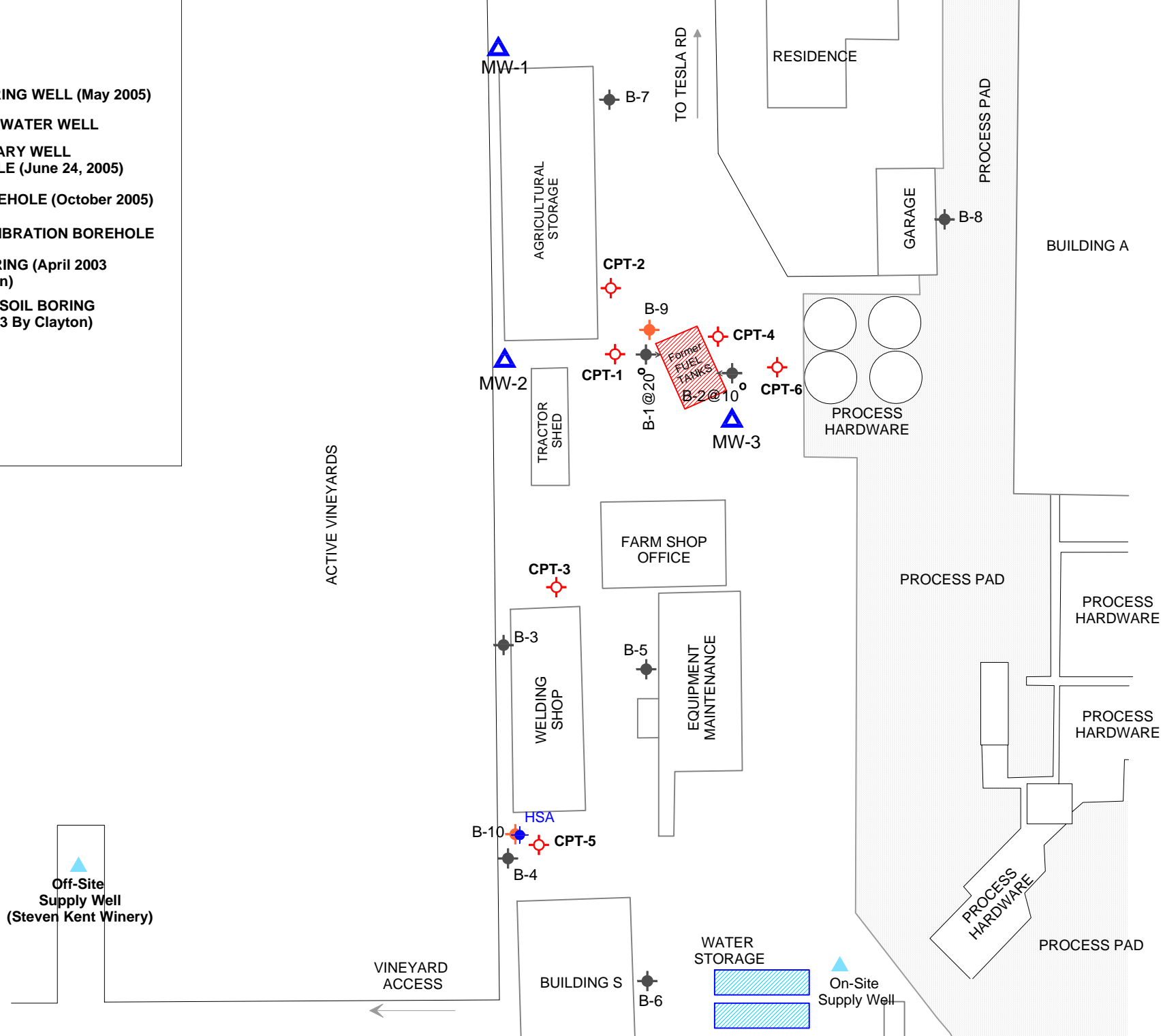
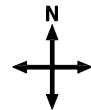


Figure 1: Site vicinity map.

-  MONITORING WELL (May 2005)
-  PRIVATE WATER WELL
-  TEMPORARY WELL BOREHOLE (June 24, 2005)
-  CPT BOREHOLE (October 2005)
-  HSA CALIBRATION BOREHOLE
-  SOIL BORING (April 2003 By Clayton)
-  ANGLED SOIL BORING (April 2003 By Clayton)



approximate scale in feet

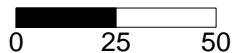


Figure 2: Map showing locations of newly installed wells, temporary well boreholes, and previous soil borings installed by Clayton group.

# TABLES

**Table 1**  
**Historical Groundwater Elevation Data & Analytical Results**  
**Hydrocarbons, BTEX, & MtBE**  
**Wente Vineyards**  
**5565 Tesla Road, Livermore, California**

Monitoring Well	Date	Top of Casing (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	TPH-g (µg/L)	TPH-d (µg/L)	TPH-mo (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MtBE (µg/L)
MW-1	5/20/2005	615.16	6.10	609.06	<200	<50	320 YZ	<0.5	<0.5	<0.5	<1.0	<0.5
	9/13/2005	615.16	9.19	605.97	<50	<50	<300	<0.5	<2.0	<0.5	<1.0	<0.5
	11/28/2005	615.16	8.90	606.26	<50	150 YZ	<300	<0.5	<2.0	<0.5	<1.0	<0.5
	2/13/2006	615.16	6.29	608.87	<50	<50	<250	<0.5	<2.0	<0.5	<1.0	<0.5
	5/5/2006	615.16	5.23	609.93	<50	70 HY	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	8/15/2006	615.16	7.54	607.62	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	11/2/2006	615.16	8.97	606.19	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	1/30/2007	615.16	NM	NM	NA	NA	NA	NA	NA	NA	NA	NA
MW-2	5/20/2005	616.03	6.69	609.34	<200	<50	<300	<0.5	<0.5	<0.5	<1.0	<0.5
	9/13/2005	616.03	9.30	606.73	<50	<50	<300	<0.5	<2.0	<0.5	<1.0	<0.5
	11/28/2005	616.03	9.20	606.83	<50	<50	<300	<0.5	<2.0	<0.5	<1.0	<0.5
	2/13/2006	616.03	6.52	609.51	<50	76.5 D <sup>35</sup>	657 D <sup>06</sup>	<0.5	<2.0	<0.5	<1.0	<0.5
	5/5/2006	616.03	5.58	610.45	<50	50 HY	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	8/15/2006	616.03	8.09	607.94	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	11/2/2006	616.03	9.00	607.03	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	1/30/2007	616.03	NM	NM	NA	NA	NA	NA	NA	NA	NA	NA
MW-3	5/20/2005	617.32	7.04	610.28	<200	680	<300	<0.5	1.58	<0.5	<1.0	<0.5
	9/13/2005	617.32	9.61	607.71	<50	300 Y	<300	<0.5	<2.0	<0.5	<1.0	<0.5
	11/28/2005	617.32	9.60	607.72	<50	150 YZ	<300	<0.5	<2.0	<0.5	<1.0	<0.5

**Table 1**  
**Historical Groundwater Elevation Data & Analytical Results**  
**Hydrocarbons, BTEX, & MtBE**  
**Wente Vineyards**  
**5565 Tesla Road, Livermore, California**

Monitoring Well	Date	Top of Casing (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	TPH-g (µg/L)	TPH-d (µg/L)	TPH-mo (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MtBE (µg/L)
MW-3 cont	2/13/2006	617.32	7.06	610.26	<50	<50	322 <sup>D06</sup>	<0.5	<2.0	<0.5	<1.0	<0.5
	5/5/2006	617.32	5.94	611.38	<50	61 HY	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	8/15/2006	617.32	8.53	608.79	<50	76 HY	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	11/2/2006	617.32	9.39	607.93	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	1/30/2007	617.32	NM	NM	NA	NA	NA	NA	NA	NA	NA	NA
<b>B-9</b>	6/24/2005	NA	NA	NA	1,850,000	540,000 LY	<24,000	3,820	114,000	40,400	177,700	<462
<b>B-10</b>	6/24/2005	NA	NA	NA	<200	<50	<300	<0.5	4.23	1.10	4.03	<0.5
Onsite Supply Well	5/20/2005	NS	NM	NC	<200	<50	<300	<0.5	0.85	<0.5	<1.0	<0.5
	11/28/2005	NS	NM	NC	<50	100 YZ	<300	<0.5	<2.0	<0.5	<1.0	<0.5
	2/13/2006	NS	NM	NC	<50	91.8	<250	<0.5	<2.0	<0.5	<1.0	<0.5
	5/5/2006	NS	NM	NC	<50	52 Y	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	8/15/2006	NS	NM	NC	<50	95 YZ	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	11/2/2006	NS	NM	NC	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	1/30/2007	NS	NM	NC	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
<b>4/30/2007</b>	<b>NS</b>	<b>NM</b>	<b>NC</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>&lt;300</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>
Offsite Supply Well	5/20/2005	NS	NM	NC	<200	<50	<300	0.77	1.08	<0.5	<1.0	<0.5
	11/28/2005	NS	NM	NC	<5,380	120 YZ	<300	<53.8	<215	<53.8	<108	<53.8
	1/16/2006	NS	9.65	NC	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	2/13/2006	NS	NM	NC	<50	<50	<250	<0.5	<2.0	<0.5	<1.0	<0.5
	5/5/2006	NS	NM	NC	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	8/15/2006	NS	NM	NC	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	11/2/2006	NS	NM	NC	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	1/30/2007	NS	NM	NC	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	<b>4/30/2007</b>	<b>NS</b>	<b>NM</b>	<b>NC</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>&lt;300</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>



**Table 1**  
**Historical Groundwater Elevation Data & Analytical Results**  
**Hydrocarbons, BTEX, & MtBE**  
**Wente Vineyards**  
**5565 Tesla Road, Livermore, California**

Monitoring Well	Date	Top of Casing (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	TPH-g (µg/L)	TPH-d (µg/L)	TPH-mo (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MtBE (µg/L)
-----------------	------	----------------------	-----------------------------	------------------------------	--------------	--------------	---------------	----------------	----------------	---------------------	----------------------	-------------

Notes:

- 1) The wells were installed on May 5, 2005 and developed by Woodward Drilling on May 20, 2005.
- 2) A grab sample was collected after the well development on May 20, 2005.
- 3) A grab sample was also collected from the water well, southeast of the water storage units on May 20, 2005.
- 4) The wells were surveyed by Harrington Surveys of Walnut Creek, CA on June 5, 2005.
- 5) A grab sample was collected from the borings on June 24, 2005.
- 6) The groundwater elevation for the May 2005 sampling was based on the survey data of Harrington Surveys.
- 7) The supply wells were first added to the quarterly events in the Fourth Quarter 2005.  
 The off-site water supply well was re-sampled on January 16, 2006, based on the directive of Alameda County Environmental Health Dpt.  
 Tetrahydrofuran was detected at 19,700 ug/L and chloroethane was detected at 380 ug/L during the 4Q05 Monitoring Event.

NA: Not Applicable. B-9 and B-10 are boring locations and are not surveyed.

NC: Not calculated.

NM: Not Measured

NS: Not surveyed. The onsite well is a private well.

TPH-d: Total hydrocarbons as diesel

TPH-g: Total hydrocarbons as gasoline

TPH-mo: Total hydrocarbons as motor oil

H: Heavier hydrocarbons contributed to the quantitation

L: Lighter weight hydrocarbons contributed to the quantitation

Y: Sample exhibits chromatographic pattern which does not resemble standard

Z: Sample exhibits unknown single peaks or peaks.

<: Not Detected above the laboratory reporting limit.

D35: Sample does not display fuel pattern. Sample contains several discrete peaks. (1Q06 diesel)

D06: Sample chromatographic pattern does not resemble fuel standard used for quantitation. (1Q06, motor oil)

As of the First Quarter 2007, supply wells are to be analyzed on a quarterly basis and sampling of monitoring wells is temporarily discontinued.

**Table 2**  
**Historical Groundwater Analytical Results**  
**Gasoline Oxygenates & Lead Scavengers**  
**Wente Vineyards**  
**5565 Tesla Road, Livermore, California**

<b>Monitoring Well</b>	<b>Date</b>	<b>TBA (µg/L)</b>	<b>DIPE (µg/L)</b>	<b>ETBE (µg/L)</b>	<b>TAME (µg/L)</b>	<b>1,2-DCA (µg/L)</b>	<b>EDB (µg/L)</b>
<b>MW-1</b>	9/13/2005	<2.5	<0.5	<0.5	<2.0	<0.5	<2.0
	2/13/2006	<2.5	<0.5	<0.5	<2.0	<0.5	<2.0
	5/5/2006	<10	<0.5	<0.5	<0.5	<0.5	<0.5
	8/15/2006	<10	<0.5	<0.5	<0.5	<0.5	<0.5
	11/2/2006	<10	<0.5	<0.5	<0.5	<0.5	<0.5
	1/30/2007	NA	NA	NA	NA	NA	NA
<b>MW-2</b>	9/13/2005	<2.5	<0.5	<0.5	<2.0	<0.5	<2.0
	2/13/2006	<2.5	<0.5	<0.5	<2.0	<0.5	<2.0
	5/5/2006	<10	<0.5	<0.5	<0.5	<0.5	<0.5
	8/15/2006	<10	<0.5	<0.5	<0.5	<0.5	<0.5
	11/2/2006	<10	<0.5	<0.5	<0.5	<0.5	<0.5
	1/30/2007	NA	NA	NA	NA	NA	NA

**Table 2**  
**Historical Groundwater Analytical Results**  
**Gasoline Oxygenates & Lead Scavengers**  
**Wente Vineyards**  
**5565 Tesla Road, Livermore, California**

<b>Monitoring Well</b>	<b>Date</b>	<b>TBA (µg/L)</b>	<b>DIPE (µg/L)</b>	<b>ETBE (µg/L)</b>	<b>TAME (µg/L)</b>	<b>1,2-DCA (µg/L)</b>	<b>EDB (µg/L)</b>
<b>MW-3</b>	9/13/2005	<2.5	<0.5	<0.5	<2.0	<0.5	<2.0
	2/13/2006	<2.5	<0.5	<0.5	<2.0	<0.5	<2.0
	5/5/2006	<10	<0.5	<0.5	<0.5	<0.5	<0.5
	8/15/2006	<10	<0.5	<0.5	<0.5	<0.5	<0.5
	11/2/2006	<10	<0.5	<0.5	<0.5	<0.5	<0.5
	1/30/2007	NA	NA	NA	NA	NA	NA
<b>Onsite Supply Well</b>	11/28/2005	<2.5	<0.5	<0.5	<2.0	<0.5	<2.0
	2/13/2006	<2.5	<0.5	<0.5	<2.0	<0.5	<2.0
	5/5/2006	<10	<0.5	<0.5	<0.5	<0.5	<0.5
	8/15/2006	<10	<0.5	<0.5	<0.5	<0.5	<0.5
	11/2/2006	<10	<0.5	<0.5	<0.5	<0.5	<0.5
	1/30/2007	<10	<0.5	<0.5	<0.5	<0.5	<0.5
	<b>4/30/2007</b>	<b>&lt;10</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>
<b>Offsite Supply Well</b>	11/28/2005	<269	<53.8	<53.8	<215	<53.8	<215
	1/16/2006	<10	<0.5	<0.5	<0.5	<0.5	<0.5
	2/13/2006	<2.5	<0.5	<0.5	<2.0	<0.5	<2.0
	5/5/2006	<10	<0.5	<0.5	<0.5	<0.5	<0.5
	8/15/2006	<10	<0.5	<0.5	<0.5	<0.5	<0.5
	11/2/2006	<10	<0.5	<0.5	<0.5	<0.5	<0.5
	1/30/2007	<10	<0.5	<0.5	<0.5	<0.5	<0.5
		<b>4/30/2007</b>	<b>&lt;10</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>

**Table 2**  
**Historical Groundwater Analytical Results**  
**Gasoline Oxygenates & Lead Scavengers**  
**Wente Vineyards**  
**5565 Tesla Road, Livermore, California**

Monitoring Well	Date	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)
-----------------	------	---------------	----------------	----------------	----------------	-------------------	---------------

Notes:

- 1) A grab sample was collected after well development on May 20, 2005.
- 2) The supply wells were first added to the quarterly events in the Fourth Quarter 2005.  
 The off-site water supply well was re-sampled on January 16, 2006, based on the directive of Alameda County Environmental Health Dpt. Tetrahydrofuran was detected at 19,700 ug/L and chloroethane was detected at 380 ug/L during the 4Q05 Monitoring Event.

<: Not Detected above the laboratory reporting limit.

As of the First Quarter 2007, supply wells are to be analyzed on a quarterly basis and sampling of monitoring wells is temporarily discontinued.

Gasoline Oxygenates:

TBA: tertiary Butyl Alcohol  
 DIPE: Di-Isopropyl Ether  
 ETBE: Ethyl tertiary Butyl Ether  
 TAME: Methyl tertiary Amyl Ether

Lead Scavengers:

EDB: 1,2-Dibromoethane  
 1,2-DCA: 1,2-Dichloroethane

**Table 3**  
**Historical Analytical Results For Volatile Organic Compound**  
**Analyses in Groundwater Samples**  
**Wente Vineyards**  
**5565 Tesla Road, Livermore, California**

Monitoring Well	Date	PCE (µg/L)	TCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	1,2-DCP (µg/L)	1,1-DCE (µg/L)
MW-1	9/13/2005	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/13/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	5/5/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	8/15/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	11/2/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	1/30/2007	NA	NA	NA	NA	NA	NA	NA
MW-2	9/13/2005	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/13/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	5/5/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	8/15/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	11/2/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	1/30/2007	NA	NA	NA	NA	NA	NA	NA
MW-3	9/13/2005	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/13/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	5/5/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	8/15/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	11/2/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	1/30/2007	NA	NA	NA	NA	NA	NA	NA

**Table 3**  
**Historical Analytical Results For Volatile Organic Compound**  
**Analyses in Groundwater Samples**  
**Wente Vineyards**  
**5565 Tesla Road, Livermore, California**

Monitoring Well	Date	PCE (µg/L)	TCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	1,2-DCP (µg/L)	1,1-DCE (µg/L)
<b>Onsite Supply Well</b>	11/28/2005	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/13/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	5/5/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	8/15/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	11/2/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	1/30/2007	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	<b>4/30/2007</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>
<b>Offsite Supply Well</b>	11/28/2005	<53.8	<53.8	<53.8	<53.8	<53.8	<53.8	<53.8
	1/16/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/13/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	5/5/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	8/15/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	11/2/2006	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	1/30/2007	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	<b>4/30/2007</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>

**Table 3**  
**Historical Analytical Results For Volatile Organic Compound**  
**Analyses in Groundwater Samples**  
**Wente Vineyards**  
**5565 Tesla Road, Livermore, California**

Monitoring Well	Date	PCE (µg/L)	TCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	1,2-DCP (µg/L)	1,1-DCE (µg/L)
-----------------	------	---------------	---------------	-----------------------	-------------------------	--------------------------	-------------------	-------------------

Notes:

- 1) A grab sample was collected after well development on May 20, 2005. However, the first time volatile organic compounds (VOCs) were analyzed was during the Third Quarter 2005 monitoring event.
  - 2) The supply wells were first added to the quarterly events in the Fourth Quarter 2005. The off-site water supply well was re-sampled on January 16, 2006, based on the directive of Alameda County Environmental Health Dpt. Tetrahydrofuran was detected at 19,700 ug/L and chloroethane was detected at 380 ug/L during the 4Q05 Monitoring Event.
- <: Not detected above the laboratory reporting limit.

As of the First Quarter 2007, supply wells are to be analyzed on a quarterly basis and monitoring wells are analyzed semi-annually.

Volatile organic compounds (VOCs)

PCE:	tetrachloroethene	TCE:	1,1,1-trichloroethane
cis-1,2-DCE:	cis-1,2-dichloroethene	trans-1,2-DCE:	trans-1,2-dichloroethene
vinyl chloride		1,2-DCP:	1,2-dichloropropane
1,1-DCE:	1,1-dichloroethene		

**Table 4**  
**Historical Groundwater Analytical Results**  
**Metals**  
**Wente Vineyards**  
**5565 Tesla Road, Livermore, California**

<b>Monitoring Well</b>	<b>Date</b>	<b>Cadmium (µg/L)</b>	<b>Chromium (µg/L)</b>	<b>Lead (µg/L)</b>	<b>Nickel (µg/L)</b>	<b>Zinc (µg/L)</b>
<b>MW-1</b>	9/13/2005	<5.0	<10	<3.0	<20	27
<b>MW-2</b>	9/13/2005	<5.0	<10	<3.0	<20	23
<b>MW-3</b>	9/13/2005	<5.0	<10	<3.0	<20	<20
<b>B-10</b>	6/24/2005	12	930	82	3,600	800
<b>Onsite Supply Well</b>	11/28/2005	<5.0	<10	<3.0	<20	62
	2/13/2006	<5.0	<10	<3.0	<20	<20
	5/5/2006	<5.0	<10	26	<20	<20
	8/15/2006	<5.0	<10	<3.0	34	60
	11/2/2006	<5.0	<10	<3.0	<20	<20
	1/30/2007	<1.0	2.30	<1.0	1.9	31
	<b>4/30/2007</b>	<b>&lt;5.0</b>	<b>&lt;5.0</b>	<b>&lt;3.0</b>	<b>&lt;5.0</b>	<b>&lt;20</b>



**Table 4**  
**Historical Groundwater Analytical Results**  
**Metals**  
**Wente Vineyards**  
**5565 Tesla Road, Livermore, California**

Monitoring Well	Date	Cadmium (µg/L)	Chromium (µg/L)	Lead (µg/L)	Nickel (µg/L)	Zinc (µg/L)
Offsite Supply Well	11/28/2005	<5.0	<10	<3.0	<20	830
	1/16/2006	<5.0	<10	8.30	<20	650
	2/13/2006	<5.0	15	<3.0	<20	1700
	5/5/2006	<5.0	<10	26	<20	750
	8/15/2006	<5.0	<10	<3.0	<20	1,200
	11/2/2006	<5.0	<10	<3.0	<20	1,300
	1/30/2007	<1.0	<1.0	<1.0	4.0	7,200
	<b>4/30/2007</b>	<b>&lt;5.0</b>	<b>&lt;5.0</b>	<b>&lt;3.0</b>	<b>&lt;5.0</b>	<b>720</b>

Notes:

- 1) Metals were tested at boring B-10 on June 24, 2005.
  - 2) Due to the results from B-10, the Alameda County Environmental Health Services requested that SOMA further analyze the wells for metals in a letter dated Sept. 19, 2005. SOMA collected grab samples from the wells on September 29, 2005.
  - 3) The only time metals were tested in wells MW-1 to MW-3 was in the Third Quarter 2005.
  - 4) The supply wells were first added to the quarterly events in the Fourth Quarter 2005. The off-site water supply well was re-sampled on January 16, 2006, based on the directive of Alameda County Environmental Health Dpt. Tetrahydrofuran was detected at 19,700 ug/L and chloroethane was detected at 380 ug/L during the 4Q05 Monitoring Event.
- <: Not Detected above the laboratory reporting limit.

# APPENDIX A

## SOMA's Groundwater Monitoring Procedures

## **Field Activities**

On April 30, 2007, SOMA's field crew conducted a groundwater monitoring event in accordance with the procedures and guidelines of the Alameda County Environmental Health Services and the California Regional Water Quality Control Board. Figure 2 shows the locations of the wells.

## **Water Level Measurements**

On April 30, 2007, field measurements and grab groundwater samples were collected from an on-site and an off-site supply well.

Prior to sample collection, each supply well was purged using an active downhole pump within each well. During the purging activities, the groundwater was measured for parameters such as DO, pH, temperature, EC, and the ORP using a Hanna HI-9828 multi-parameter instrument. Turbidity was measured using a Hanna HI-98703 portable turbidimeter. The equipment was calibrated at the Site using standard solutions and procedures provided by the manufacturer. At the supply wells, groundwater was extracted using an active pump within the well.

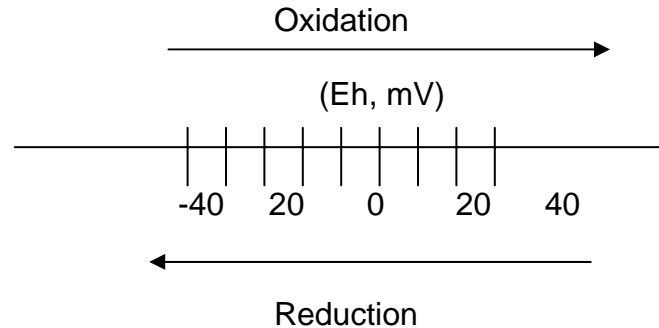
The pH of groundwater has an effect on the activity of microbial populations in the groundwater. The groundwater temperature affects the metabolic activity of bacteria. The groundwater conductivity (EC) is directly related to the concentration of ions in solution.

There is a strong correlation between the turbidity level and the biological oxygen demand of natural water bodies. The main purpose for checking the turbidity level is to provide a general overview of the extent of the suspended solids in the groundwater.

ORP is the measure of the potential for an oxidation or reduction process to occur. In the oxidation process a molecule or ion loses one or several electrons. In the reduction process a molecule or ion gains one or several electrons. The unit of the redox potential is the volt or m-volt. The most important redox reaction in petroleum contaminated groundwater is the oxidation of petroleum hydrocarbons in the presence of bacteria and free molecular oxygen. Because the solubility of O<sub>2</sub> in water is low (9 mg/L at 25 °C and 11 mg/L at 5 °C), and because the rate of O<sub>2</sub> replenishment in subsurface environments is limited, DO can be entirely consumed when the oxidation of only a small amount of petroleum hydrocarbons occurs.

Oxidation of petroleum hydrocarbons can still occur when all the dissolved O<sub>2</sub> in the groundwater is consumed; however, the oxidizing agents (i.e., the constituents that undergo reduction) now become NO<sub>3</sub><sup>-</sup>, MnO<sub>2</sub>, Fe (OH)<sub>3</sub>, SO<sub>4</sub><sup>2-</sup> and others (Freeze and Cherry, 1979). As these oxidizing agents are consumed, the groundwater environment becomes more and more reduced. If the process

advances far enough, the environment may become so strongly reduced that the petroleum hydrocarbons undergo anaerobic degradation, resulting in the production of methane and carbon dioxide. The concept of oxidation and reduction in terms of changes in oxidation states is illustrated below.



The purging of the wells continued until the parameters for DO, pH, temperature, EC, turbidity, and redox stabilized, or three casing volumes were purged.

### **Sampling**

On April 30, 2007, for sampling purposes, after purging the groundwater samples from the supply wells were collected using the active downhole pumps.

The groundwater sample was transferred to four 40-mL VOA vials and preserved with hydrochloric acid. The vials were then sealed to prevent the development of air bubbles within the headspace. The groundwater sample was also transferred into a 1-L non-preserved amber glass container. The groundwater samples from each supply well were further transferred into a 250-mL poly container. All groundwater samples were placed in an ice chest along with a COC form. On April 30, 2007, upon completion of the monitoring event, SOMA's field crew delivered the groundwater samples to Curtis & Tompkins in Berkeley, California.

### **Laboratory Analysis**

Curtis & Tompkins, a California state-certified laboratory, analyzed the groundwater samples collected from the supply wells for TPH-g, TPH-d, TPH-mo, BTEX, MtBE, gasoline oxygenates, lead scavengers, VOCs, and metals.

EPA Method 5030B was used to prepare the samples for TPH-g, BTEX, MtBE, gasoline oxygenates, lead scavengers, and VOCs, which were analyzed using EPA Method 8260B. EPA Method 3520C was used to prepare the samples for TPH-d and TPH-mo, which were analyzed using Method 8015B.

Metals, which included cadmium, chromium, lead, nickel, and zinc were prepared using EPA Method 3010A and analyzed using EPA Method 6010B.

# **APPENDIX B**

Field Measurements of Physical, Chemical,  
& Biodegradation Parameters of the  
Groundwater Samples at Time of Sampling



ENVIRONMENTAL ENGINEERING, INC

Well No.: offsite supply well  
 Casing Diameter:      inch  
 Depth of Well: 125 ft  
 Top of Casing Elevation: NS ft  
 Depth to Groundwater: NM ft  
 Groundwater Elevation: NC ft  
 Water Column Height: NM ft  
 Purged Volume: 75 gallons

Project No.: 2841  
 Address: Wente Vineyards  
 5565 Tesla Rd, Livermore  
 Date: 4/30/07  
 Sampler: Tony Perini  
 Brian Tims

Purging Method: Bailer

Pump  Active pump

Sampling Method: Bailer

Pump  Active pump

Color: No

Yes  Describe rusty

Sheen: No

Yes  Describe \_\_\_\_\_

Odor: No

Yes  Describe \_\_\_\_\_

Field Measurements:

Time	Volume (gallons)	D.O. mg/L	pH	Temp °C	E.C. (µS/cm)	Turb. NTU	ORP
1221 PM	Started						
1228 PM	20	3.43	6.16	20.53	1116	999	-23.6
1233 PM	40	4.30	6.15	19.43	1120	198	-9.9
1238 PM	60	3.87	6.14	19.53	1128	232	-15.5
1241 PM	75	3.52	6.15	19.59	1184	113	2.5
1245 PM	Samples						

Notes:

NC - not calculated  
 NM - not measured

NS - not surveyed  
 well depth based on available data



ENVIRONMENTAL ENGINEERING, INC

Well No.: on-site supply well  
 Casing Diameter:          inch  
 Depth of Well:     NM     ft  
 Top of Casing Elevation:     NS     ft  
 Depth to Groundwater:     NM     ft  
 Groundwater Elevation:     NC     ft  
 Water Column Height:     NM     ft  
 Purged Volume:     70     gallons

Project No.: 2841  
 Address: Wente Vineyards  
 5565 Tesla Rd, Livermore  
 Date: 4/30/07  
 Sampler: Tony Perini  
 Brian Tims

Purging Method: Bailer

Pump  Active pump

Sampling Method: Bailer

Pump  Active pump

Color: No

Yes  Describe

Sheen: No

Yes  Describe

Odor: No

Yes  Describe

Field Measurements:

Time	Volume (gallons)	D.O. mg/L	pH	Temp °C	E.C. (µS/cm)	Turb. NTU	ORP
120 PM	<u>started purging well</u>						
126 PM	20	3.74	6.15	22.29	1060	12.8	-48.3
132 PM	40	3.66	6.14	20.28	1096	14.8	+13.8
142 PM	60	3.36	6.14	20.92	1091	10.1	+18.8
145 PM	70	3.22	6.15	20.99	1111	12.1	+22
148 PM	<u>sampled</u>						

Notes:

# APPENDIX C

Specifications for Off-site well at 5443 Tesla Road



**Mansour Sepahr**

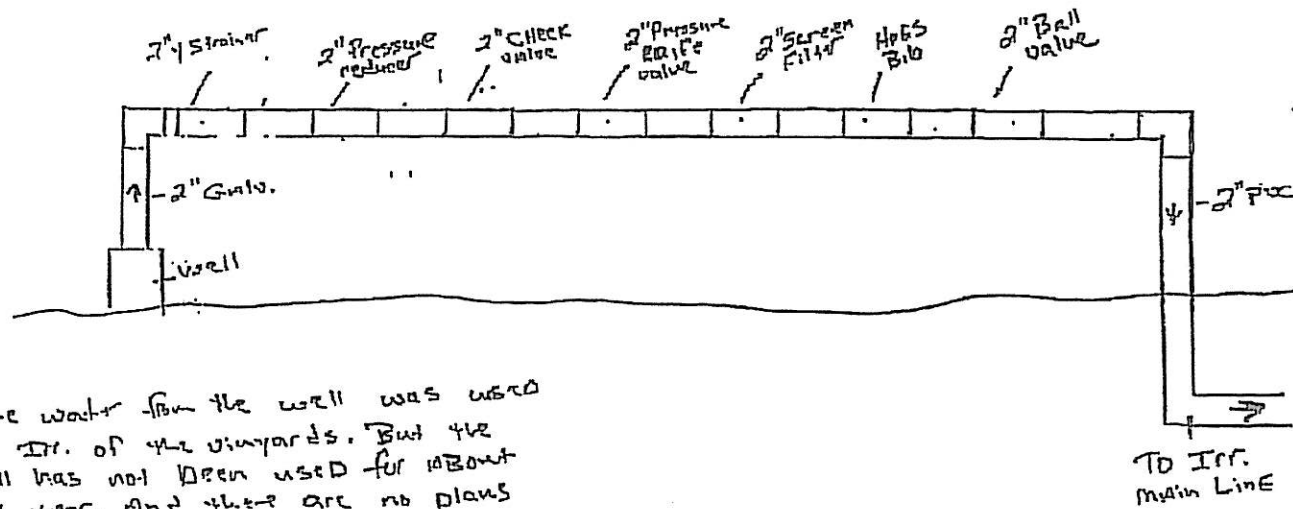
---

**From:** Aris Krimetz [aris@wentevineyards.com]  
**Sent:** Thursday, February 16, 2006 5:06 PM  
**To:** Mansour Sepahr (E-mail)  
**Subject:** 5443 Tesla Road

Mansour-

According to documents provided by the previous owner, the total depth of the well is 125', and the pump is at 100'. It was installed about 1972 by the previous owner. We only re-piped on the well discharge side and connected it to the irrigation system, removing it from the potable system when we purchased the property in 1995/96. The potable water for the property is supplied from a municipal source.

**Aris Krimetz**  
Director of Engineering  
Wente Vineyards  
5565 Tesla Road  
Livermore, CA 94550  
Office: 925 456 2313  
Cell: 925 519 9010  
aris@wentevineyards.com  
www.wentevineyards.com

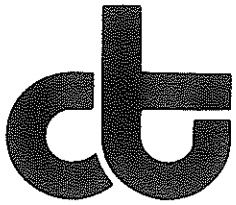


The water from the well was used for irr. of the vineyards. But the well has not been used for about one year. And there are no plans to use the well in the near future.

DATE FOR THE JOB: \_\_\_\_\_  
 NAME OF THE AGENT: \_\_\_\_\_  
 C.D.

# APPENDIX D

Chain of Custody Form and Laboratory Report



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 194470


SOMA Environmental Engineering Inc. 6620 Owens Dr. Pleasanton, CA 94588	Project : 2841 Location : 5565 Tesla Rd, Livermore Level : II
---	---

<u>Sample ID</u>	<u>Lab ID</u>
OFF-SITE SUPPLY WELL	194470-001
ON-SITE SUPPLY WELL	194470-002

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Signature:   
Project Manager

Date: 05/07/2007

Signature:   
Operations Manager

Date: 05/07/2007

# CHAIN OF CUSTODY

**Curtis & Tompkins, Ltd.**  
 Analytical Laboratory Since 1878  
 2323 Fifth Street  
 Berkeley, CA 94710  
 (510)486-0900 Phone  
 (510)486-0532 Fax

**Analyses**

C&T LOGIN # 194470

Sampler: Tony Perini / Brian Jones

Project No: 2841

Report To: Tony Perini

Project Name: 5565 Tesla Rd, Livermore

Company: SOMA Environmental

Turnaround Time: Standard

Telephone: 925-734-6400

Fax: 925-734-6401

Lab No.	Sample ID.	Sampling Date Time	Matrix			# of Containers	Preservative					TPH-g 8260B	TPH-d / TPH-mo	Volatile Organics (full 8260B list)	Metals	Gasoline Oxygenates & lead scavengers
			Soil	Water	Waste		HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	ICE	none					
-1	Off-site Supply Well	4/30/07 1245 PM		*		4-VOAs/ 1 L Amber/ 250 ml Poly	*				*	*	*	*	*	
-2	On-site Supply Well	4/30/07 148 PM		*		4-VOAs/ 1L Ambers/ 250 ml Poly	*				*	*	*	*	*	

**Notes: EDF OUTPUT REQUIRED**  
**Metals for supply wells**  
 Metals include cadmium, chromium, lead nickel, and zinc  
 GasOx to include ethanol  
 THF

RELINQUISHED BY:	RECEIVED BY:
<u>[Signature]</u> 4/30/07 4:25 PM DATE/TIME	<u>[Signature]</u> 4/30/07 1625 DATE/TIME
DATE/TIME	DATE/TIME
DATE/TIME	DATE/TIME

*Revid cold & intact on ice. 4/30/07*  
*[Signature]*

**CASE NARRATIVE**

Laboratory number: 194470  
Client: SOMA Environmental Engineering Inc.  
Project: 2841  
Location: 5565 Tesla Rd, Livermore  
Request Date: 04/30/07  
Samples Received: 04/30/07

This hardcopy data package contains sample and QC results for two water samples, requested for the above referenced project on 04/30/07. The samples were received cold and intact.

**TPH-Extractables by GC (EPA 8015B):**

The LCSD was lost during extraction due to a loose connection on the receiver end. Therefore there is no precision data for this batch. LCS was within limits and all samples' surrogates were within limits. The associated analytes were not detected above the reporting limit. No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B):**

High recoveries were observed for tert-butyl alcohol (TBA) in the BS/BSD for batch 124891; the associated RPD was within limits, and this analyte was not detected at or above the RL in the associated samples. No other analytical problems were encountered.

**Metals (EPA 6010B):**

No analytical problems were encountered.

### Total Extractable Hydrocarbons

Lab #: 194470	Location: 5565 Tesla Rd, Livermore
Client: SOMA Environmental Engineering Inc.	Prep: EPA 3520C
Project#: 2841	Analysis: EPA 8015B
Matrix: Water	Sampled: 04/30/07
Units: ug/L	Received: 04/30/07
Diln Fac: 1.000	Prepared: 05/01/07
Batch#: 124708	Analyzed: 05/02/07

Field ID: OFF-SITE SUPPLY WELL      Lab ID: 194470-001  
 Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	110	61-134

Field ID: ON-SITE SUPPLY WELL      Lab ID: 194470-002  
 Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	101	61-134

Type: BLANK      Lab ID: QC385845

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	89	61-134

ND= Not Detected  
 RL= Reporting Limit

## Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	194470	Location:	5565 Tesla Rd, Livermore
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 3520C
Project#:	2841	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC385846	Batch#:	124708
Matrix:	Water	Prepared:	05/01/07
Units:	ug/L	Analyzed:	05/02/07

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,464	99	58-130

Surrogate	%REC	Limits
Hexacosane	98	61-134



Gasoline by GC/MS			
Lab #:	194470	Location:	5565 Tesla Rd, Livermore
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2841	Analysis:	EPA 8260B
Field ID:	OFF-SITE SUPPLY WELL	Batch#:	124891
Lab ID:	194470-001	Sampled:	04/30/07
Matrix:	Water	Received:	04/30/07
Units:	ug/L	Analyzed:	05/06/07
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
Freon 12	ND	1.0
tert-Butyl Alcohol (TBA)	ND	10
Chloromethane	ND	1.0
Isopropyl Ether (DIPE)	ND	0.5
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Chloroethane	ND	1.0
Methyl tert-Amyl Ether (TAME)	ND	0.5
Trichlorofluoromethane	ND	1.0
Ethanol	ND	1,000
Acetone	ND	10
Freon 113	ND	0.5
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5

ND= Not Detected  
 RL= Reporting Limit

Gasoline by GC/MS			
Lab #:	194470	Location:	5565 Tesla Rd, Livermore
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2841	Analysis:	EPA 8260B
Field ID:	OFF-SITE SUPPLY WELL	Batch#:	124891
Lab ID:	194470-001	Sampled:	04/30/07
Matrix:	Water	Received:	04/30/07
Units:	ug/L	Analyzed:	05/06/07
Diln Fac:	1.000		

Analyte	Result	RL
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5
Tetrahydrofuran	ND	100

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-123
1,2-Dichloroethane-d4	98	79-134
Toluene-d8	100	80-120
Bromofluorobenzene	101	80-122

ND= Not Detected  
 RL= Reporting Limit

Gasoline by GC/MS			
Lab #:	194470	Location:	5565 Tesla Rd, Livermore
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2841	Analysis:	EPA 8260B
Field ID:	ON-SITE SUPPLY WELL	Batch#:	124891
Lab ID:	194470-002	Sampled:	04/30/07
Matrix:	Water	Received:	04/30/07
Units:	ug/L	Analyzed:	05/06/07
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
Freon 12	ND	1.0
tert-Butyl Alcohol (TBA)	ND	10
Chloromethane	ND	1.0
Isopropyl Ether (DIPE)	ND	0.5
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Chloroethane	ND	1.0
Methyl tert-Amyl Ether (TAME)	ND	0.5
Trichlorofluoromethane	ND	1.0
Ethanol	ND	1,000
Acetone	ND	10
Freon 113	ND	0.5
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5

ND= Not Detected  
 RL= Reporting Limit

### Gasoline by GC/MS

Lab #: 194470	Location: 5565 Tesla Rd, Livermore
Client: SOMA Environmental Engineering Inc.	Prep: EPA 5030B
Project#: 2841	Analysis: EPA 8260B
Field ID: ON-SITE SUPPLY WELL	Batch#: 124891
Lab ID: 194470-002	Sampled: 04/30/07
Matrix: Water	Received: 04/30/07
Units: ug/L	Analyzed: 05/06/07
Diln Fac: 1.000	

Analyte	Result	RL
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5
Tetrahydrofuran	ND	100

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-123
1,2-Dichloroethane-d4	94	79-134
Toluene-d8	99	80-120
Bromofluorobenzene	102	80-122

ND= Not Detected  
 RL= Reporting Limit

## Batch QC Report

Gasoline by GC/MS			
Lab #:	194470	Location:	5565 Tesla Rd, Livermore
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2841	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	124891
Units:	ug/L	Analyzed:	05/06/07
Diln Fac:	1.000		

Type: BS Lab ID: QC386555

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	125.0	169.6	136 *	68-132
Isopropyl Ether (DIPE)	25.00	25.23	101	65-120
Ethyl tert-Butyl Ether (ETBE)	25.00	28.16	113	75-124
Methyl tert-Amyl Ether (TAME)	25.00	28.93	116	77-120
1,1-Dichloroethene	25.00	23.63	95	80-132
Benzene	25.00	25.33	101	80-120
Trichloroethene	25.00	23.94	96	80-120
Toluene	25.00	26.63	107	80-120
Chlorobenzene	25.00	25.94	104	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-123
1,2-Dichloroethane-d4	97	79-134
Toluene-d8	99	80-120
Bromofluorobenzene	98	80-122

Type: BSD Lab ID: QC386556

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	125.0	168.1	134 *	68-132	1	20
Isopropyl Ether (DIPE)	25.00	24.09	96	65-120	5	20
Ethyl tert-Butyl Ether (ETBE)	25.00	25.70	103	75-124	9	20
Methyl tert-Amyl Ether (TAME)	25.00	27.15	109	77-120	6	20
1,1-Dichloroethene	25.00	22.34	89	80-132	6	20
Benzene	25.00	24.06	96	80-120	5	20
Trichloroethene	25.00	22.88	92	80-120	4	20
Toluene	25.00	25.50	102	80-120	4	20
Chlorobenzene	25.00	24.64	99	80-120	5	20

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-123
1,2-Dichloroethane-d4	97	79-134
Toluene-d8	100	80-120
Bromofluorobenzene	97	80-122

\*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference

## Batch QC Report

Gasoline by GC/MS			
Lab #:	194470	Location:	5565 Tesla Rd, Livermore
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2841	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	124891
Units:	ug/L	Analyzed:	05/06/07
Diln Fac:	1.000		

Type: BS Lab ID: QC386557

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	938.8	94	70-130

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-123
1,2-Dichloroethane-d4	99	79-134
Toluene-d8	99	80-120
Bromofluorobenzene	99	80-122

Type: BSD Lab ID: QC386558

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	1,000	891.6	89	70-130	5	20

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-123
1,2-Dichloroethane-d4	99	79-134
Toluene-d8	100	80-120
Bromofluorobenzene	98	80-122

RPD= Relative Percent Difference

## Batch QC Report

Gasoline by GC/MS			
Lab #:	194470	Location:	5565 Tesla Rd, Livermore
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2841	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC386559	Batch#:	124891
Matrix:	Water	Analyzed:	05/06/07
Units:	ug/L		

Analyte	Result	RL
Gasoline C7-C12	ND	50
Freon 12	ND	1.0
tert-Butyl Alcohol (TBA)	ND	10
Chloromethane	ND	1.0
Isopropyl Ether (DIPE)	ND	0.5
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Chloroethane	ND	1.0
Methyl tert-Amyl Ether (TAME)	ND	0.5
Trichlorofluoromethane	ND	1.0
Ethanol	ND	1,000
Acetone	ND	10
Freon 113	ND	0.5
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5

ND= Not Detected  
 RL= Reporting Limit

## Batch QC Report

Gasoline by GC/MS			
Lab #:	194470	Location:	5565 Tesla Rd, Livermore
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2841	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC386559	Batch#:	124891
Matrix:	Water	Analyzed:	05/06/07
Units:	ug/L		

Analyte	Result	RL
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5
Tetrahydrofuran	ND	100

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-123
1,2-Dichloroethane-d4	100	79-134
Toluene-d8	100	80-120
Bromofluorobenzene	103	80-122

ND= Not Detected  
 RL= Reporting Limit



### Metals Analytical Report

Lab #: 194470	Location: 5565 Tesla Rd, Livermore
Client: SOMA Environmental Engineering Inc.	Prep: EPA 3010A
Project#: 2841	Analysis: EPA 6010B
Units: ug/L	Received: 04/30/07
Diln Fac: 1.000	Prepared: 05/01/07
Batch#: 124700	Analyzed: 05/01/07
Sampled: 04/30/07	

Field ID: OFF-SITE SUPPLY WELL      Lab ID: 194470-001  
 Type: SAMPLE      Matrix: Water

Analyte	Result	RL
Cadmium	ND	5.0
Chromium	ND	5.0
Lead	ND	3.0
Nickel	ND	5.0
Zinc	720	20

Field ID: ON-SITE SUPPLY WELL      Lab ID: 194470-002  
 Type: SAMPLE      Matrix: Water

Analyte	Result	RL
Cadmium	ND	5.0
Chromium	ND	5.0
Lead	ND	3.0
Nickel	ND	5.0
Zinc	ND	20

Type: BLANK      Matrix: Filtrate  
 Lab ID: QC385811

Analyte	Result	RL
Cadmium	ND	5.0
Chromium	ND	5.0
Lead	ND	3.0
Nickel	ND	5.0
Zinc	ND	20

ND= Not Detected  
 RL= Reporting Limit

## Batch QC Report

Metals Analytical Report			
Lab #:	194470	Location:	5565 Tesla Rd, Livermore
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 3010A
Project#:	2841	Analysis:	EPA 6010B
Matrix:	Filtrate	Batch#:	124700
Units:	ug/L	Prepared:	05/01/07
Diln Fac:	1.000	Analyzed:	05/01/07

Type: BS Lab ID: QC385812

Analyte	Spiked	Result	%REC	Limits
Cadmium	50.00	54.68	109	80-120
Chromium	200.0	207.0	104	80-120
Lead	100.0	103.7	104	80-120
Nickel	500.0	528.3	106	80-120
Zinc	500.0	547.4	109	80-120

Type: BSD Lab ID: QC385813

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Cadmium	50.00	54.72	109	80-120	0	20
Chromium	200.0	207.2	104	80-120	0	20
Lead	100.0	103.3	103	80-120	0	20
Nickel	500.0	531.0	106	80-120	0	20
Zinc	500.0	547.4	109	80-120	0	20

RPD= Relative Percent Difference

## Batch QC Report

Metals Analytical Report			
Lab #:	194470	Location:	5565 Tesla Rd, Livermore
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 3010A
Project#:	2841	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	124700
MSS Lab ID:	193814-001	Sampled:	03/29/07
Matrix:	Filtrate	Received:	03/30/07
Units:	ug/L	Prepared:	05/01/07
Diln Fac:	1.000	Analyzed:	05/01/07

Type: MS Lab ID: QC385814

Analyte	MSS Result	Spiked	Result	%REC	Limits
Cadmium	<0.3555	50.00	55.32	111	80-121
Chromium	<0.3298	200.0	206.2	103	80-120
Lead	1.462	100.0	102.2	101	70-120
Nickel	<0.6463	500.0	518.6	104	78-120
Zinc	82.43	500.0	620.2	108	80-124

Type: MSD Lab ID: QC385815

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Cadmium	50.00	54.17	108	80-121	2	20
Chromium	200.0	203.8	102	80-120	1	20
Lead	100.0	100.8	99	70-120	1	20
Nickel	500.0	514.9	103	78-120	1	20
Zinc	500.0	612.8	106	80-124	1	20

RPD= Relative Percent Difference