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Alameda County
Environmental Health

February 7, 2008

Mr. Jerry Wickham
Local Oversight Program
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502-6577

Subject: Response to Technical Comments by ACEH and Workplan for
Bioventing System Augmentation Redwood Regional Park
Service Yard Site – 7867 Redwood Road, Oakland, California
ACEH Fuel Leak Case No. RO0000246

Dear Mr. Wickham:

INTRODUCTION AND BACKGROUND

On behalf of the responsible party, East Bay Regional Park District (EBRPD), Stellar Environmental Solutions, Inc. (SES) is submitting this response to technical comments made by the Alameda County Environmental Health Department (ACEH) in its letter of October 11, 2007.

This report also contains a workplan for the augmentation of the currently installed bioventing system at the Redwood Regional Park Service Yard site. The EBRPD requested that we petition ACEH for the system augmentation followed by 1 year of operation, with additional testing, before committing to the investigation and implementation of other alternatives.

Environmental remediation and investigations associated with former fuel underground storage tanks (USTs) have been conducted at the site since 1993 when the USTs were removed. The site currently contains 11 site groundwater monitoring wells, 7 of which are sampled on a quarterly basis; the site also contains an operating bioventing system that consists of three vent wells (VWs) and four vapor monitoring points (VMPs) that are monitored on a monthly basis. Figure 1 shows the site plan with the plume and proposed bioventing system modification.

RESPONSE TO ACEH TECHNICAL COMMENTS

Response to Comment No. 1: While SES concurs with ACEH that additional contaminant is feeding the plume, the bioventing appears to be working effectively to reduce concentrations where oxygen is penetrating the vadose zone. Since the first post-installation operational quarterly monitoring in April 2006, MW-8 has shown a downward concentration trend. Well MW-8 (surrounded by VW-1 downgradient and VW-2 upgradient) shows the most pronounced concentration reductions (see Figure 2, Attachment A). On the other hand, MW-7 does not show as pronounced a reduction, as it is nearest to the ineffective VW-3 (see Figure 3, Attachment A). Similarly, the farther upgradient area near MW-2, with its sharp increase in concentration, is outside the radius of oxidation by VW-2 (see Figure 4, Attachment A); however, the concentration dropped significantly after purging (as discussed in more detail below). Thus, while there appears to be more residual hydrocarbon in the area of the original excavation that continues to feed the plume, the bioventing has been effective.

Response to Comment No. 2: SES concurs with ACEH that the contaminant plume continues to discharge to Redwood Creek. This has been occurring since the discovery of the plume in the 1990s; however, the results of the two instream bioassessment events in Redwood Creek documented no impacts to aquatic organisms in 1999 when the concentrations in wells nearest to the creek (e.g., MW-7) were significantly higher. Thus, while the goal is no discharge to Redwood Creek, reduction in concentration in wells closest to the Creek suggest that no impacts to aquatic organisms are likely to be occurring.

Response to Comment No. 3: SES does not agree with ACEH that the bioventing system has been ineffective, although we believe it could be more effective if augmented (as described below) to address the area in closer proximity to the former excavation.

GENERAL DISCUSSION

The groundwater contamination has exhibited a general pattern of increased concentration near the source area during higher groundwater elevations, suggesting an inundation of residual contaminant source in the vadose zone soil. The recent (measured during quarterly events in September and December 2007) significant increase in concentrations of hydrocarbons in MW-2, located upgradient of the source area, appears to have been easily corrected through the minimal pumping at that location. Possible explanations for the increase in concentration include: 1) the contaminant-rich upper layer of groundwater entering the well due to the groundwater elevation dropping to approximately coincident with the top of the MW-2 screened interval; or 2) an isolated hot contaminant feed (although, based on the results of the pumping seen in the Figure 4 plot, this is clearly is not a major source of contamination).

Since the December 2007 detection of 16,000 micrograms per liter ($\mu\text{g/L}$) of total volatile hydrocarbons as gasoline (TVHg), SES purged the well of approximately 80 gallons. The post-purge sample showed 480 $\mu\text{g/L}$ of TVHg, a significant reduction in concentration suggesting a limited localized input. A review of previous investigations suggests that the removal of contaminated soil in the UST excavation was halted in the northern direction by the presence of large redwood trees, and in the southern direction by redwood trees and a building. There are no estimations of the original volume of contamination released or of residual contamination remaining in the source area. However, a subsequent boring investigation in 1993 (after the UST removals) suggests that the volume of contamination is minor in the area beyond the original excavation boundary (see Figure 1). Either way, current groundwater monitoring data suggest that significant residual contamination exists in the source area—to the north and south of the former UST locations in the upper parking lot area of the site.

SES previously evaluated additional remedial technologies, and reported the findings in a letter to ACEH entitled “Bioventing Feasibility at the Redwood Regional Park Service Yard Site” (SES, 2004a). That study, and the subsequent pilot test, demonstrated the feasibility of bioventing as a remedial solution. Permeability testing indicated that soil air permeability was approximately 75 darcys. This is sufficient for bioventing to be an effective technology and significantly greater than the minimum design criteria.

The bioventing pilot test activities conducted for approximately 2 weeks between June and October 2004 included installation of one air injection VW, installation of three vadose zone VMPs, laboratory analysis of soil and soil vapor samples, and installation and operation of the bioventing pilot test system components. Data collected during the 2004 pilot test were used to

assess the feasibility and cost of additional remediation of the remaining soil contamination, and to develop design criteria for full-scale bioventing operations. Flow rate optimization is accomplished by gradually increasing the flow rate to each VW until all VMPs reach a minimum oxygen concentration of approximately 10 percent, expected to be approximately 40 standard cubic feet per minute (scfm) per VW based on the 2004 pilot test results. During the 2 weeks of operations, the pressure, oxygen influence, and soil vapor sampling measurements collected at the three VMPs showed a radius of influence of approximately 30 feet, greater than the minimum design criteria needed for cost-effective operations.

WORKPLAN FOR PROPOSED BIOVENTING SYSTEM EXPANSION

SES proposes to remove the non-responsive VW-3 vent well and to augment the existing bioventing system with one to two additional VWs (VW-4 and VW-5) to be installed in the source area. These additional VWs would be screened from 10 feet below ground surface (bgs) to 23 feet bgs, which is the lowest occurrence of groundwater measured in nearby well MW-2. The slotted depth interval for the proposed VWs is based on the bottom depth of the USTs (10 to 12 feet bgs) and the lowest recorded depth of groundwater measured in the closest well—MW-2. The overlying excavation backfill material should act as a preferential pathway, and extend the actual area of influence under field conditions. Therefore, the proposed design augmentation should encompass all of the remaining areas of residual fuel contamination in the source area.

Existing VMP four (VMP-4) was installed in 2004, and is located in the upper source area approximately 20 feet from the proposed location of VW-4, and 35 feet from VW-5. VMP-4 should be within the radius of influence of VW-4 and at the maximum extent of influence of VW-5. VMP-4 consists of a 1-inch outer diameter (OD) shallow screen from 15.5 to 17.0 feet bgs and a deeper screen set at 20.5 to 22.0 feet bgs. This should be sufficient for monitoring the blower radius of influence.

Locations of the proposed VWs and their radius of influence are shown on Figure 1 in Attachment A. Historical groundwater elevation data and analytical results for monitoring well MW-2 are included in Attachment B.

Task 1: Vent Well Installation

SES proposes to install one VW to the existing capped blower port on the blower manifold. If two VWs are desired, SES proposes to cap VW-3 (the VW that has never functioned) and connect its blower piping to a newly installed additional VW. The construction specifications of the proposed VWs are shown on Figure 5 in Attachment A.

The proposed bioventing VWs would be constructed as follows:

- 2.0-inch inner diameter (ID), Schedule 40 PVC casing from 0 to 10 feet, with flush threads
- 2.0-inch ID, Schedule 40 PVC screen (0.020-inch slot size) from 10 to 23 feet, flush-threaded, with bottom cap
- Annular filter pack (#3 sand) from 23 to 8 feet
- 3 feet of hydrated bentonite pellets or chips (8 to 5 feet)
- 2 feet of Portland-type cement grout annular pollution seal to surface
- 2.0-inch ID Schedule 40 PVC ball valve at well head with 90-degree fitting
- Well box (18- to 24-inch diameter) installed at the surface to protect the well, with below-grade hole (approx 2.5-inch diameter) cut in wellbox skirt and access through concrete collar, for air distribution piping

The drill cuttings would be transferred to 55-gallon steel drums by the drilling contractor.

The sanitary seal is designed to inhibit any “short-circuiting” of the air from above. The well would be surface completed with a flush mount metal well box and concrete collar. Fittings consisting of a flow control valve and a sampling port would be connected to the top of the VW casing and connect to the blower system piping.

Task 2: Soil Sampling and Laboratory Analysis

Borehole geologic logging would be performed using the visual method of the Unified Soils Classification System. Field screening consisting of visual observation (i.e., looking for discoloration or staining), noting of any chemical odors, and measuring of samples with a photoionization detector (PID) would be performed and included on the geologic logs. Two soil samples would be collected during drilling from each VW bore as determined from logging and PID response, but from a depth within the VW screened interval.

Sample would be submitted to the analytical laboratory for analysis of:

- TVHg, by EPA Method 8015B
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) and methyl tertiary-butyl ether (MTBE), by EPA Method 8260B
- Total extractable hydrocarbons – diesel range (TEHd), by EPA Method 8015M

Task 3: Blower, Distribution Piping, and Instrumentation

To adjust individual air flows, four separate flow control valves and flow measurement ports are currently installed on the existing system for each VW header piping within the blower enclosure/shed. Air supply piping that would be used as the conduit for the injected air to flow from the blower to the VWs would be constructed of solid 2-inch ID, Schedule 80 PVC. The new VWs would be connected to the existing air blower manifold using below-grade or above-grade piping as required by site conditions. The existing blower, a Rototron EN 505M (or equivalent), regenerative-type has a maximum free air flow of 160 scfm. This would be sufficient to deliver 20 to 40 scfm to each of four VWs, and to achieve the desired 30-foot radius of influence. The blower, distribution piping locations, and radius of VW influence are shown on the Figure 1 in Attachment A.

Task 4: Disposal of Investigation-Derived Waste

Drill cuttings would be containerized onsite in labeled steel 55-gallon drums for future disposal. Any decontamination fluids generated during sampling would be placed in the 1,000-gallon tank currently onsite, and combined with purged groundwater from groundwater monitoring events for disposal. One composite sample of the drummed soil would be collected for waste characterization. Following characterization and acceptance at a licensed facility, the investigation-derived waste would be disposed of offsite in accordance with local, State, and federal requirements. Used personal protection and disposable equipment would be double-bagged and placed in a municipal refuse dumpster.

Task 5: System Monitoring

System monitoring at the four VMPs would be conducted to confirm that air injection in the VWs is influencing the oxygen concentrations within the soils impacted by remaining fuel residuals. The blower, flow rates, and oxygen concentrations in the VMPs would be checked at least weekly during the first month of operation to ensure that required flow rates are achieved and that oxygen concentrations increase in the VMPs as a result of air injection; these checks would then be performed monthly as they have been since installation of the original system. Monthly system checks of the system include VW flow rates, outlet pressure, and inlet vacuum; assessing the need for air filter replacement; checking groundwater levels in the VWs and VMPs; and visually inspecting the condition of the aboveground portion of the air distribution piping.

Task 5: Technical Reporting

- SES would complete a documentation report that would be incorporated into the biannual bioventing system status report. This report would include geologic logs and analytical data collected during system augmentation activities.
- Following VW installations, SES would prepare and submit the required Well Completion Reports to the California Department of Water Resources in accordance with State regulations. Copies of the Well Completion Reports would also be submitted to the ACEH.
- SES would conduct an in-situ respiration (ISR) test to estimate the rate of biodegradation of petroleum hydrocarbons. The ISR test would be conducted in late fall 2008, approximately 8 to 9 months after the proposed new VW installations (and 1 year after the previous ISR test in November 2007). The ISR test ideally would be done at low groundwater, when the lower level screens are unsaturated. The ISR test would consist of shutting down the blower, monitoring over time (approximately 72 hours) the decreases in oxygen concentration and increases in carbon dioxide concentration at the VWs and VMPs, and evaluating biodegradation rates (including contaminant mass removal and overall system effectiveness). The ISR test results would be included in the system status report from the period within which it occurs, and would provide a summary of all system activities and measurements.
- As required, site data would be uploaded to both the State of California GeoTracker system and ACEH ftp system.

TEAM QUALIFICATIONS

SES has completed dozens of similar projects, including several under the jurisdiction of ACEH. Our team would consist of:

- Stellar Environmental Solutions, Inc. (owners' consultant responsible for overall project coordination, geologic evaluation, sampling, data evaluation, installation and operation, and report certification by a California Professional Geologist)
- A driller with a current C-57 license
- An analytical laboratory with a current certification by the State of California Environmental Laboratory Accreditation Program

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We trust that this submittal meets your agency's needs. We request that ACEH provide to SES and the property owners written approval of this workplan. Please contact the undersigned directly if you have any questions.

Sincerely,



Henry Pietropaoli, P.G., R.E.A.
Project Manager



Richard S. Makdisi, P.G., R.E.A.
Principal

Attachments:

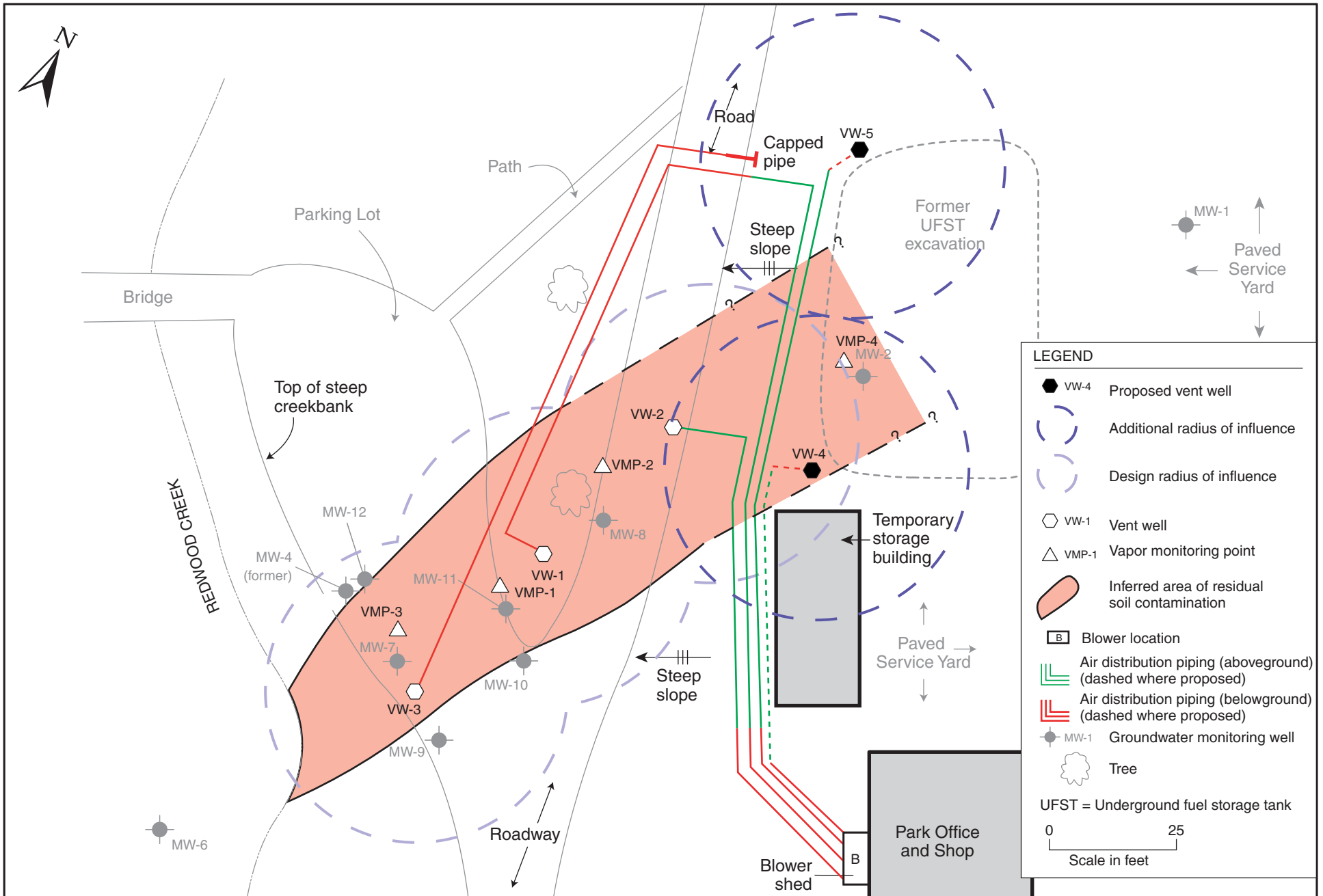
- Attachment A – Site Plan and Proposed Vent Well Construction
- Attachment B – Historical Groundwater Elevation Data and Analytical Results
- Attachment C – References

cc: Mr. Neal Fujita – East Bay Regional Park District



ATTACHMENT A

Site Plan and Vent Well Construction, and Contaminant Concentration Plot Figures



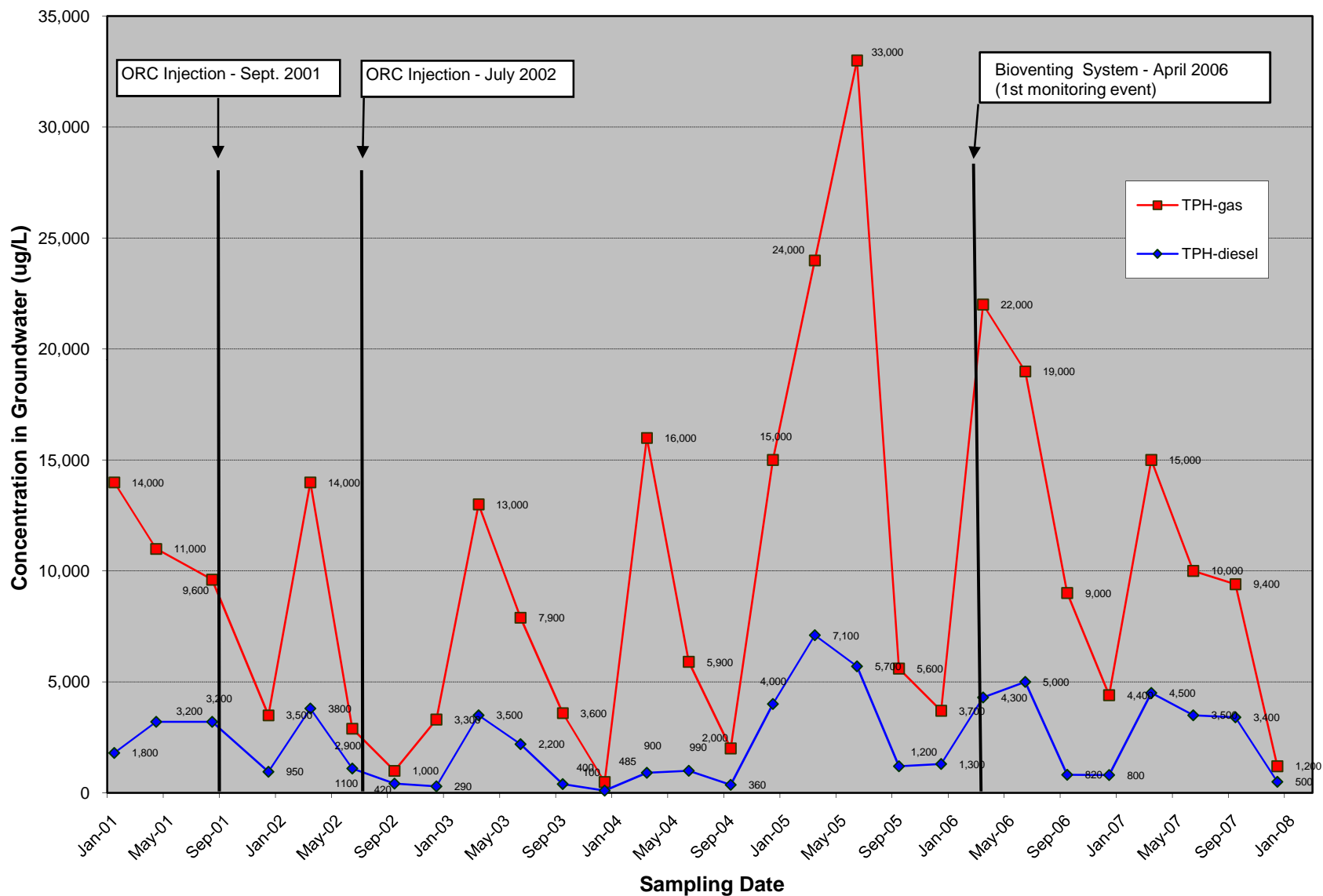
PROPOSED BIOVENTING SYSTEM AUGMENTATION
7867 Redwood Rd, Oakland, CA

Figure 1

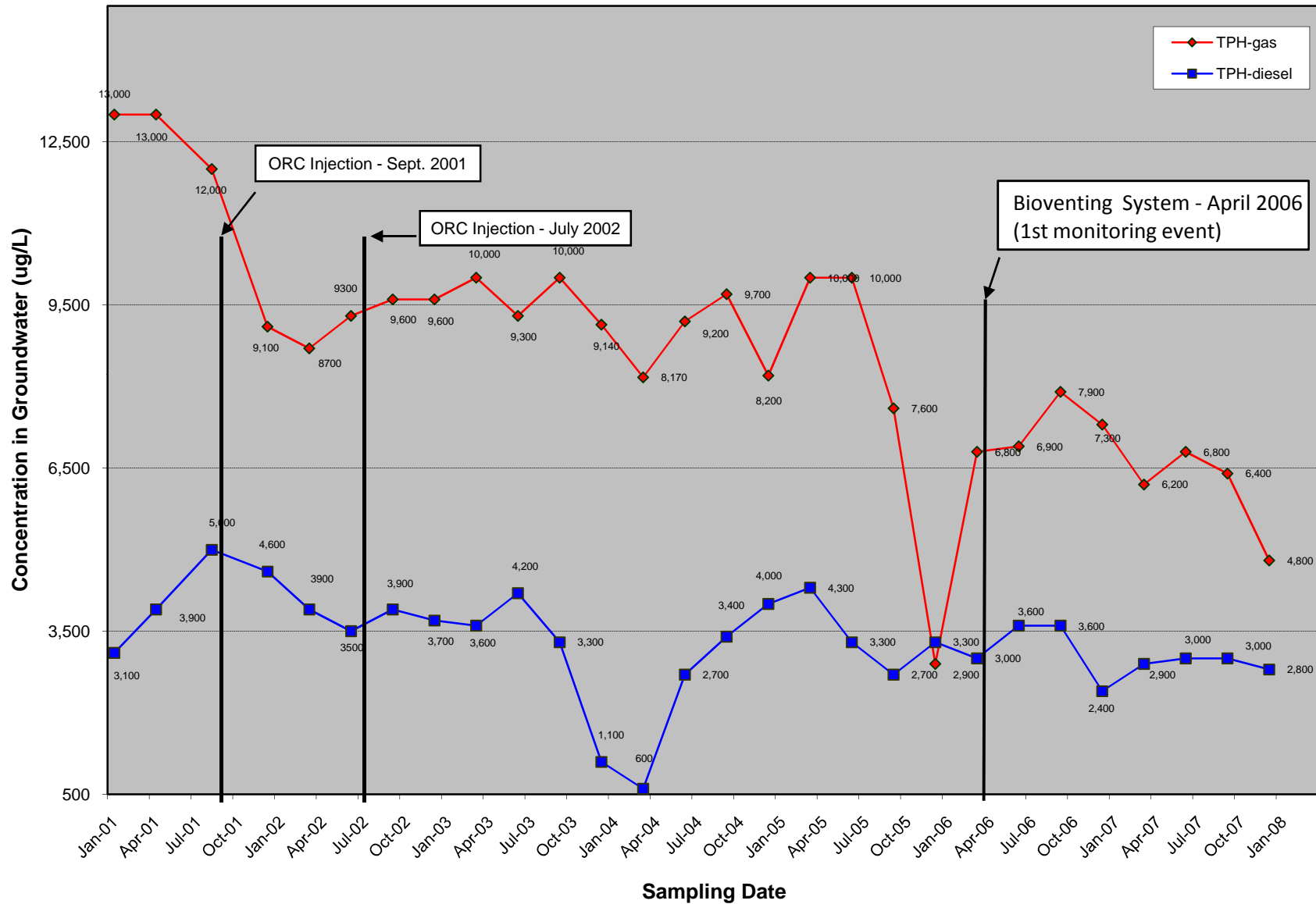
by: MJC

FEBRUARY 2008

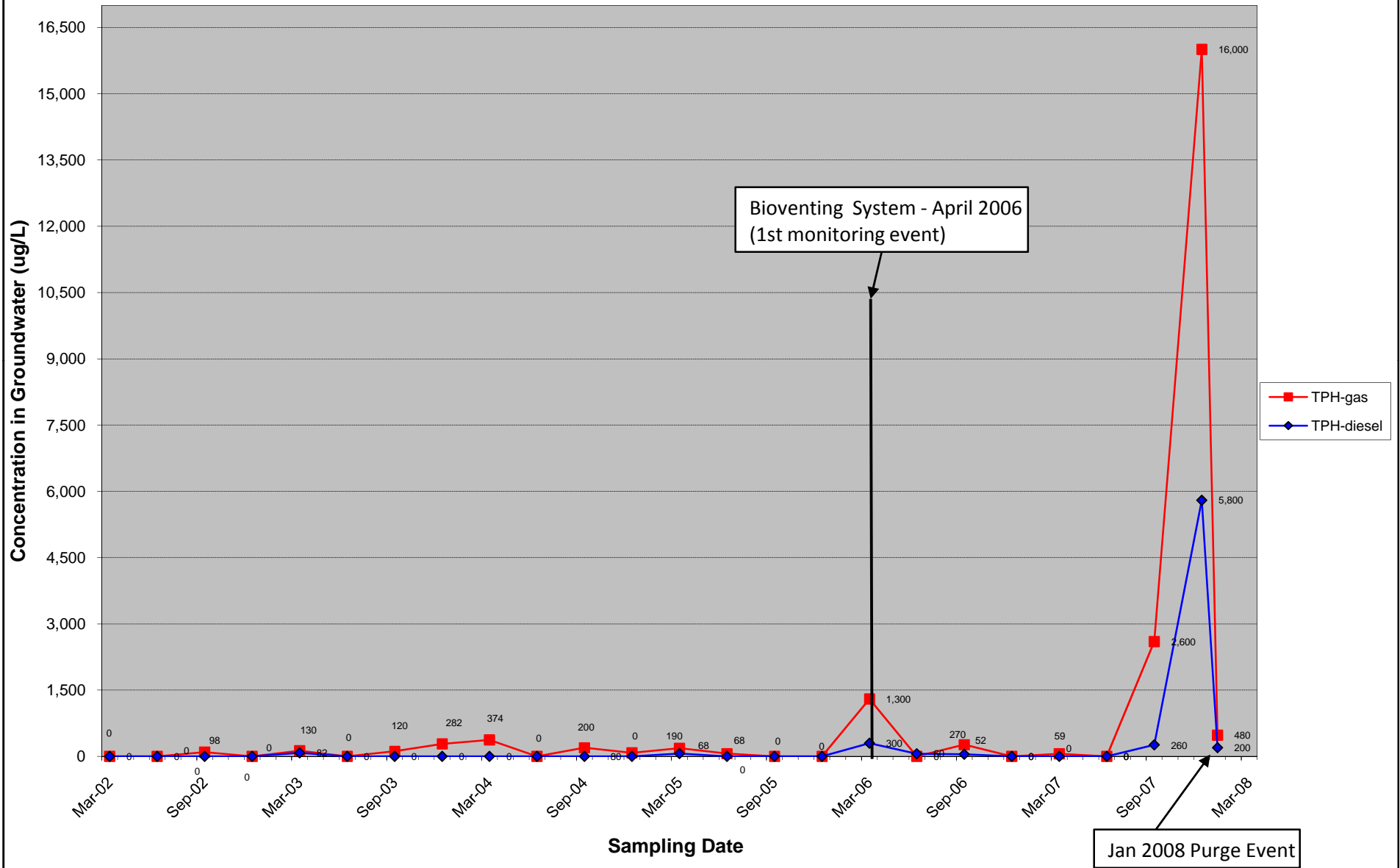
**Figure 2: Gasoline and Diesel Hydrochemical Trends: Well MW-8
Redwood Regional Park Service Yard, Oakland, California**

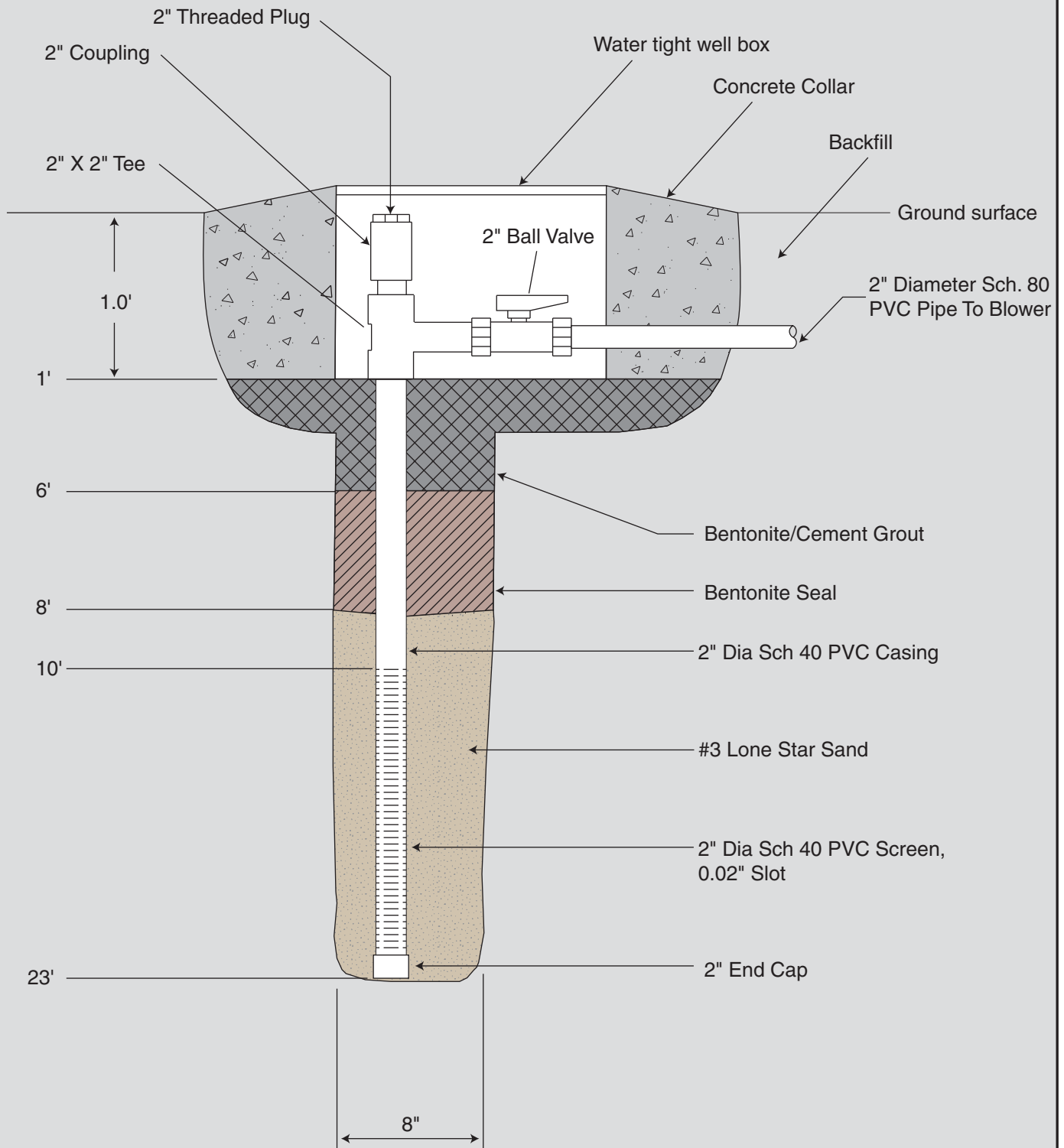


**Figure 3: Gasoline and Diesel Hydrochemical Trends: Well MW-7
Redwood Regional Park Service Yard, Oakland, California**



**Figure 4: Gasoline and Diesel Hydrochemical Trends: Well MW-2
Redwood Regional Park Service Yard, Oakland, California**





NOT TO SCALE
(well casing is actually centered in borehole)

Note: All connections threaded with gasket or teflon tape. No glues used.

PROPOSED VENT WELL CONSTRUCTION DETAILS FOR VW-4 & VW-5

Redwood Regional Park
Oakland, CA

By: MJC

FEBRUARY 2008

Figure 5



ATTACHMENT B

Groundwater Elevation Data Analytical Results

**HISTORICAL GROUNDWATER ELEVATIONS IN MONITORING WELLS
REDWOOD REGIONAL PARK SERVICE YARD
7867 REDWOOD ROAD, OAKLAND, CALIFORNIA**

Well I.D.	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12
TOC Elevation (a)	565.83	566.42	560.81	548.10	547.41	545.43	547.56	549.13	549.28	547.22	547.75	544.67
Date Monitored	Groundwater Elevations (feet above mean sea level)											
09/18/98	563.7	544.2	540.8	534.5	531.1	545.6						
04/06/99	565.2	546.9	542.3	535.6	532.3	532.9						
12/20/99	562.9	544.7	541.5	534.9	531.2	532.2						
09/28/00	562.8	542.7	538.3	532.2	530.9	532.0						
01/11/01	562.9	545.1	541.7	535.0	531.2	532.3	534.9	538.1				
04/13/01	562.1	545.7	541.7	535.1	531.5	532.4	535.3	539.8				
09/01/01	560.9	542.0	537.7	533.9	530.7	531.8	534.0	535.6				
12/17/01	562.2	545.2	542.2	534.8	531.4	532.4	534.8	538.4	534.6	535.7	535.2	
03/14/02	563.0	547.1	542.2	535.5	532.4	533.3	535.7	541.8	535.0	537.6	536.6	
06/18/02	562.1	544.7	541.1	534.6	531.2	532.2	534.8	537.9	534.7	535.6	535.3	
09/24/02	561.4	542.2	537.3	533.5	530.6	531.8	533.5	535.5	535.3	533.8	531.7	
12/18/02	562.4	545.0	542.0	534.8	531.5	532.5	534.6	537.1	536.5	535.2	532.8	
03/27/03	562.6	545.7	541.7	534.8	531.6	532.4	535.1	539.9	537.2	536.2	533.6	
06/19/03	562.3	544.9	541.5	534.8	531.3	532.3	534.9	538.2	536.9	535.7	533.2	
09/10/03	561.6	542.1	537.9	533.8	530.8	531.9	533.7	535.6	535.6	534.1	531.9	
12/10/03	562.4	542.7	537.6	533.7	530.9	531.9	533.7	535.2	535.5	533.8	531.7	
03/18/04	563.1	546.6	541.9	535.0	531.7	532.4	535.2	540.9	537.4	536.6	533.8	
06/17/04	562.1	544.3	540.7	534.3	531.0	532.1	534.6	537.4	536.5	535.1	532.7	
09/21/04	561.5	541.1	536.5	533.1	530.5	531.6	533.1	534.7	532.7	533.2	533.2	
12/14/04	562.2	545.3	541.7	534.7	531.4	532.2	534.6	540.4	536.7	535.5	532.9	
03/16/05	563.8	547.3	541.7	535.3	532.4	532.8	535.6	541.8	538.0	537.1	534.2	
06/15/05	562.9	545.9	541.6	535.0	531.7	532.5	535.0	540.0	535.0	536.1	535.6	
09/13/05	562.3	543.5	539.7	534.4	530.9	532.2	534.3	536.7	536.1	534.7	532.4	
12/15/05	562.2	544.3	541.4	(b)	531.0	532.2	534.5	537.3	534.1	534.7	534.9	535.1
03/30/06	565.8	548.6	542.7	(b)	533.9	534.4	536.2	542.3	536.4	537.3	537.6	535.7
06/20/06	563.6	545.4	541.6	(b)	531.5	532.5	534.9	538.6	534.6	536.2	535.5	535.0
09/29/06	561.9	542.8	539.0	(b)	530.7	532.1	535.1	536.1	533.7	534.6	534.7	534.7
12/14/06	562.9	544.2	541.5	(b)	531.1	532.3	534.7	536.7	534.0	534.8	535.2	535.0
03/21/07	562.5	545.2	541.7	(b)	531.4	532.4	534.9	539.3	534.6	535.6	535.6	535.1
06/20/07	561.5	543.5	540.8	(b)	531.0	532.4	534.6	537.1	531.1	535.2	535.3	534.9
9/14/2007	560.71	541.02	536.99	(b)	530.46	531.58	533.42	534.86	532.64	533.47	533.68	533.74
12/6/2007	560.62	541.22	536.85	(b)	530.68	531.48	533.21	535.08	532.62	533.3	533.61	533.64

TOC = Top of well Casing
(a) TOC Elevations resurveyed on December 15, 2005 in accordance GeoTracker requirements.
(b) Well decommissioned and replaced by MW-12 in December 2005.

HISTORICAL GROUNDWATER MONITORING WELLS ANALYTICAL RESULTS
REDWOOD REGIONAL PARK SERVICE YARD, OAKLAND, CALIFORNIA
(all concentrations in ug/L, equivalent to parts per billion [ppb])

Well MW-2									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Nov-94	66	< 50	3.4	< 0.5	< 0.5	0.9	4.3	NA
2	Feb-95	89	< 50	18	2.4	1.7	7.5	30	NA
3	May-95	< 50	< 50	3.9	< 0.5	1.6	2.5	8.0	NA
4	Aug-95	< 50	< 50	5.7	< 0.5	< 0.5	< 0.5	5.7	NA
5	May-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
6	Aug-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
7	Dec-96	< 50	< 50	6.3	< 0.5	1.6	< 0.5	7.9	NA
8	Feb-97	< 50	< 50	0.69	< 0.5	0.55	< 0.5	1.2	NA
9	May-97	67	< 50	8.9	< 0.5	5.1	< 1.0	14	NA
10	Aug-97	< 50	< 50	4.5	< 0.5	1.1	< 0.5	5.6	NA
11	Dec-97	61	< 50	21	< 0.5	6.5	3.9	31	NA
12	Feb-98	2,000	200	270	92	150	600	1,112	NA
13	Sep-98	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	7.0
14	Apr-99	82	710	4.2	< 0.5	3.4	4.0	12	7.5
15	Dec-99	57	< 50	20	0.6	5.9	< 0.5	27	4.5
16	Sep-00	< 50	< 50	0.72	< 0.5	< 0.5	< 0.5	0.7	7.9
17	Jan-01	51	< 50	8.3	< 0.5	1.5	< 0.5	9.8	8.0
18	Apr-01	110	< 50	10	< 0.5	11	6.4	27	10
19	Aug-01	260	120	30	6.7	1.6	6.4	45	27
20	Dec-01	74	69	14	0.8	3.7	3.5	22	6.6

Well MW-2 (continued)									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
21	Mar-02	< 50	< 50	2.3	0.51	1.9	1.3	8.3	8.2
22	Jun-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	7.7
23	Sep-02	98	< 50	5.0	< 0.5	< 0.5	< 0.5	—	13
24	Dec-02	< 50	< 50	4.3	< 0.5	< 0.5	< 0.5	—	< 2.0
25	Mar-03	130	82	39	< 0.5	20	4.1	63	16
26	Jun-03	< 50	< 50	1.9	< 0.5	< 0.5	< 0.5	1.9	8.7
27	Sep-03	120	< 50	8.6	0.51	0.53	< 0.5	9.6	23
28	Dec-03	282	< 100	4.3	1.6	1.3	1.2	8.4	9.4
29	Mar-04	374	< 100	81	1.2	36	7.3	126	18
30	Jun-04	< 50	< 50	0.75	< 0.5	< 0.5	< 0.5	< 0.5	15
31	Sep-04	200	< 50	23	< 0.5	< 0.5	0.70	24	16
32	Dec-04	80	< 50	14	< 0.5	2.9	0.72	18	20
33	Mar-05	190	68	27	< 0.5	14	11	52	26
34	Jun-05	68	< 50	7.1	< 0.5	6.9	1.8	16	24
35	Sep-05	< 50	< 50	2.5	< 0.5	< 0.5	< 1.0	2.5	23
36	Dec-05	< 50	< 50	3.9	< 0.5	< 0.5	< 1.0	3.9	23
37	Mar-06	1300	300	77	4.4	91	250	422	18
38	Jun-06	< 50	60	< 0.5	< 0.5	< 0.5	< 1.0	—	17
39	Sep-06	270	52	31	< 0.5	15	6.69	53	17
40	Dec-06	< 50	< 50	2.1	< 0.5	< 0.5	< 0.5	2	16
41	Mar-07	59	< 50	4	< 0.5	< 0.5	< 0.5	< 0.5	14
42	Jun-07	< 50	< 50	3.5	< 0.5	< 0.5	< 0.5	3.5	8
43	Sep-07	2,600	260	160	44	86	431	721	15
44	Dec-07	16,000	5,800	23	91	230	2,420	2764	16
44a	Jan-08	480	200	1.1	3.2	5.5	68	77.8	11

Well MW-4									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Nov-94	2,600	230	120	4.8	150	88	363	NA
2	Feb-95	11,000	330	420	17	440	460	1,337	NA
3	May-95	7,200	440	300	13	390	330	1,033	NA
4	Aug-95	1,800	240	65	6.8	89	67	227	NA
5	May-96	1,100	140	51	< 0.5	< 0.5	47	98	NA
6	Aug-96	3,700	120	63	2.0	200	144	409	NA
7	Dec-96	2,700	240	19	< 0.5	130	93	242	NA
8	Feb-97	3,300	< 50	120	1.0	150	103	374	NA
9	May-97	490	< 50	2.6	6.7	6.4	6.7	22	NA
10	Aug-97	1,900	150	8.6	3.5	78	53	143	NA
11	Dec-97	1,000	84	4.6	2.7	61	54	123	NA
12	Feb-98	5,300	340	110	24	320	402	856	NA
13	Sep-98	1,800	< 50	8.9	< 0.5	68	27	104	23
14	Apr-99	2,900	710	61	1.2	120	80	263	32
15	Dec-99	1,000	430	4.0	2.0	26	14	46	< 2.0
16	Sep-00	570	380	< 0.5	< 0.5	16	4.1	20	2.4
17	Jan-01	1,600	650	4.2	0.89	46	13.8	65	8.4
18	Apr-01	1,700	1,100	4.5	2.8	48	10.7	66	5.0
19	Aug-01	1,300	810	3.2	4.0	29	9.7	46	< 2.0
20	Dec-01	< 50	110	< 0.5	< 0.5	< 0.5	1.2	1.2	< 2.0
21	Mar-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
22	Jun-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
23	Sep-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
24	Dec-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
25	Mar-03	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
26	Jun-03	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
27	Sep-03	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
28	Dec-03	< 50	< 100	< 0.3	< 0.3	< 0.3	< 0.6	—	< 5.0
29	Mar-04	< 50	< 100	< 0.3	< 0.3	< 0.3	< 0.6	—	< 5.0
30	Jun-04	< 50	2,500	< 0.3	< 0.3	< 0.3	< 0.6	—	< 5.0
31	Sep-04	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0
32	Dec-04	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0
33	Mar-05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0
34	Jun-05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0
35	Sep-05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0

Groundwater monitoring in this well discontinued with Alameda County Health Care Services Agency approval.

Well MW-5									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Nov-94	50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
2	Feb-95	70	< 50	0.6	< 0.5	< 0.5	< 0.5	0.6	NA
3	May-95	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
4	Aug-95	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
5	May-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
6	Aug-96	80	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
7	Dec-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
8	Feb-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
9	May-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
10	Aug-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
11	Dec-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
12	Feb-98	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
13	Sep-98	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2
Groundwater monitoring in this well discontinued in 1998 with Alameda County Health Care Services Agency approval.									
Subsequent groundwater monitoring conducted to confirm plume's southern limit									
14	Jun-04	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	5.9
15	Sep-04	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0

Well MW-7									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Jan-01	13,000	3,100	95	4	500	289	888	95
2	Apr-01	13,000	3,900	140	< 0.5	530	278	948	52
3	Aug-01	12,000	5,000	55	25	440	198	718	19
4	Dec-01	9,100	4,600	89	< 2.5	460	228	777	< 10
5	Mar-02	8,700	3,900	220	6.2	450	191	867	200
6	Jun-02	9,300	3,500	210	6.3	380	155	751	18
7	Sep-02	9,600	3,900	180	< 0.5	380	160	720	< 2.0
8	Dec-02	9,600	3,700	110	< 0.5	400	189	699	< 2.0
9	Mar-03	10,000	3,600	210	12	360	143	725	45
10	Jun-03	9,300	4,200	190	< 10	250	130	570	200
11	Sep-03	10,000	3,300	150	11	300	136	597	< 2.0
12	Dec-03	9,140	1,100	62	45	295	184	586	89
13	Mar-04	8,170	600	104	41	306	129	580	84
14	Jun-04	9,200	2,700	150	< 0.5	290	91	531	< 2.0
15	Sep-04	9,700	3,400	98	< 0.5	300	125	523	< 2.0
16	Dec-04	8200	4,000	95	< 0.5	290	124	509	< 2.0
17	Mar-05	10,000	4,300	150	<0.5	370	71	591	<2.0
18	Jun-05	10,000	3,300	210	<1.0	410	56	676	<4.0
19	Sep-05	7,600	2,700	110	<1.0	310	54	474	<4.0
20	Dec-05	2,900	3,300	31	<1.0	140	41	212	<4.0
21	Mar-06	6,800	3,000	110	< 1.0	280	42	432	110
22	Jun-06	6,900	3,600	63	< 2.5	290	43	396	< 10
23	Sep-06	7,900	3,600	64	< 0.5	260	58	382	49
24	Dec-06	7,300	2,400	50	< 0.5	220	42	312	< 2.0
25	Mar-07	6,200	2,900	34	< 0.5	190	15	239	< 2.0
26	Jun-07	6,800	3,000	30	<1.0	160	27	217	<4.0
27	Sep-07	6,400	3,000	<0.5	<0.5	170	43	213	<2.0
28	Dec-07	4,800	2,800	<0.5	<0.5	100	26.5	126.5	2.7

Well MW-8									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Jan-01	14,000	1,800	430	17	360	1230	2,037	96
2	Apr-01	11,000	3,200	320	13	560	1,163	2,056	42
3	Aug-01	9,600	3,200	130	14	470	463	1,077	14
4	Dec-01	3,500	950	69	2.4	310	431	812	< 4.0
5	Mar-02	14,000	3,800	650	17	1,200	1,510	3,377	240
6	Jun-02	2,900	1,100	70	2.0	170	148	390	19
7	Sep-02	1,000	420	22	< 0.5	64	50	136	< 2.0
8	Dec-02	3,300	290	67	< 0.5	190	203	460	< 2.0
9	Mar-03	13,000	3,500	610	12	1,100	958	2,680	< 10
10	Jun-03	7,900	2,200	370	7.4	620	562	1,559	< 4.0
11	Sep-03	3,600	400	120	3.3	300	221	644	< 2.0
12	Dec-03	485	100	19	1.5	26	36	83	< 5.0
13	Mar-04	16,000	900	592	24	1,060	1,870	3,546	90
14	Jun-04	5,900	990	260	9.9	460	390	1,120	< 10
15	Sep-04	2,000	360	100	< 2.5	180	102	382	< 10
16	Dec-04	15,000	4,000	840	21	1,200	1,520	3,581	< 10
17	Mar-05	24,000	7,100	840	51	1,800	2,410	5,101	<10
18	Jun-05	33,000	5,700	930	39	2,500	3,860	7,329	<20
19	Sep-05	5,600	1,200	270	6.6	400	390	1,067	<20
20	Dec-05	3,700	1,300	110	< 5.0	320	356	786	<20
21	Mar-06	22,000	4,300	550	30	1,800	2,380	4,760	<20
22	Jun-06	19,000	5,000	500	28	1,800	1,897	4,225	<20
23	Sep-06	9,000	820	170	7.7	730	539	1,447	<10
24	Dec-06	4,400	800	75	4.2	320	246	645	< 2.0
25	Mar-07	15,000	4,500	340	19	1,300	1,275	2,934	< 20
26	Jun-07	10,000	3,500	220	11	670	675	1,576	<4.0
27	Sep-07	9,400	3,400	200	6.9	1,000	773	1,980	<8.0
28	Dec-07	1,200	500	15	0.88	95	57.7	168.58	<2.0

Well MW-9									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Aug-01	11,000	170	340	13	720	616	1,689	48
2	Dec-01	9,400	2,700	250	5.1	520	317	1,092	< 10
3	Mar-02	1,700	300	53	4.2	120	67	244	20
4	Jun-02	11,000	2,500	200	16	600	509	1,325	85
5	Sep-02	3,600	2,800	440	11	260	39	750	< 4.0
6	Dec-02	7,000	3,500	380	9.5	730	147	1,266	< 10
7	Mar-03	4,400	1,400	320	6.9	400	93	820	< 2.0
8	Jun-03	7,600	1,600	490	10	620	167	1,287	< 4.0
9	Sep-03	8,300	2,900	420	14	870	200	1,504	< 10
10	Dec-03	7,080	700	287	31	901	255	1,474	< 10
11	Mar-04	3,550	600	122	15	313	84	534	35
12	Jun-04	6,800	1,700	350	< 2.5	620	99	1,069	< 10
13	Sep-04	7,100	1,900	160	8.1	600	406	1,174	< 10
14	Dec-04	4,700	2,800	160	< 2.5	470	< 0.5	630	< 10
15	Mar-05	4,200	1,600	97	< 2.5	310	42	449	< 10
16	Jun-05	9,900	2,000	170	< 2.5	590	359	1,119	< 10
17	Sep-05	3,600	1,200	250	< 0.5	330	36	616	< 2.0
18	Dec-05	8,700	1,500	150	4	650	551	1,355	< 4.0
19	Mar-06	3,600	880	37	< 1.0	210	165	412	< 4.0
20	Jun-06	3,200	1,300	39	< 1.0	220	144	403	4.2
21	Sep-06	12,000	3,300	130	8	850	604	1,592	< 1.0
22	Dec-06	12,000	2,800	140	9.4	880	634	1,663	< 10
23	Mar-07	9,600	2,900	120	8.7	780	453	1,362	< 10
24	Jun-07	7,100	2,200	75	5.2	480	298	858	< 4.0
25	Sep-07	4,500	2,100	60	3.8	420	227	710	< 4.0
26	Dec-07	6,200	2,000	51	< 0.5	340	128.8	519.8	< 2.0

Well MW-10									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Aug-01	550	2,100	17	< 0.5	31	44	92	40
2	Dec-01	< 50	81	< 0.5	< 0.5	< 0.5	< 0.5	—	25
3	Mar-02	< 50	< 50	0.61	< 0.5	< 0.5	< 0.5	0.61	6.0
4	Jun-02	< 50	< 50	0.59	< 0.5	0.58	< 0.5	1.2	9.0
5	Sep-02	160	120	10	< 0.5	6.7	3.6	20	26
6	Dec-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	16
7	Mar-03	110	< 50	11	< 0.5	12	1.3	24	15
8	Jun-03	110	< 50	9.6	< 0.5	6.8	< 0.5	16	9.0
9	Sep-03	< 50	< 50	1.1	< 0.5	1.5	< 0.5	2.6	7.0
10	Dec-03	162	<100	6.9	<0.3	8.0	<0.6	15	9.9
11	Mar-04	94	<100	2.8	<0.3	5.7	7.0	16	<5.0
12	Jun-04	150	56	11	< 0.5	12	< 0.5	23	15
13	Sep-04	< 50	< 50	1.6	< 0.5	1.9	< 1.0	3.5	5.8
14	Dec-04	64	< 50	3.7	< 0.5	3.7	0.7	8.1	10
15	Mar-05	95	98	8.3	<0.5	7.7	0.77	17	13
16	Jun-05	150	57	14	<0.5	10	1.0	25	<2.0
17	Sep-05	87	< 50	5.0	<0.5	3.6	<1.0	8.6	<2.0
18	Dec-05	< 50	< 50	1.2	<0.5	<0.5	<1.0	1.2	7.8
19	Mar-06	58	71	3.2	<0.5	2.2	<1.0	5.4	8.8
20	Jun-06	73	140	4.9	<0.5	2.5	<1.0	7.4	5.3
21	Sep-06	88	51	<0.5	<0.5	<0.5	<0.5	<0.5	9.6
22	Dec-06	<50	<50	0.61	<0.5	0.55	<0.5	1.2	3.7
23	Mar-07	57	<50	3.6	<0.5	2.2	<0.5	5.8	3.1
24	Jun-07	60	65	2.4	<0.5	1.6	<0.5	4.0	4.0
25	Sep-07	84	<50	3.6	<0.5	2.3	0.52	6.4	3.6
26	Dec-07	130	67	0.77	<0.5	340	0.83	341.6	<2.0

Well MW-11									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Aug-01	17,000	7,800	390	17	820	344	1,571	< 10
2	Dec-01	5,800	2,800	280	7.8	500	213	1,001	< 10
3	Mar-02	100	94	< 0.5	< 0.5	0.64	< 0.5	0.64	2.4
4	Jun-02	8,200	2,600	570	13	560	170	1,313	< 4
5	Sep-02	12,000	4,400	330	13	880	654	1,877	< 10
6	Dec-02	18,000	4,500	420	< 2.5	1,100	912	2,432	< 10
7	Mar-03	7,800	2,600	170	4.7	530	337	1,042	53
8	Jun-03	14,000	3,800	250	< 2.5	870	693	1,813	< 10
9	Sep-03	10,000	3,000	250	9.9	700	527	1,487	< 4
10	Dec-03	15,000	1,100	314	60	1,070	802	2,246	173
11	Mar-04	4,900	400	72	17	342	233	664	61
12	Jun-04	10,000	2,300	210	2.8	690	514	1,417	< 10
13	Sep-04	7,200	2,300	340	< 2.5	840	75	1,255	< 10
14	Dec-04	11,000	3,900	180	5.1	780	695	1,660	< 10
15	Mar-05	4,600	1,900	69	< 2.5	300	206	575	< 10
16	Jun-05	1,400	590	85	< 0.5	110	8.2	203	< 2.0
17	Sep-05	12,000	3,100	220	< 1.0	840	762	1,822	< 4.0
18	Dec-05	2,500	2,100	120	< 2.5	260	16	396	< 10
19	Mar-06	2,200	1,300	27	< 2.5	130	5.2	162	< 10
20	Jun-06	3,700	1,900	170	< 1.0	230	14	414	< 4.0
21	Sep-06	3,600	2,100	80	< 0.5	230	8.8	319	< 2.0
22	Dec-06	6,000	3,500	83	< 1.0	260	16.4	359	< 4.0
23	Mar-07	4,500	1,900	110	< 0.5	170	7.9	288	< 2.0
24	Jun-07	4	2,200	120	< 0.5	140	6.6	267	< 4.0
25	Sep-07	5,500	2,700	86	< 0.5	180	16.1	282	< 2.0
26	Dec-07	7,100	4,000	68	< 0.5	140	14	222	35

Well MW-12									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Dec-05	1,300	700	< 0.5	< 0.5	33	5.6	39	< 2.0
2	Mar-06	1,100	540	< 0.5	< 0.5	8.5	1.5	10	49
3	Jun-06	680	400	< 0.5	< 0.5	5.8	1.4	7.2	< 2.0
4	Sep-06	910	480	< 0.5	< 0.5	9.9	1.5	11.4	21
5	Dec-06	770	230	< 0.5	< 0.5	7.4	2.0	9.4	< 2.0
6	Mar-07	390	110	< 0.5	< 0.5	1.7	1.7	3.4	< 2.0
7	Jun-07	590	280	< 0.5	< 0.5	4.5	0.9	5.4	< 2.0
8	Sep-07	390	180	< 0.5	< 0.5	2.4	2.4	4.8	< 2.0
9	Dec-07	210	140	< 0.5	< 0.5	2.1	1.3	3.4	< 2.0

**HISTORICAL SURFACE WATER ANALYTICAL RESULTS
REDWOOD REGIONAL PARK SERVICE YARD, OAKLAND, CALIFORNIA**

(all concentrations in ug/L, equivalent to parts per billion [ppb])

Sampling Location SW-1 (Upstream of Contaminated Groundwater Discharge Location SW-2)									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Feb-94	50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
2	May-95	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
3	May-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
4	Aug-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
5	Dec-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
6	Feb-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
7	Aug-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
8	Dec-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
9	Feb-98	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
10	Sep-98	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
11	Apr-99	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
Sampling at this location discontinued after April 1999 with Alameda County Health Services Agency approval.									

Sampling Location SW-2 (Area of Historical Contaminated Groundwater Discharge)									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Feb-94	130	< 50	1.9	< 0.5	4.4	3.2	9.5	NA
2	May-95	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
3	Aug-95	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
4	May-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
5	Aug-96	200	< 50	7.5	< 0.5	5.4	< 0.5	13	NA
6	Dec-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
7	Feb-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
8	Aug-97	350	130	13	0.89	19	11	44	NA
9	Dec-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
10	Feb-98	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
11	Sep-98	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
12	Apr-99	81	< 50	2.0	< 0.5	2.5	1.3	5.8	2.3
13	Dec-99	1,300	250	10	1.0	47	27	85	2.2
14	Sep-00	160	100	2.1	< 0.5	5.2	1.9	9.2	3.4
15	Jan-01	< 50	< 50	< 0.5	< 0.5	0.53	< 0.5	0.5	< 2.0
16	Apr-01	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
17	Sep-01	440	200	2.1	< 0.5	17	1.3	20	10
18	Dec-01	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
19	Mar-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
20	Jun-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
21	Sep-02	220	590	10	< 0.5	13	< 0.5	23	< 2.0
22	Dec-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
23	Mar-03	< 50	< 50	< 0.5	< 0.5	0.56	< 0.5	0.56	2.8
24	Jun-03	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
25	Sep-03	190	92	2.1	< 0.5	4.2	< 0.5	6.3	< 2.0
26	Dec-03	86	< 100	< 0.3	< 0.3	< 0.3	< 0.6	—	< 5.0
27	Mar-04	< 50	< 100	< 0.3	< 0.3	1.1	< 0.6	1.1	< 5.0
28	Jun-04	< 50	< 50	< 0.5	< 0.5	0.83	< 0.5	0.83	< 2.0
29	Sep-04	260	370	4.4	< 0.5	6.3	< 1.0	11	< 2.0
30	Dec-04	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0
31	Mar-05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0
32	Jun-05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0
33	Sep-05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0
34	Dec-05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0
35	Mar-06	< 50	62	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0
36	Jun-06	< 50	110	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0
37	Sep-06	62	94	< 0.5	< 0.5	0.81	< 0.5	0.8	< 2.0
38	Dec-06	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0
39	Mar-07	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0
40	Jun-07	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
41	Sep-07	< 50	77	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
42	Dec-07	130	430	< 0.5	< 0.5	1.5	< 0.5	1.5	< 2.0

Sampling Location SW-3 (Downstream of Contaminated Groundwater Discharge Location SW-2)									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	May-95	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
2	Aug-95	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
3	May-96	< 50	74	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
4	Aug-96	69	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
5	Dec-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
6	Feb-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
7	Aug-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
8	Dec-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
9	Feb-98	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
10	Sep-98	< 50	<50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
11	Apr-99	< 50	<50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
12	Dec-99	< 50	<50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
13	Sep-00	NS	NS	NS	NS	NS	NS	—	NS
14	Jan-01	< 50	<50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
15	Apr-01	< 50	<50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
16	Sep-01	NS	NS	NS	NS	NS	NS	—	NS
17	Dec-01	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
18	Mar-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
19	Jun-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	2.4
20	Sep-02	NS	NS	NS	NS	NS	NS	—	NS
21	Dec-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
22	Mar-03	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
23	Jun-03	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
24	Sep-03	NS	NS	NS	NS	NS	NS	—	NS
25	Dec-03	60	< 100	< 0.3	< 0.3	< 0.3	< 0.6	—	< 5.0
26	Mar-04	<50	<100	<0.3	<0.3	<0.6	<0.6	—	< 5.0
27	Jun-04	NS	NS	NS	NS	NS	NS	—	NS
28	Sep-04	NS	NS	NS	NS	NS	NS	—	NS
29	Dec-04	<50	<50	<0.5	<0.5	<0.5	< 1.0	—	< 2.0
30	Mar-05	<50	<50	<0.5	<0.5	<0.5	< 1.0	—	< 2.0
31	Jun-05	<50	<50	<0.5	<0.5	<0.5	< 1.0	—	< 2.0
32	Sep-05	<50	<50	<0.5	<0.5	<0.5	< 1.0	—	< 2.0
33	Dec-05	<50	<50	<0.5	<0.5	<0.5	< 1.0	—	< 2.0
34	Mar-06	<50	<50	<0.5	<0.5	<0.5	< 1.0	—	< 2.0
35	Jun-06	<50	120	<0.5	<0.5	<0.5	< 1.0	—	< 2.0
36	Sep-06	<50	120	<0.5	<0.5	<0.5	<0.5	—	7.8
37	Dec-06	<50	<50	<0.5	<0.5	<0.5	< 1.0	—	< 2.0
38	Mar-07	<50	<50	<0.5	<0.5	<0.5	< 1.0	—	3.3
39	Jun-07	<50	<50	<0.5	<0.5	<0.5	<0.5	—	<2.0
40	Sep-07	NS	NS	NS	NS	NS	NS	—	NS
41	Dec-07	NS	NS	NS	NS	NS	NS	—	NS

NS = Not Sampled (no surface water present during sampling event)

ATTACHMENT C

References

REFERENCES

- Alameda County Department of Environmental Health (ACEH), 2007. Letter requesting a pilot test to evaluate one or more additional remedies for remediation acceleration. October 11.
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- Stellar Environmental Solutions, Inc. (SES), 2006. Bioventing System Installation and Startup Report – Redwood Regional Park Service Yard, Oakland, California. February 21.
- Stellar Environmental Solutions, Inc. (SES), 2004a. Bioventing Feasibility at the Redwood Regional Park Service Yard Site, Oakland, California. Letter Report. February 6.
- Stellar Environmental Solutions, Inc. (SES), 2004b. Bioventing Pilot Tests Result Report, Redwood Regional Park Service Yard, Oakland, California. October 29.