AUG 0 4 2010

July 30, 2010

Ms. Barbara Jakub, P.G.
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: Grimit Auto Repair and Service, 1970 Seminary Boulevard, Oakland, California (Fuel Leak Case No. RO0000413)

Dear Ms. Jakub:

Stratus Environmental, Inc. (Stratus) has recently prepared a report entitled *Work Plan Addendum* on my behalf. The report was prepared in regards to Alameda County Fuel Leak Case No. RO0000413, for Grimit Auto Repair and Service, 1970 Seminary Boulevard, Oakland, California.

I have reviewed a copy of this report, sent to me by representatives of Stratus, and "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge".

If you have any questions, please contact me via electronic mail at peggy.h.garcia@sbcglobal.net, or my daughter Angel LaMarca at angelcpt@gmail.com.

Sincerely,

Ms. Peggy Garcia, Trustee, Grimit Family Trust

Cc: Angel LaMarca

STRATUS
ENVIRONMENTAL, INC.

3330 Cameron Park Drive, Ste 550
Cameron Park, California 95682
(530) 676-6004 ~ Fax: (530) 676-6005

June 30, 2010
Project No. 2090-1970-01

Ms. Barbara Jakub, P.G.
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(via Geotracker & Alameda County FTP site)

Re: Addendum to Work Plan, Grimit Auto Repair and Service, 1970 Seminary Boulevard, Oakland, California (Fuel Leak Case No. RO0000413)

Dear Ms. Jakub:

On behalf of Ms. Peggy Garcia, Stratus Environmental, Inc. (Stratus) has prepared this *Addendum to Work Plan* for the Grimit Auto Repair and Service underground storage tank (UST) fuel leak case (the Site), located at 1970 Seminary Boulevard, Oakland, California (see Figures 1 and 2). In a letter dated December 5, 2008, Alameda County Environmental Health Services (ACEHS) requested that a work plan be submitted that proposes a scope of work to further investigate the lateral and vertical extent of previously documented petroleum hydrocarbon and solvent contaminant distribution within the subsurface, and evaluates concentrations of these contaminants in shallow soil vapor. The December 5, 2008 letter also requested that information regarding underground utility corridors in the site vicinity be submitted, and that historical project information be summarized in the form of a Site Conceptual Model (SCM). On May 20, 2009, a consultant who previously represented Ms. Garcia (Hoexter Consulting, Inc.) submitted a work plan/report to meet this request; the SCM portion of the document summarized historical project information and identified data gaps that have not been adequately investigated, and the work plan portion of the report proposed a scope of work to meet some of the identified data gaps. Based on a recent discussion with ACEHS personnel, the May 20, 2009 work plan/report had not yet been formally reviewed by their agency; however, it was stated that this review process would likely occur within the next few months.

Prior to ACEHS's formal review of the May 20, 2009 document, Stratus is proposing to make some changes to the previous scope of work proposed by Hoexter Consulting, Inc. In general, the previous scope of work proposed:

- Advancing 9 direct push soil borings for the purpose of conducting soil conductivity probe (SCP) and membrane interface probe (MIP) measurements (see Figure 3 for locations).

- Collect soil samples from 9 additional direct push soil borings, using a piston sampler or dual tube coring system, with these borings advanced immediately adjacent to the SCP/MIP borings.
- Collect hydropunch groundwater samples from 9 additional soil borings advanced in close proximity to the SCP/MIP and soil sampling borings.
- Collect shallow soil vapor samples from 7 locations (see Figure 3).
- Destroy existing monitoring well MW-8, which is located within pea gravel backfill of a former UST and has shown anomalous groundwater level measurements relative to other monitoring wells at the site and could provide analytical results unrepresentive of those in nearby undisturbed soil.
- Install a 2-inch diameter replacement groundwater monitoring well (MW-8R) in close proximity to existing well MW-8, but outside of the pea gravel backfill material.
- Submit the soil, groundwater, and soil vapor samples for chemical analyses.
- Develop and sample replacement well MW-8R.
- Complete site surveying requirements for Geotracker compliance.
- Conduct physical property testing for bulk density, effective permeability or saturated hydraulic conductivity, grain size analyses to determine percentages of clay, silt, and sand, organic carbon content, porosity, and water content on two soil samples retained during the investigation.

Stratus is proposing to make the following changes to the scope of work presented in the May 20, 2009 work plan:

- Eliminate advancement of the SCP/MIP borings, and instead complete continuous soil coring using the direct push method.
- Leave existing well MW-8 in-place for future groundwater monitoring instead of destroying the well and installing a replacement well nearby.
- Install 3 extraction wells during the current phase of subsurface investigative work for future use in interim remedial action.

RATIONALE

Although collection of any site assessment data is potentially useful, it is our opinion that advancement of the SCP/MIP borings offers limited additional benefit to the project. Stratus believes that continuously coring the soil borings, with a geologist logging all of the recovered soil, is preferable to conducting logging using the SCP, because the soil types

can be directly correlated to the Unified Soil Classification System (USCS), which is not possible using the SCP. If samples were only collected using a piston sampler, or at specific intervals using the direct push sampling system, as discussed in the May 20, 2009 work plan, soil types could only be logged by the USCS across the sampled interval (typically 1 to 2 feet of recovered soil per sample) and not throughout the entire length of the borehole. In addition, moisture content of the soils, which can be used to select groundwater sampling locations, can be best observed by direct observation than by soil conductivity measurements.

Although the MIP is useful for identifying the depths and presence/absence of contaminants in the subsurface, it is our opinion that use of the MIP offers little benefit to this specific project given the property use in the area and the locations of the proposed borings. A review of Figure 3 illustrates that a majority of the proposed soil borings are situated in the sidewalks of City of Oakland roadways. If the MIP detects the presence of a contaminant in the subsurface in 'real time' during advancement of these borings, Stratus will not be able to 'step out' the boring laterally, in order to attempt to achieve full delineation of the contaminants at another location, because of private property access issues. Movement of the boring(s) would have to be delayed until private property access agreement(s) could be secured and drilling permit(s) obtained, and thus the collection of the 'real time' VOC measurements appear to offer little benefit beyond typical screening for soil contaminants that could/will be conducted using a photo-ionization detector (PID). In addition, the collection of groundwater samples within the saturated zone will be primarily governed by the types of soil encountered in the boreholes, and not by results obtained by MIP.

In summary, in order to evaluate the vertical and lateral extent of petroleum hydrocarbon impact to the subsurface, Stratus is proposing to advance 9 continuously cored direct push borings, and 9 adjacent groundwater sampling borings (18 total boreholes). Pending approval by ACEHS, these work tasks would replace the scope of work from the May 2009 work plan, which proposed to advance 9 SCP/MIP borings, collect soil samples from specific intervals at 9 adjacent soil sampling borings using a piston sampler or other soil sampling device, and collect groundwater samples from an additional 9 sampling borings (27 total boreholes). We believe that the revised scope of work presented by Stratus provides an improved procedure for collecting the data needed to conduct vertical and lateral contaminant assessment work, while advancing a lesser number of borings to complete this task.

The May 2009 work plan recommends destroying well MW-8, but does not appear to specify a location for the replacement well. Given the layout of the site (see Figure 2), it does not appear feasible to situate a replacement well southwest, west, or northwest, due to the presence of the facility building and only a narrow walkway behind this building that would be too small to accommodate drilling equipment. Although sufficient space is

available northeast of well MW-8, this area was formerly occupied by three USTs, and thus is also likely to contain gravel fill material or pea gravel in the shallow subsurface. The replacement well could potentially be installed on adjacent property to the east and southeast of the site, but given the absence of petroleum hydrocarbons and only traces of solvents in groundwater at the well MW-8 location (see Appendix A tables and Figures 4 and 5), which therefore appear to sufficiently delineate groundwater impact in this area, Stratus is not recommending placing a monitoring well on the neighboring property at this time.

Stratus is recommending that sampling of well MW-8 to assess groundwater quality in this portion of the site continue, given the lack of better alternatives for placement of the well and our recommendation not to pursue installation of the well on the neighboring property. Since there are 8 other groundwater monitoring wells onsite, it will not be problematic to assess shallow groundwater flow direction using data from these 8 wells only, and omitting the potentially anomalous MW-8 groundwater elevation data.

Although the vertical and lateral extent of petroleum hydrocarbon and solvent impact to the subsurface has not been fully assessed, sufficient data has been collected, in our opinion, to justify initiating property cleanup efforts. Groundwater monitoring at the site has been ongoing for nearly 20 years (since August 1990). During this time, free phase liquid hydrocarbons (free product) have consistently been measured (well MW-1, at thicknesses ranging from a sheen to 0.42 feet). In general, free product thicknesses have been increasing at well MW-1 during the 20-year monitoring period. Petroleum hydrocarbons and/or solvents have been detected in all 9 of the site's monitoring wells, and given the locations of the wells, these contaminants appear to be distributed across nearly the entire property. For reference, historical groundwater monitoring and analytical data is provided in Appendix A. The approximate distribution of select petroleum hydrocarbons and solvents in groundwater onsite, using data collected from the January 2010 well sampling event, are illustrated on Figures 4 and 5, respectively.

In 1997, Terra Vac Corporation performed a remediation pilot test that evaluated the feasibility of using dual phase extraction (DPE) technology to mitigate site contaminants. During the test, 2-inch diameter monitoring well MW-1 was utilized for simultaneous extraction of groundwater and soil vapors from the subsurface, and two temporary observation points (OB-1 and OB-2) were used for measurement of induced vacuum in the area surrounding well MW-1. Terra Vac's report documenting the equipment used to perform the pilot study, the test procedures, and findings of the work, is provided in Appendix B. Terra Vac concluded, based on the findings of their pilot testing work, that DPE was a viable remedial alternative for the site.

Given the significant and well documented petroleum hydrocarbon and solvent contamination beneath the property, our understanding regarding the distribution of these

contaminants in the subsurface, the geologic and hydrogeologic conditions at the site, and the apparent effectiveness of DPE technology at the site during the 1997 pilot study, Stratus believes that implementation of onsite DPE remediation is an appropriate course of action. Stratus is thus proposing to install a network of extraction wells on the subject property, with the intention of implementing a DPE remediation project in the near future. Installation of the extraction wells at the same time as completion of the other subsurface investigation work should be more efficient and cost effective than completing these tasks during separate phases of work, assuming that ACEHS personnel concurs that implementation of DPE at the site is appropriate.

The locations and spacing of the proposed extraction wells were selected with the intention of providing coverage across the areas of the subsurface with the highest levels of petroleum hydrocarbons and solvents, using the least number of extraction wells. Based on the findings of the 1997 pilot study, Terra Vac concluded that a radius of influence of at least 14 feet was achieved during testing, and that minimal induced vacuum was noted about 25 feet away from the well used for extraction. For the purpose of selecting the extraction well locations, Stratus is assuming that a 25-foot radius of influence would be achieved using a full-scale DPE remediation system. Stratus is proposing to use 4-inch diameter wells for extraction, which we believe would provide somewhat improved performance over the 2-inch diameter well used for extraction during the 1997 pilot study. The locations of the proposed extraction wells are included on Figure 6.

SUPPLEMENTAL SCOPE OF WORK

In general, a majority of the scope of work for the upcoming subsurface investigation will follow procedures outlined in the May 20, 2009 work plan, pending approval of this document by ACEHS. The scope of work presented below only covers procedures for work tasks that were presented by Stratus in this work plan addendum, and were not covered in the May 20, 2009 document. These tasks involve:

- Advancement of exploratory soil borings using continuously cored direct push borings, instead of by SCP/MIP and adjacent direct push sampling borings, and
- Installation and development of three 4-inch diameter extraction wells (EX-1 through EX-3).

Supplemental Task 1: Vertical and Lateral Assessment Soil Borings (Soil Sampling Boring Procedure Only)

A Stratus geologist, under the direct supervision of a California Registered Professional Geologist, will oversee a C-57 licensed drilling contractor advance 9 soil sampling exploratory borings using a direct push drilling rig to a depth of approximately 50 feet below ground surface (bgs). The initial 5 feet of each boring will be cleared using hand

tools to reduce the possibility of damaging underground utilities. The 9 soil borings will be continuously cored using a double-walled sampling system equipped with disposable acetate liners. During advancement of the borings, soil samples will be retained in approximately 4-foot intervals. The bottom end of the acrylic lined soil sample section will be lined with Teflon™ sheets, capped, and sealed. Each sample will be labeled, placed in a resealable plastic bag, and stored in an ice-chilled cooler. The samples will remain chilled until relinquished to a state-certified analytical laboratory. Chain-of-custody procedures will be followed from the time the samples are collected until the time the samples are relinquished to the laboratory. Stratus anticipates that approximately 3 to 5 soil samples from each soil boring will be submitted for chemical analysis. The exact number of samples submitted will be determined at the time of the investigation. PID screening of the samples (described below) will be used to assist in the determination of which samples will be submitted for chemical analysis.

The entire soil core will be classified onsite using the Unified Soil Classification System and recorded, along with other pertinent geologic information, on a boring log. Select sections of the soil core will also be placed and sealed in plastic bags to allow the accumulation of volatile organic compound (VOC) vapors within the airspace in the bags. A PID will be used to measure VOC concentrations from each sample in parts per million (ppm), and will be recorded on the boring log.

Supplemental Task 2: Extraction Well Installation and Development

A Stratus geologist, under the direct supervision of a California Registered Professional Geologist, will oversee a C-57 licensed drilling contractor complete the soil boring and well construction activities necessary to install three 4-inch diameter extraction wells at the site. Each well boring will be advanced using a truck mounted or limited access drilling rig equipped with 10-inch diameter hollow stem augers. The initial 5 feet of each boring will be cleared using hand tools to reduce the possibility of damaging underground utilities.

Soil samples will be collected at 5-foot intervals during the advancement of the well borings using a California-type, split-spoon sampler equipped with three cleaned brass or stainless steel sleeves. The ends of the bottom-most, intact brass/stainless steel sleeve from each sample interval will be lined with Teflon™ sheets, capped, and sealed. Each sample will be labeled, placed in a resealable plastic bag, and stored in an ice-chilled cooler. The samples will remain chilled until relinquished to a state-certified analytical laboratory. Chain-of-custody procedures will be followed from the time the samples are collected until the time the samples are relinquished to the laboratory. A minimum of two soil samples will be submitted for chemical analyses from each boring. Additional samples may be selected for chemical analyses based on field conditions.

Soil in the remaining sleeves will be classified onsite using the Unified Soil Classification System and recorded, along with other pertinent geologic information, on a boring log. Soil from each sampled interval will also be placed and sealed in plastic bags to allow the accumulation of VOC vapors within the airspace in the bags. A PID will be used to measure VOC concentrations from each sample and will be recorded on the boring logs. PID results will also be used to evaluate which soil samples should be sent to the laboratory for chemical analyses.

Extraction wells EX-1 through EX-3 will be constructed through the 10-inch diameter hollow stem augers used to advance the borings. The wells will be constructed using 4-inch diameter PVC casing and 20 feet of 0.020-inch machine slotted PVC well casing installed from approximately 10 to 30 feet bgs. A sand filter pack (#3 or similar) will be placed in the annular space around the well casing from the bottom of the well screen to approximately two feet above the top of the well screen. Following initial placement of the filter pack, the well will be surged to settle the filter pack within the borehole and additional sand will be added, if necessary. Approximately three feet of bentonite will be placed on top of the filter pack and hydrated with clean water to provide a sanitary seal for the well. Neat cement will be used to backfill the remaining annular space around the well casing. A watertight locking cap will be placed over the top of the well casing, and a traffic rated vault box will be installed around the top of the well. The actual well construction may be modified in the field based on conditions encountered at the time of the investigation.

A minimum of 48 hours following the installation of wells EX-1 through EX-3, Stratus will return to the site to develop these wells. Development will be conducted by surging and bailing, followed by groundwater pumping. Development will continue until approximately ten casing volumes are removed and water appears free of suspended sediment, or until the wells go dry.

CLOSING

Stratus would again like to emphasize that this document is intended to be used in conjunction with the May 20, 2009 report previously submitted on behalf of the Grimit Auto Facility. Amendments to the scope of work presented in the May 2009 document are presented, a rationale for making these changes are discussed, and details associated with the portion of the scope of work that differs from the May 2009 report are provided.

SCHEDULE

Following an ACEHS review of this report and the May 2009 document, and obtaining approval for a scope of work by ACEHS personnel, Stratus will forward property access agreements, as necessary, in order to allow for collection of soil vapor samples on private property located adjacent to the site. Stratus will also forward an encroachment permit

application to the City of Oakland for review. It is expected that a few months may be required in order to obtain these items from the City of Oakland and nearby property owners. Once the access agreement(s) and City permit have been obtained, Stratus will retain a C-57 licensed drilling contractor, apply for Alameda County Public Works Agency drilling permits, and schedule the work for prompt implementation.

Once all of the field activities have been completed, a report will be prepared to document all work and present findings of the investigation. The report will be submitted within approximately 4 weeks of receiving all laboratory analytical results.

Please contact Scott Bittinger at (530) 676-2062, or via electronic mail at sbittinger@stratusinc.net, if you have any questions regarding this document or the project in general.

Sincerely,

STRATUS ENVIRONMENTAL, INC.

REGISTERED GEOLOGIST
Scott G. Bittinger
No. 7477
STATE OF CALIFORNIA

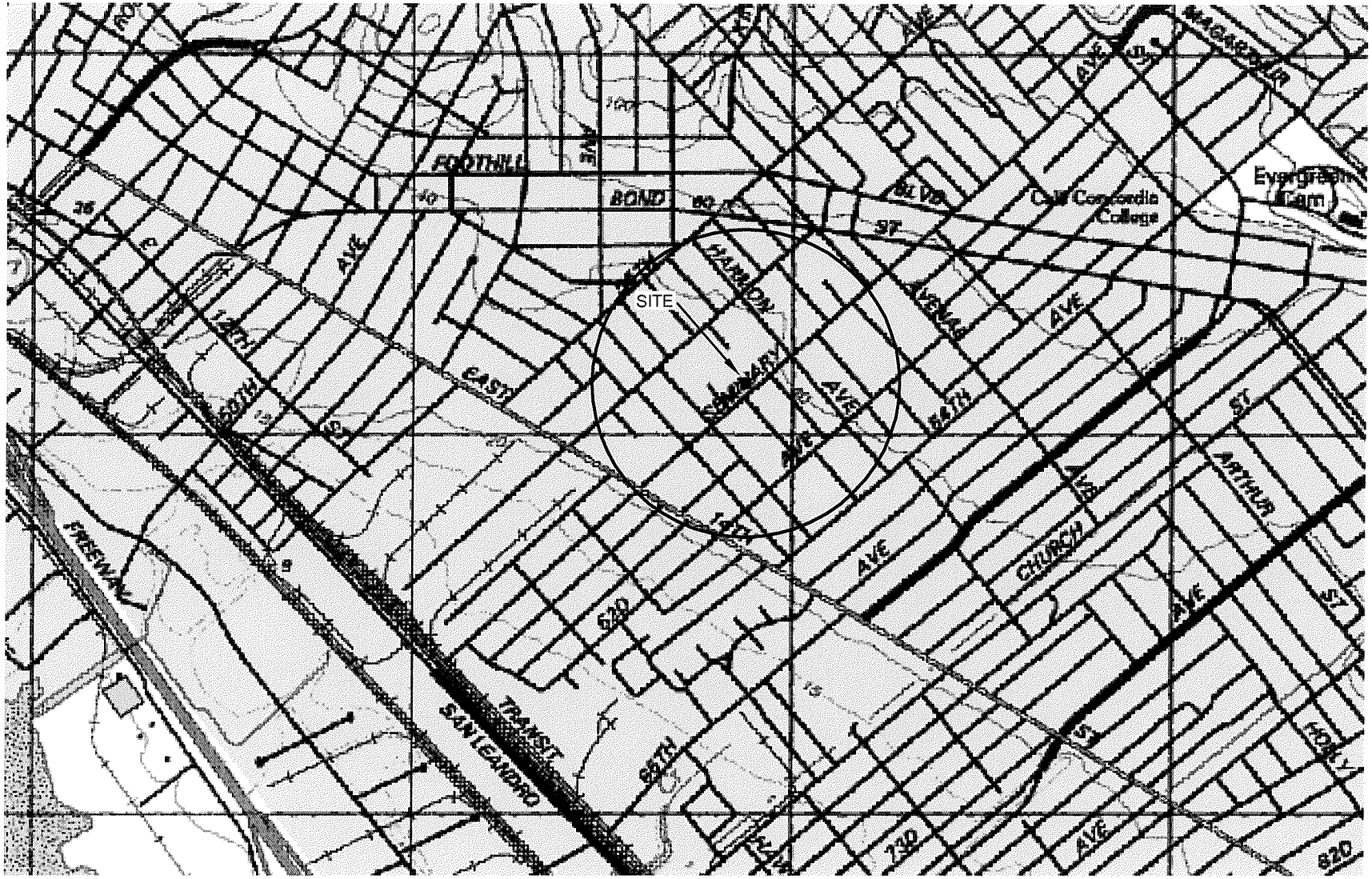
Scott G. Bittinger, P.G.
Project Manager

Gowri S. Kowtha, P.E.
Principal Engineer

Attachments:

Figure 1	Site Location Map
Figure 2	Site Plan
Figure 3	Proposed Sample Locations Map (From May 20, 2009 Work Plan)
Figure 4	Petroleum Hydrocarbon Groundwater Analytical Summary First Quarter 2010
Figure 5	Halogenated Volatile Organic Compound Groundwater Analytical Summary, First Quarter 2010
Figure 6	Site Plan with Proposed Extraction Well Locations
Appendix A	Historical Groundwater Analytical Data
Appendix B	1997 Dual Phase Extraction Pilot Test Report Prepared by Terra Vac Corporation

cc: Ms. Peggy Garcia, Trustee, Grimit Family Trust
Ms. Angel LaMarca



GENERAL NOTES:
BASE MAP FROM U.S.G.S.
OAKLAND EAST, CA.
7.5 MINUTE TOPOGRAPHIC
PHOTOREVISED 1980

STRATUS
ENVIRONMENTAL, INC.

0 2000 FT

SCALE 1:24,000

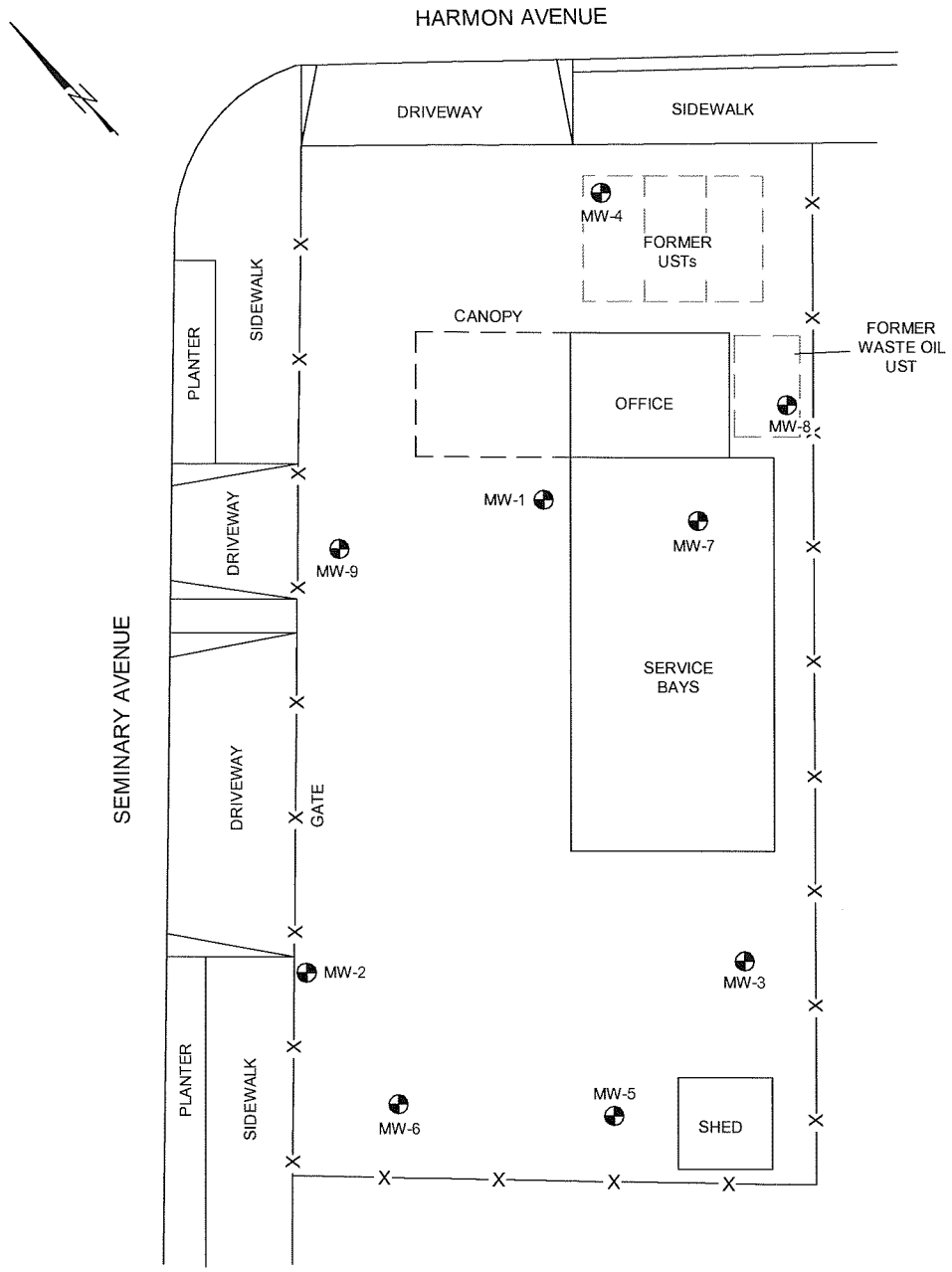
GRIMIT AUTO
1970 SEMINARY AVENUE
OAKLAND, CALIFORNIA

SITE LOCATION MAP

FIGURE
1

PROJECT NO.
2090-1970-01

JMP REV June 24, 2010 Grimit Auto Site Location Map
Grimit Auto



LEGEND

MW-1 GROUNDWATER MONITORING WELL LOCATION

0 20 FT

APPROXIMATE SCALE

NOTE: LOCATIONS OF ALL WELLS & SITE FEATURES ARE APPROXIMATE

STRATUS ENVIRONMENTAL, INC.

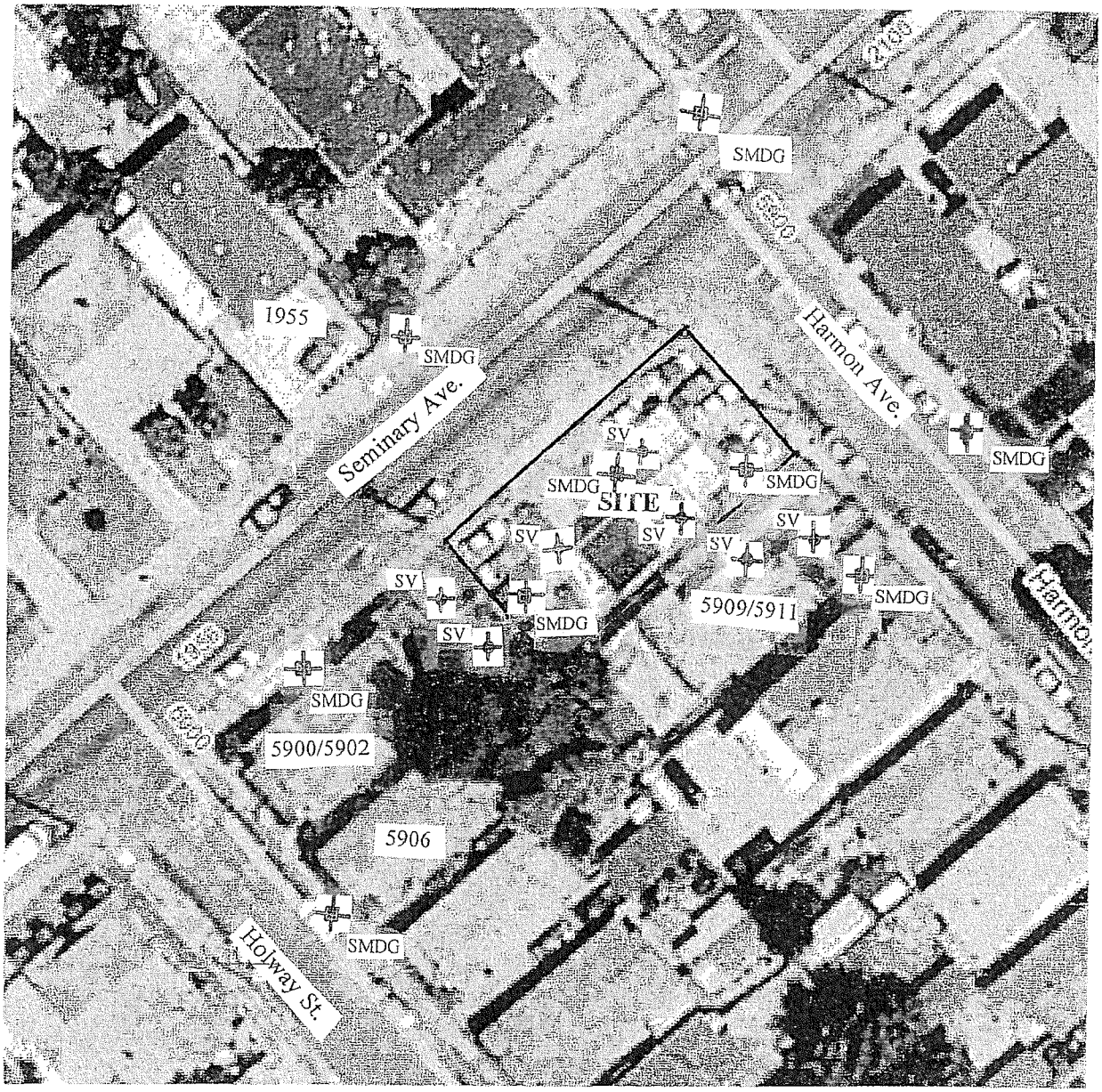
GRIMIT AUTO
1970 SEMINARY AVENUE
OAKLAND, CALIFORNIA

SITE PLAN

FIGURE
2

PROJECT NO.
2090-1970-01

Grimit Auto\Quarterly JMP REV June 24, 2010 Grimit Quarterly Figures



50 0 50 100

Scale in Feet

PROPOSED SAMPLE LOCATIONS

SV — Soil vapor

SMDG — SCP/MIP/DP/GW

N

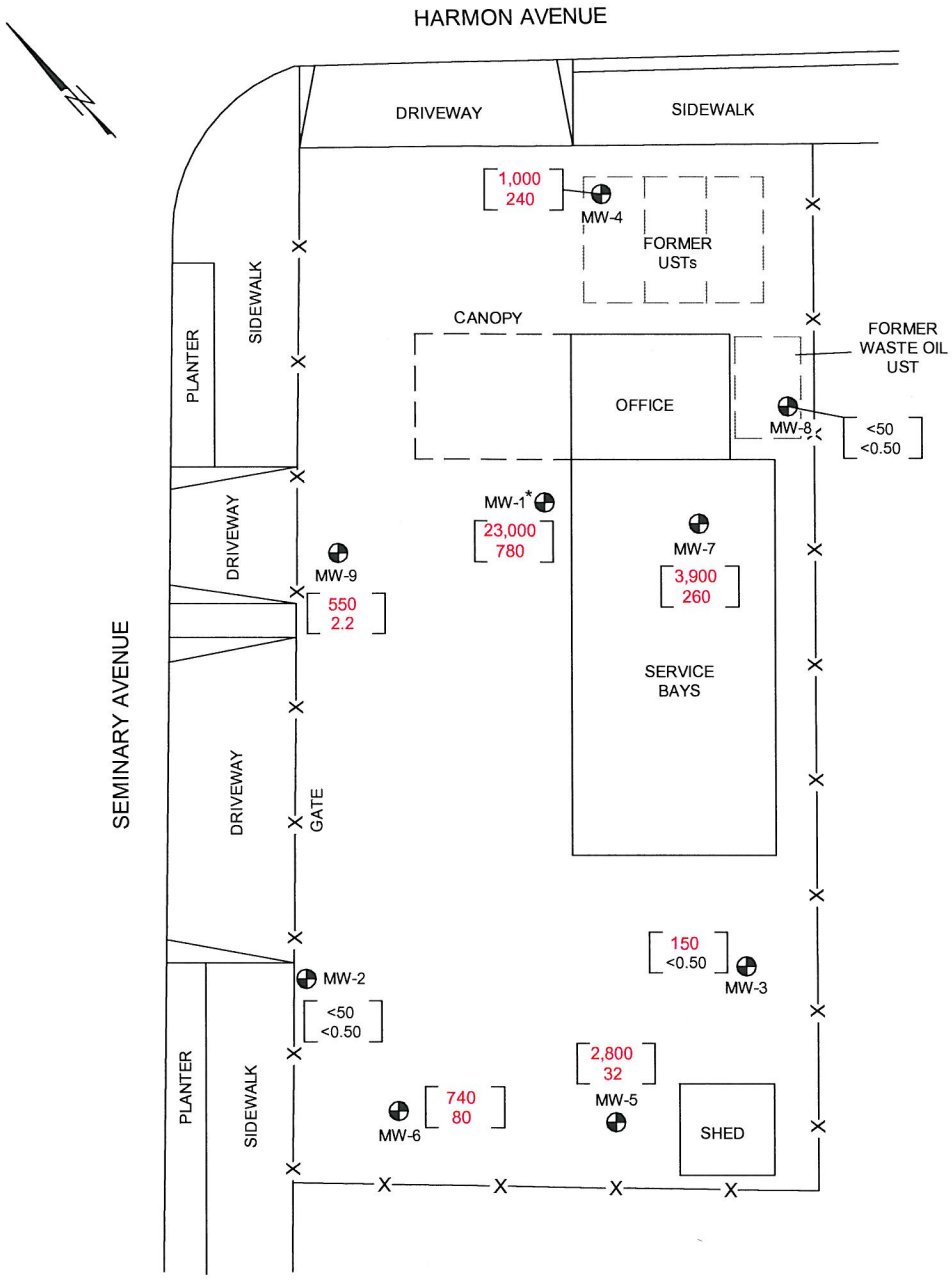
Base: Google Maps

HOEXTER CONSULTING
Geology
Engineering Geology
Environmental Studies

PROPOSED SAMPLE LOCATIONS

1970 Seminary Ave.
Oakland, California

Project No.	Date	Figure
E-10-1G-772G	May 2009	3



LEGEND

MW-1 GROUNDWATER MONITORING WELL LOCATION

[<50 / <0.50] GASOLINE RANGE ORGANICS (GRO) IN µg/L / BENZENE CONCENTRATION IN µg/L

SAMPLES COLLECTED ON 1/25/10
GRO ANALYZED BY EPA METHOD 8015B
BENZENE ANALYZED BY EPA METHOD 8260B
* WELL HAS FREE PRODUCT, BUT WAS STILL SAMPLED

0 20 FT
APPROXIMATE SCALE

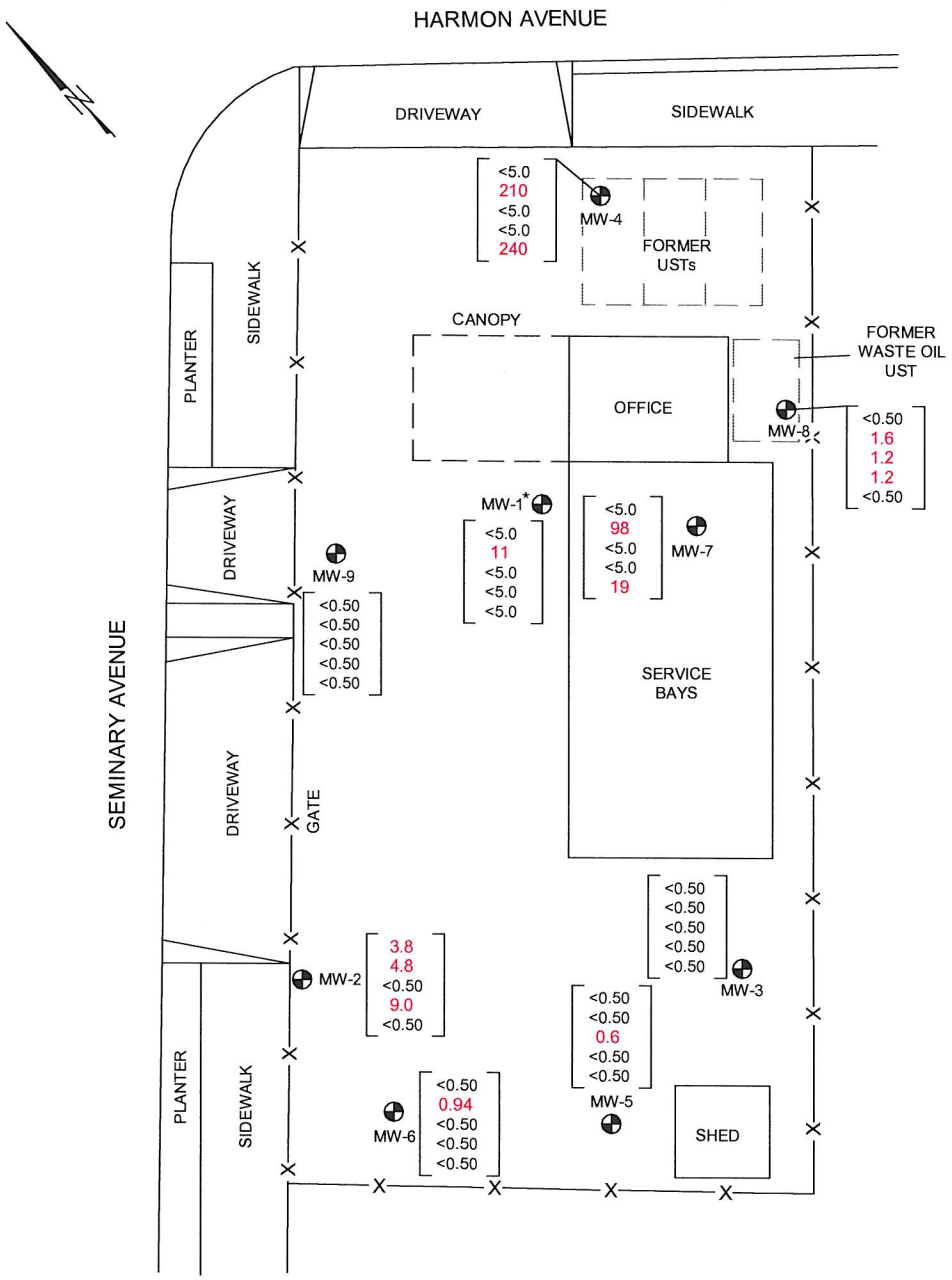
NOTE: LOCATIONS OF ALL WELLS & SITE FEATURES ARE APPROXIMATE

STRATUS ENVIRONMENTAL, INC.

GRIMIT AUTO
1970 SEMINARY AVENUE
OAKLAND, CALIFORNIA
PETROLEUM HYDROCARBON
GROUNDWATER ANALYTICAL SUMMARY
1st QUARTER 2010

FIGURE
4
PROJECT NO.
2090-1970-01

Grimit Auto\Quarterly JMP REV June 24, 2010 Grimit Quarterly Figures



LEGEND

MW-1 GROUNDWATER MONITORING WELL LOCATION

<0.50	1,2 DICHLOROETHANE (1,2 DCA) IN µg/L
<0.50	cis 1,2 DICHLOROETHENE (cis 1,2 DCE) IN µg/L
<0.50	TETRACHLOROETHENE (PCE) IN µg/L
<0.50	TRICHLORETHENE (TCE) IN µg/L
<0.50	VINYL CHLORIDE (VCL) IN µg/L

SAMPLES COLLECTED ON 1/25/10

1,2 DCA, cis 1,2 DCE, PCE, TCE, AND VCL ANALYZED BY EPA METHOD 8260B

* WELL HAS FREE PRODUCT, BUT WAS STILL SAMPLED

0 20 FT

APPROXIMATE SCALE

NOTE: LOCATIONS OF ALL WELLS & SITE FEATURES ARE APPROXIMATE

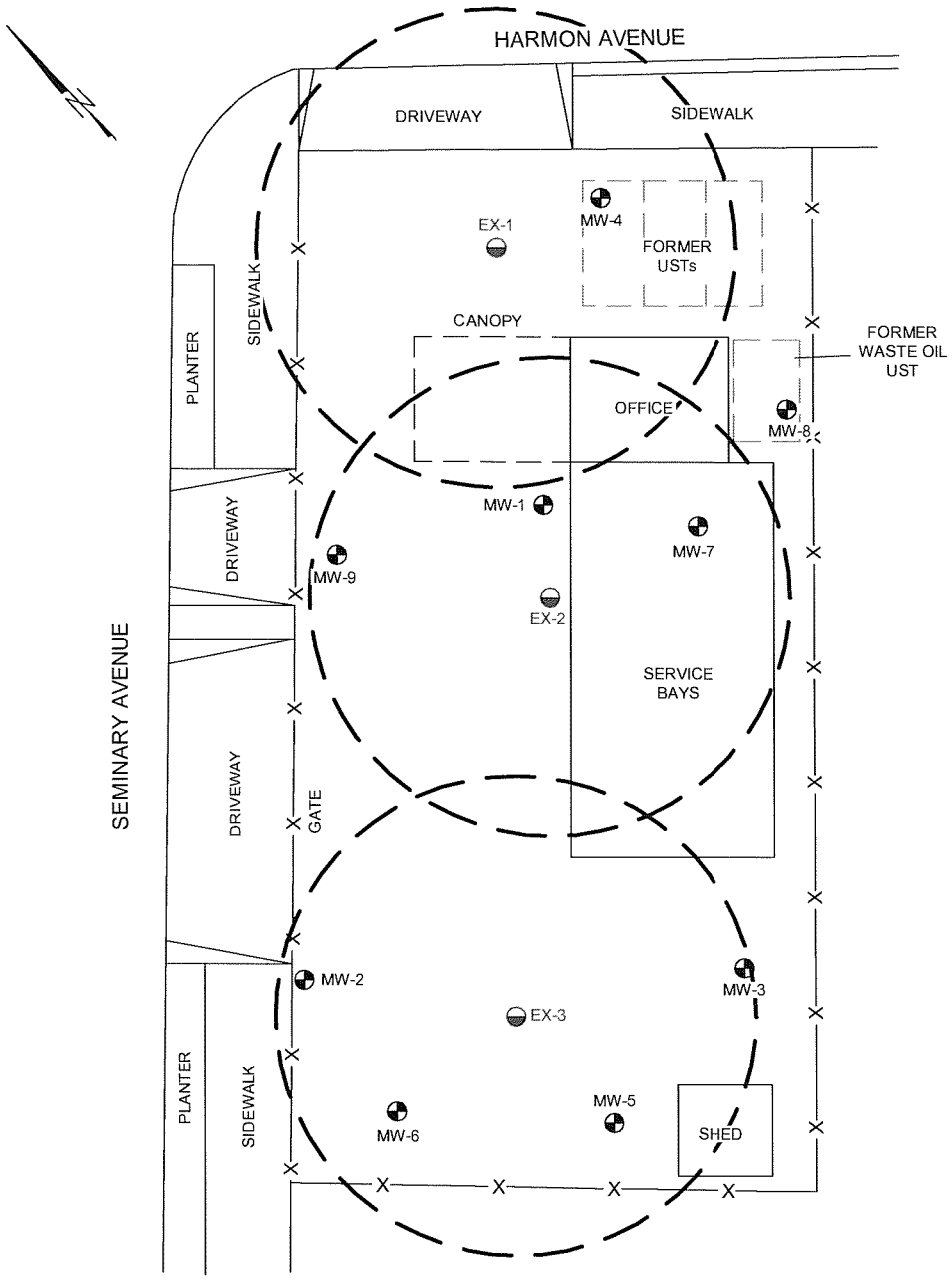
STRATUS ENVIRONMENTAL, INC.

GRIMIT AUTO
1970 SEMINARY AVENUE
OAKLAND, CALIFORNIA
HALOGENATED VOC GROUNDWATER
ANALYTICAL SUMMARY
1st QUARTER 2010

FIGURE
5

PROJECT NO.
2090-1970-01

Grimit Auto\Quarterly JMP REV June 24, 2010 Grimit Quarterly Figures



LEGEND

- MW-1 GROUNDWATER MONITORING WELL LOCATION
- EX-1 PROPOSED EXTRACTION WELL LOCATION
- APPROXIMATE RADIUS OF INFLUENCE = 25'

0 20 FT

APPROXIMATE SCALE

NOTE: LOCATIONS OF ALL WELLS & SITE FEATURES ARE APPROXIMATE

STRATUS ENVIRONMENTAL, INC.

GRIMIT AUTO
1970 SEMINARY AVENUE
OAKLAND, CALIFORNIA

SITE PLAN WITH PROPOSED EXTRACTION WELL LOCATIONS

FIGURE
6

PROJECT NO.
2090-1970-01

Grimit Auto\Quarterly JMP REV June 24, 2010 Grimit Quarterly Figures

APPENDIX A

HISTORICAL GROUNDWATER ANALYTICAL DATA

TABLE 1A

GROUND WATER ELEVATION DATA
(All Measurements in Feet)

Well Number and Date of Measurement	Reference Elevation (2)	Depth To Water (measured)	Thickness of Free-Phase Petroleum Hydrocarbon (10)	Depth to Water (adjusted for Free-Phase Petroleum Hydrocarbon)	Ground Water Elevation (measured) (2)	Ground Water Elevation (adjusted for Free-phase Petroleum Hydrocarbons)
MW-1 ("deep")						
8/6/90	37.00	21.5	Sheen	21.5	15.5	15.5
1/28/92		21.0	Sheen	21.0	16.0	16.0
4/27/92		20.95	Sheen	20.95	16.05	16.05
8/10/92		22.20	Not recorded	22.20	14.80	14.80
2/11/94		15.93 (3)	Sheen	15.93 (3)	21.07 (3)	21.07 (3)
2/28/94		13.85 (4)	N/A	13.85 (4)	23.15 (4)	23.15 (4)
9/9/94		20.19	Sheen	20.19	16.81	16.81
12/28/94		14.91	Sheen	14.91	22.09	22.09
4/13/95		14.18	Sheen	14.18	22.82	22.82
11/1/95		20.90	Sheen	20.90	16.10	16.10
3/8/96		11.82	N/A	11.82	25.18	25.18
3/25-26/96	36.97	13.54	Sheen	13.54	23.43	23.43
10/7/96		21.78 (11)	Sheen	21.78	15.19	15.19
1/15/97		13.34 (11)	Sheen	13.34	23.63	23.63
6/23/97	36.99	19.91	Sheen	19.91	17.08	17.08
10/6/97		21.55	Sheen	21.55	15.44	15.44
12/12/98		16.24	Sheen	16.24	20.75	20.75
4/24/99		14.21	Sheen	14.21	22.78	22.78
12/18/99		19.28	0.01	19.28	17.71	17.72
7/22/00		21.93	Sheen	21.93	15.93	15.93
1/29/01		19.49	0.01	19.48	17.50	17.51
7/28/01		19.84	Sheen	19.84	17.15	17.15
2/3/02		16.03	0.01	16.02	20.96	20.97
7/23/02		20.45	0.01	20.44	16.54	16.55
1/20/03		15.08	0.02	15.06	21.91	21.93
7/30/03		19.06	0.02	19.04	17.93	17.95
1/27/04		16.45	Sheen	16.45	20.54	20.54
7/22/04	40.02	20.22	0.08	20.14	19.80 (7)	19.88
1/20/05		13.92	Sheen	13.92	26.10	26.10
7/20/05		16.76	Sheen	16.76	23.26	23.26
1/26/06		14.40	0.01	14.39	25.62	25.63
7/27/06		17.66	Sheen	17.66	22.36	22.36
1/24/07		17.43	0.02	17.41	22.59	22.61
7/18/07		19.31	0.17	19.14	20.71	20.88
2/15/08		14.80	0.02	14.78	25.22	25.24
7/25/08		20.21	0.42	19.79	19.82	20.24
1/23/09		19.71 (9)	0.08	19.64	20.31 (9)	20.39
7/20/09		19.58	0.125	19.45	20.44	20.57
1/25/10		13.69 (9)	0.125	13.56	26.33 (9)	26.45

Well Number and Date of Measurement	Reference Elevation (2)	Depth To Water	Relative Ground Water Elevation (2)
MW-2 ("deep")			
2/11/94	36.40	14.16 (3)	22.24 (3)
2/28/94		16.01 (4)	20.39 (4)
9/9/94		18.96	17.44
12/28/94		21.42	14.98
4/13/95		19.69	16.71
11/1/95		21.91	14.49
3/8/96		14.56 (6)	21.84 (6)
3/25-26/96	36.39	10.84	25.55
10/7/96		18.41	17.98
1/15/97		10.07	26.32
6/23/97	36.40	13.73	22.67
10/6/97		17.03	19.37
12/12/98		11.39	25.01
4/24/99		10.45	25.95
12/18/99		13.22	23.18
7/22/00		13.73	22.67
1/29/01		12.25	24.15
7/28/01		16.73 (6)	19.67 (6)
2/3/02		11.40	25.00
7/23/02		13.42	22.98
1/20/03		10.49	25.91
7/30/03		13.47	22.93
1/27/04		11.72	24.68
7/22/04	39.42	13.86	25.56 (7)
1/20/05		10.24	29.18
7/20/05		12.34	27.08
1/26/06		10.60	28.82
7/27/06		13.02	26.40
1/24/07		15.76	23.66
7/18/07		13.91	25.51
2/15/08		10.94	28.48
7/25/08		14.29	25.13
1/23/09		20.17 (9)	19.25 (9)
7/20/09		15.16	24.26
1/25/10		15.66 (9)	23.76 (9)
MW-3 ("shallow")			
2/11/94	36.94	6.97 (3)	29.97 (3)
2/28/94		7.74 (4)	29.20 (4)
9/9/94		9.68	27.26
12/28/94		8.15	28.79
4/13/95		8.05	28.89
11/1/95		7.82	29.12
3/8/96		5.69	31.25
3/25-26/96	36.94	6.91	30.03
10/7/96		9.51	27.43
1/15/97		6.23	30.71

Well Number and Date of Measurement	Reference Elevation (2)	Depth To Water	Relative Ground Water Elevation (2)
MW-3 ("shallow") cont'			
6/23/97	36.94	9.65	27.29
10/6/97		10.53	26.41
12/12/98		7.12	29.82
4/24/99		7.17	29.77
12/18/99		8.51	28.43
7/22/00		9.41	27.53
1/29/01		7.23	29.71
7/28/01		8.63	28.31
2/3/02		7.99	28.95
7/23/02		10.17	26.77
1/20/03		6.76	30.18
7/30/03		10.13	26.81
1/27/04		7.65	29.29
7/22/04	39.95	11.29	28.66 (7)
1/20/05		6.24	33.71
7/20/05		9.03	30.92
1/26/06		6.49	33.46
7/27/06		8.80	31.15
1/24/07		8.75	31.20
7/18/07		11.29	28.66
2/15/08		6.79	33.16
7/25/08		12.40	27.55
1/23/09		9.72 (9)	30.23 (9)
7/20/09		10.81	29.14
1/25/10		7.67 (9)	32.28 (9)
MW-4 ("deep")			
3/25-26/96	36.46	14.14	22.32
10/7/96		22.31	14.15
1/15/97		13.78	22.68
6/23/97	36.47	20.90	15.57
10/6/97		22.77	13.60
12/12/98		17.16	19.31
4/24/99		14.55	21.92
12/18/99		20.46	16.01
7/22/00		20.67	15.80
1/29/01		18.06	18.41
7/28/01		20.80	15.67
2/3/02		15.53	20.94
7/23/02		20.26	16.21
1/20/03		15.26	21.21
7/30/03		20.23	16.24
1/27/04		17.15	19.32
7/22/04	39.49	21.28	18.21 (7)
1/20/05		14.20	25.29
7/20/05		17.64	21.85
1/26/06		14.42	25.07

Well Number and Date of Measurement	Reference Elevation (2)	Depth To Water	Relative Ground Water Elevation (2)
MW-4 ("deep") cont'			
7/27/06		18.51	20.98
1/24/07		18.43	21.06
7/18/07		20.59	18.90
2/15/08		15.11	24.38
7/25/08		21.12	18.37
1/23/09		19.99 (9)	19.50 (9)
7/20/09		20.58	18.91
1/25/10		15.07 (9)	24.42 (9)
MW-5 ("deep")			
10/7/96		22.86	13.91
1/15/97		17.33	19.44
6/23/97	36.77	21.91	14.86
10/6/97		24.26	12.51
12/12/98		20.66	16.11
4/24/99		17.19	19.58
12/18/99		22.71	14.06
7/22/00		21.42	15.35
1/29/01		20.79	15.98
7/28/01		21.07	15.70
2/3/02		17.67	19.10
7/23/02		20.16	16.61
1/20/03		17.21	19.56
7/30/03		20.32	16.45
1/27/04		18.34	18.43
7/22/04	39.79	20.90	18.89 (7)
1/20/05		15.89	23.90
7/20/05		17.97	21.82
1/26/06		15.49	24.30
7/27/06		18.50	21.29
1/24/07		18.76	21.03
7/18/07		20.12	19.67
2/15/08		16.35 (9)	23.44 (9)
7/25/08		20.57	19.22
1/23/09		19.42 (9)	20.37 (9)
7/20/09		20.35	19.44
1/25/10		16.33 (9)	23.46 (9)
MW-6 ("shallow")			
3/25-26/96	36.42	8.52	27.90
10/7/96		12.82	23.60
1/15/97		7.72	28.70
6/23/97	36.42	11.42	25.00
10/6/97		12.67	23.75
12/12/98		9.15	27.27
4/24/99		8.56	27.86

Well Number and Date of Measurement	Reference Elevation (2)	Depth To Water	Relative Ground Water Elevation (2)
MW-6 ("shallow") cont'			
12/18/99		10.53	25.89
7/22/00		11.50	24.92
1/29/01		9.34	27.08
7/28/01		N/A	N/A
2/3/02		9.32	27.10
7/23/02		11.33	25.09
1/20/03		8.49	27.93
7/30/03		11.35	25.07
1/27/04		9.20	27.22
7/22/04	39.44	11.13	28.31 (7)
1/20/05		7.65	31.79
7/20/05		10.02	29.42
1/26/06		8.13	31.31
7/27/06		10.59	28.85
1/24/07		10.09	29.35
7/18/07		11.06	28.38
2/15/08		8.17	31.27
7/25/08		11.30	28.14
1/23/09		9.82 (9)	29.62 (9)
7/20/09		11.02	28.42
1/25/10		6.58 (9)	32.86 (9)
MW-7 ("deep")			
6/23/97	36.83	19.93	16.90
10/6/97		21.43	15.40
12/12/98		16.56	20.27
4/24/99		14.48	22.35
12/18/99		19.40	17.43
7/22/00		19.85	16.98
1/29/01		17.59	19.24
7/28/01		20.05	16.78
2/3/02		15.89	20.94
7/23/02		19.57	17.26
1/20/03		15.36	21.47
7/30/03		19.21	17.62
1/27/04		16.84	19.99
7/22/04	39.84	20.17	19.67 (7)
1/20/05		14.44	25.40
7/20/05		17.26	22.58
1/26/06		14.55	25.29
7/27/06		18.13	21.71
1/24/07		18.03	21.81
7/18/07		19.76	20.08
2/15/08		15.44	24.40
7/25/08		20.50	19.34
1/23/09		19.08 (9)	20.76 (9)
7/20/09		20.20	19.64

Well Number and Date of Measurement	Reference Elevation (2)	Depth To Water	Relative Ground Water Elevation (2)
MW-7 ("deep") cont'			
1/25/10		15.30 (9)	24.54 (9)
MW-8 ("shallow")			
6/23/97	36.55	5.74	30.81
10/6/97		5.69	30.86
12/12/98		4.01	32.54
4/24/99		4.40	32.15
12/18/99		4.91	31.64
7/22/00		5.47	31.08
1/29/01		3.01	33.54
7/23/02		5.11	31.44
1/20/03		3.57	32.98
7/30/03		5.23	31.32
1/27/04		4.26	32.29
7/22/04	39.49	5.42	34.07 (7)
1/20/05		3.39	36.10
7/20/05		5.14	34.35
1/26/06		3.70	35.75
7/27/06		5.63	33.86
1/24/07		4.87	34.62
7/18/07		5.41	34.08
2/15/08		3.77	35.72
7/25/08		5.67	33.82
1/23/09		3.55 (9)	35.94 (9)
7/20/09		5.71	33.78
1/25/10		1.15 (9) (10)	38.34 (9) (10)
MW-9 ("shallow")			
6/23/97	36.70	17.04	19.66
10/6/97		19.17	20.53
4/24/99		12.33	24.37
12/18/99		16.14	20.56
7/22/00		15.78	20.92
1/29/01		14.65	22.05
7/28/01		15.33	21.37
2/3/02		12.59	24.11
7/23/02		15.27	21.43
1/20/03		12.27	24.43
7/30/03		14.85	21.85
1/27/04		11.72	24.98
7/22/04	39.71	15.17	24.54 (7)
1/20/05		10.16	29.52
7/20/05		12.12	27.59
1/26/06		10.12	29.59
7/27/06		12.52	27.19
1/24/07		12.63	27.08 (8)
7/18/07		13.77	25.94 (8)

Well Number and Date of Measurement	Reference Elevation (2)	Depth To Water	Relative Ground Water Elevation (2)
MW-9 ("shallow") cont'			
2/15/08		10.78	28.93
7/25/08		13.93	25.78
1/23/09		13.08 (9)	26.63 (9)
7/20/09		13.63	26.08
1/25/10		11.35 (9)	28.36 (9)

Notes on following page

Notes

(1) N/A = not applicable.
(2) Elevations from a survey conducted by Andreas Deak, California Licensed Land Surveyor, March 21, 1996 and June 23, 1997, City of Oakland datum; and by Virgil D. Chavez Land Surveying, California Licensed Land Surveyor, July 22, 2004, NGVD 29 datum.
(3) Well under pressure when locking cap removed; water level may not have been stabilized.
(4) Depth to water was measured over a 120 minute period; indicated depths appear to be stabilized readings.
(5) Surveyed elevations of wells MW 1 and MW-2 varied to 0.02 foot on March 21, 1996 survey as compared to February 11, 1994 survey; previously calculated measurements of elevation have **not** been modified to reflect the new survey data. Similar slight survey differences on June 20, 1997 have not been corrected.
(6) Well not stabilized (water level rising).
(7) (Initial elevation to NGVD datum).
(8) Corrected elevation.
(9) Well possibly not equilibrated.
(10) Well situated and screened within excavation backfill, water level elevated due to recent precipitation.

TABLE 1B

SUMMARY OF GROUND WATER GRADIENT INFORMATION

Date	Shallow Wells		Deep Wells	
	Direction	Inclination	Direction	Inclination
8/6/90	N/A	N/A	N/A	N/A
1/28/92	N/A	N/A	N/A	N/A
4/27/92	N/A	N/A	N/A	N/A
8/10/92	N/A	N/A	N/A	N/A
2/11/94	N/A	N/A	N/A	N/A
2/28/94	N/A	N/A	N/A	N/A
9/9/94	N/A	N/A	N/A	N/A
12/28/94	N/A	N/A	N/A	N/A
4/13/95	N/A	N/A	N/A	N/A
11/1/95	N/A	N/A	N/A	N/A
3/8/96	N/A	N/A	N/A	N/A
3/25-26/96 (2)	N/A	N/A	N/A	0.01
10/7/96 (2)	N/A	N/A	N/A	0.02
1/15/97 (2)	N/A	N/A	S 33 E	0.13
6/23/97 (3)	N 44 W	0.24	S 68 E	0.07
10/6/97 (3)	N 47 W	0.29	S 55 E	0.11
12/12/98 (3)	N 33 W	0.32	S 47 E	0.05
4/24/99 (3)	N 59 W	0.17	S 44 E	0.07
12/18/99 (3)	N 55 W	0.26	S 44 E	0.07
7/22/00 (3)	N 56 W	0.24	S 65 E	0.19
1/29/01 (3)	N 47 W	0.30	S 65 E	0.20
7/28/01 (3)	N 51 W	0.24	S 65 E	0.05
2/3/02 (3)	N 50 W	0.23	S 65 E	0.05
7/23/02 (3)	N 51 W	0.24	S 85 E	0.11
1/20/03 (3)	N 50 W	0.22	S 50 E	0.19
7/30/03 (3)	N 62 W	0.23	S 66 E	0.10
1/27/04 (3)	N 60 W	0.19	S 77 E	0.10
7/22/04 (3)	N 60 W	0.22	S 67 E	0.08
1/20/05 (3)	N 45 W	0.17	S 30 E	0.04
7/20/05 (3)	N 70 W	0.14	S 68 E	0.08
1/26/06 (3)	N 52 W	0.14	S 55 E	0.04
7/27/06 (3)	N 68 W	0.15	S 72 E	0.09
1/24/07 (3)	N 57 W	0.19	S 65 E	0.08
7/18/07 (3)	N 52 W	0.26	S 57 E	0.11
2/15/08 (3)	N 63 W	0.14	S 55 E	0.06
7/25/08 (3)	N 65 W	0.17	S 76 E	0.11
1/23/09 (3)	N 62 W (4)	0.21 (4)	N/A (5)	N/A (5)
7/20/09 (3)	N 61 W	0.17	S 769E	0.08
1/25/10 (3)	N/A (6)	N/A (6)	N/A (6)	N/A (6)

Notes

(1) N/A = not applicable.
(2) Six wells.
(3) Nine wells.
(4) Wells probably not equilibrated, but derived gradient information consistent with previous sampling events.
(5) Wells probably not equilibrated, and derived gradient information not consistent with previous sampling events.
(6) Wells not equilibrated, and gradients not calculated

TABLE 2

SUMMARY OF ANALYTICAL TEST RESULTS - GROUND WATER
Petroleum Hydrocarbons
(Results reported in parts per billion, ppb/ug/l) (1)

Well and Date	TPH Gasoline	MTBE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Oil & Grease HVOC (7)
MW-1 ("deep")							
8/6/90 (2)	54,000	NA	3,500	3,200	1,900	9,400	7,600
1/28/92	2,000,000	NA	7,400	17,000	28,000	120,000	7,500 (5)
4/27/92 (3)	500,000	NA	3,400	6,400	10,000	45,000	440,000 (6)
4/27/92 (4)	175,000	NA	4,200	4,400	3,200	14,600	N/A
8/10/92	170,000	NA	4,200	4,200	3,300	15,900	120,000 (6)
2/11/94	1,800,000	NA	ND	5,100	5,200	23,900	16,000 (6)
9/9/94	23,000,000	NA	56,000	61,000	9,100	137,000	880,000 (6)
12/28/94	55,000	NA	3,700	5,300	1,400	5,800	83,000 (6)
4/13/95	45,000	NA	2,800	3,400	1,200	5,100	50,000 (5)
11/1/95	44,000	NA	2,600	3,400	1,400	5,900	52,000 (5)
3/25/96	45,000	NA	3,000	4,100	1,600	6,800	46,000 (5) (7)
10/8/96	55,000	490	3,300	4,500	1,700	7,100	11,000 (5) (7)
1/16/97	48,000	310	2,600	3,200	1,300	5,300	110,000 (5) (7)
6/23/97	40,000	ND<100	2,300	3,500	1,500	6,300	190,000 (5) (7)
10/7/97	45,000	ND<680	2,500	3,600	1,700	6,800	150,000 (5) (7)
12/12/98	39,000	ND<1,500	3,000	100	1,400	5,800	67,000 (5) (7)
4/24/99	33,000	ND<200	2,300	3,300	1,100	4,100	140,000 (5) (7)
4/24/99 (8)	41,000	1,100	2,500	3,700	1,500	5,700	N/A
12/18/99	43,000	ND<200	2,600	3,800	1,400	5,800	110,000 (5) (7)
7/22/00	37,000	ND<200	2,200	2,600	1,300	5,200	320,000 (5) (7)
1/29/01	36,000	ND<200	2,100	2,300	1,200	4,500	76,000 (5) (7)
7/28/01	99,000	ND<250	1,500	2,300	1,700	6,600	86,000 (5) (7)
2/3/02	42,000	ND<500	1,200	1,300	1,100	3,900	42,000 (5) (7)
7/23/02	53,000	ND<1,000	1,700	2,800	1,500	5,100	170,000 (5) (7)
1/20/03	33,000	ND<2,000	2,100	2,500	1,300	4,400	65,000 (5) (7)
7/30/03	24,000	ND<500	1,300	1,500	760	2,700	55,000 (5)
1/27/04	21,000	ND<250	1,600	1,500	1,100	3,200	220,000 (5)
7/22/04	31,000	ND<1,000	1,500	1,700	1,200	4,100	780,000 (5) (7)
1/20/05	25,000	ND<270	1,300	1,400	1,000	2,800	72,000 (5) (7)
7/20/05A (11)	22,000	ND<150	1,100	1,600	830	2,600	500,000 (5) (7)
7/20/05B (11)	24,000	ND<1,000	830	960	670	2,200	N/A
1/26/06	28,000	ND<500	1,600	1,500	1,200	3,500	64,000 (5) (7)
7/27/06 (A) (12)	25,000	ND<250	810	1,000	1,100	3,200	N/A
7/27/06 (C) (12)	15,000	ND<400	880	1,200	950	2,800	2,500,000 (5) (7)
1/25/07	32,000	ND<700	990	960	1100	3,500	170,000 (5)
7/19/07	32,000	ND<1,200	600	740	950	2,500	1,100,000 (5)
2/15/08	28,000	ND<900	930	780	940	2,500	3,500,000 (5) (7)
7/25/08 (1A) (13)	28,000	ND<700	540	580	750	2,000	(see table 6)
7/25/08(1D) (13)	28,000	ND<1,000	930	1,000	1,200	3,700	N/A
1/23/09	52,000	ND<350	420	350	1,400	3,600	1,000,000 (5) (7)
7/21/09	19,000	ND<500	530	500	890	2,300	46,000 (5)
1/25/10	23,000	ND<600	780	540	850	2,200	140,000 (5) (7)
MW-2 ("deep")							
2/11/94	130	NA	22	1.1	5.2	7.3	ND (6)
9/9/94	1,000	NA	89	ND	ND	6.9	ND (6)
12/28/94	330	NA	100	3.8	5.4	4.7	5100 (6)
4/13/95	1,300	NA	280	6.9	33	23	ND (5)
11/1/95	100	NA	9.9	ND	ND	ND	ND (5)
3/25/96	4,500	NA	470	57	220	280	ND (5) (7)
10/8/96	710	41	1.9	0.54	1.0	1.0	ND (5) (7)
1/16/97	330	12	41	2.4	1.3	9.9	ND (5) (7)
6/23/97	280	10	12	0.69	ND	13	NA (7)
10/7/97	320	ND<35	4.5	ND	ND	ND	NA (7)
12/12/98	290	ND<11	21	0.76	10	19	ND (5) (7)
4/24/99	360	21	36	1.3	9.2	19	ND<5000 (5) (7)
12/18/99	210	ND<200	13	ND	2.9	7.7	ND<5000 (5) (7)
7/22/00	180	ND<5	10	ND	4.5	6.0	ND<5000 (5) (7)

Well and Date	TPH Gasoline	MTBE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Oil & Grease HVOC (7)
MW-2 ("deep") continued							
1/29/01	130	ND<5	16	ND	1.9	3.8	ND<5000 (5) (7)
7/28/01	ND<50	ND<5	2.7	ND	0.64	0.69	ND<5000 (5) (7)
2/3/02	140	ND<5	5.5	ND	9.0	12	ND<5000 (5) (7)
7/23/02	780	ND<15	52	2.0	44	6.2	ND<5000 (5) (7)
1/20/03	1,900	ND<50	120	10	120	94	ND<5000 (5) (7)
7/30/03	710	ND<20	43	1.8	24	5.9	ND<5000 (5) (7)
1/27/04	180	ND<5	10	ND<0.5	3.2	10	ND<5000 (5) (7)
7/22/04	ND<50	ND<5	0.90	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
1/20/05	96	ND<5	1.3	ND<0.5	1.5	1.0	ND<5000 (5) (7)
7/20/05	430	ND<5	17	1.5	2.3	1.2	ND<5000 (5) (7)
1/26/06	120	ND<5	5.3	ND<0.5	0.64	3.3	ND<5000 (5) (7)
7/27/06	89	ND<5	3.1	ND<0.5	1.9	3.1	ND<5000 (5) (7)
1/25/07	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
7/19/07	100	ND<5	1.1	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
2/15/08	460	ND<15	25	0.75	3.7	3.2	ND<5000 (5) (7)
7/25/08	ND<50	ND<5	0.66	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
1/23/09	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
7/21/09	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
1/25/10	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
MW-3 ("shallow")							
2/11/94	ND	NA	ND	ND	ND	ND	ND (6)
9/9/94	710	NA	10	ND	ND	3.5	ND (6)
12/28/94	2,300	NA	7.8	ND	130	73	ND (6)
4/13/95	1,700	NA	2.9	ND	61	24	ND (5)
11/1/95	1,100	NA	4.4	ND	27	22	ND (5)
3/25/96	2,300	NA	4.0	0.96	120	65	ND (5) (7)
10/8/96	160	ND	ND	0.5	1.2	0.77	ND (5) (7)
1/16/97	1,800	7.1	2.8	0.68	48	66	ND<5000 (5) (7)
6/23/97	ND	ND	ND	ND	ND	ND	NA (7)
10/7/97	ND	ND	ND	ND	ND	ND	NA (7)
12/12/98	1,900	ND	1.8	0.78	78	42	ND (5) (7)
4/24/99	2,100	ND	1.5	0.85	79	43	ND<5000 (5) (7)
12/18/99	330	ND	0.51	ND	ND	ND	ND<5000 (5) (7)
7/22/00	230	ND	0.89	2.4	ND	ND	ND<5000 (5) (7)
1/29/01	450	ND<5	1.1	1.6	11	3.6	ND<5000 (5)
7/28/01	ND<50	ND<5	ND<0.5	ND	ND	ND	ND<5000 (5)
2/3/02	98	ND<5	ND<0.5	ND	ND	ND	ND<5000 (5)
7/23/02	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5)
1/20/03	700	ND<5	1.6	0.56	41	21	ND<5000 (5)
7/30/03	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5)
1/27/04	85	ND<5	ND<0.5	ND<0.5	ND<0.5	0.87	ND<5000 (5)
7/22/04	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5)
1/20/05	440	ND<5	0.81	0.67	7.1	2.6	ND<5000 (5)
7/20/05	130	ND<5	ND<0.5	1.2	ND<0.5	ND<0.5	ND<5000 (5)
1/26/06	790	ND<5	1.0	1.0	12	3.4	ND<5000 (5)
7/27/06	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5)
1/25/07	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5)
7/19/07	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5)
2/15/08	74	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5)
7/25/08	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5)
1/23/09	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5)
7/21/09	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5)
1/25/10	150	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
MW-4 ("deep")							
3/26/96	9,900	NA	4,000	40	71	100	ND (5) (7)
10/8/96	7,800	140	3,900	33	31	40	ND (5) (7)
1/16/97	4,800	84	1,900	21	2.5	27	5,200 (5) (7)
6/23/97	6,200	160	2,800	20	20	23	ND (5) (7)
10/7/97	4,400	85	1,800	14	18	14	ND (5) (7)
12/12/98	3,500	110	1,500	13	39	14	ND (5) (7)
4/24/99	3,100	ND<10	1,700	22	67	21	7,500 (5) (7)
12/18/99	2,600	33	1,000	12	32	10	ND<5000 (5) (7)
7/22/00	2,700	60	940	14	31	12	7,000 (5) (7)

Well and Date	TPH Gasoline	MTBE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Oil & Grease HVOC (7)
MW-4 ("deep") continued							
1/29/01	2,500	ND<5	980	11	35	5	ND<5000 (5) (7)
7/28/01	1,100	27	250	6.3	19	4.8	90,000 (5) (7)
2/3/02	2,100	ND<25	890	23	41	20	7,400 (5) (7)
7/23/02	1,200	ND<17	490	11	22	8.8	ND<5000 (5) (7)
1/20/03	1,900	ND<80	740	11	32	12	ND<5000 (5) (7)
7/30/03	1,700	ND<150	440	8.9	18	6.1	ND<5000 (5) (7)
1/27/04	1,100	ND<10	350	10	17	5.0	31,000 (5) (7)
7/22/04	910	ND<100	210	7.9	19	6.5	54,000 (5) (7)
1/20/05	1,900	ND<200	550	36	63	43	ND<5000 (5) (7)
7/20/05	1,300	ND<25	310	11	36	12	ND<5000 (5) (7)
1/26/06	1,900	ND<75	500	16	40	12	26,000 (5) (7)
7/27/06	980	ND<20	340	13	18	8.8	85,000 (5) (7)
1/25/07	910	ND<120	230	5	15	4	7,100 (5) (7)
7/19/07	960	ND<100	150	3.9	9.9	3.4	ND<5000 (5) (7)
2/15/08	1,500	ND<150	310	12	18	11	12,000 (5) (7)
7/25/08	1,000	ND<110	54	3.1	5.5	2.0	7,800 (5) (7)
1/23/09	1,000	ND<150	200	5	9.3	2.3	ND<5,000 (5) (7)
7/21/09	940	ND<110	230	8.8	6.5	8.0	12,000 (5) (7)
1/25/10	1,000	ND<150	240	6.9	20	8.9	29,000 (5) (7)
MW-5 ("deep")							
3/26/96	1,200	NA	43	8.2	83	95	ND (5) (7)
10/8/96	6,700	190	260	92	410	370	ND (5) (7)
1/16/97	3,000	90	150	68	190	180	ND (5) (7)
6/23/97	12,000	150	410	170	920	800	NA (7)
10/7/97	10,000	ND<480	310	62	530	500	NA (7)
12/12/98	11,000	ND<660	400	120	740	480	ND (5) (7)
4/24/99	9,300	ND<100	390	290	820	770	ND<5000 (5) (7)
12/18/99	7,000	ND<100	250	52	500	300	ND<5000 (5) (7)
7/22/00	14,000	ND<100	290	140	770	630	12,000 (5) (7)
1/29/01	8,200	ND<5	180	42	420	250	11,000 (5) (7)
7/28/01	9,100	ND<70	190	67	540	430	ND<5000 (5) (7)
2/3/02	11,000	ND<100	250	160	730	540	ND<5000 (5)
7/23/02	6,400	ND<110	160	67	540	390	ND<5000 (5)
1/20/03	7,300	ND<170	190	80	480	310	ND<5000 (5) (7)
7/30/03	8,700	ND<300	170	35	470	300	ND<5000 (5) (7)
1/27/04	7,600	ND<400	220	50	460	290	ND<5000 (5)
7/22/04	10,000	ND<250	200	38	510	400	ND<5000 (5)
1/20/05	8,500	ND<250	130	63	430	280	ND<5000 (5) (7)
7/20/05	7,900	74	110	47	350	250	ND<5000 (5) (7)
1/26/06	8,000	ND<350	170	53	410	270	ND<5000 (5)
7/27/06	5,300	ND<150	110	35	380	250	ND<5000 (5)
1/25/07	1,300	ND<30	17	6.1	34	46	ND<5,000 (5) (7)
7/19/07	10,000	ND<210	99	15	250	200	ND<5,000 (5) (7)
2/15/08	9,900	ND<200	120	26	290	200	ND<5,000 (5) (7)
7/25/08	5,600	ND<110	120	20	210	190	ND<5,000 (5) (7)
1/23/09	6,600	ND<180	68	18	220	110	ND<5,000 (5) (7)
7/21/09	5,600	ND<180	81	21	210	160	ND<5,000 (5)
1/25/10	2,800	ND<45	32	11	100	64	ND<5,000 (5) (7)
MW-6 ("shallow")							
3/26/96	9,900	NA	1,000	150	470	720	ND (5) (7)
10/8/96	1,300	57	120	2.3	1.4	4.0	ND (5) (7)
1/15/97	6,500	220	570	65	170	630	ND (5) (7)
6/23/97	3,100	100	410	16	110	140	NA (7)
10/7/97	960	ND<74	78	3.4	1.8	5.8	NA (7)
12/12/98	2,500	ND<160	230	10	92	110	ND (5) (7)
4/24/99	2,900	ND<10	430	33	160	200	ND<5000 (5) (7)
12/18/99	2,300	ND<200	170	6.6	56	63	ND<5000 (5) (7)
7/22/00	2,200	ND<10	290	9.6	80	43	ND<5000 (5) (7)
1/29/01	2,500	ND<10	220	11	150	230	ND<5000 (5) (7)
7/28/01	NA	NA	NA	NA	NA	NA	NA
2/3/02	2,500	ND<50	290	18	88	330	ND<5000 (5) (7)
7/23/02	1,100	ND<20	160	6.5	54	35	ND<5000 (5) (7)
1/20/03	3,800	ND<80	370	33	220	300	ND<5000 (5) (7)

Well and Date	TPH Gasoline	MTBE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Oil & Grease HVOC (7)
MW-6 ("shallow") continued							
7/30/03	2,000	ND<70	250	4.8	50	24	ND<5000 (5) (7)
1/27/04	2,600	ND<400	420	20	170	180	ND<5000 (5) (7)
7/22/04	1,200	ND<45	110	3.2	36	17	ND<5000 (5) (7)
1/20/05	3,100	ND<25	280	21	180	250	ND<5000 (5) (7)
7/20/05	730	ND<10	66	4.4	25	26	ND<5000 (5) (7)
1/26/06	1,900	ND<60	180	12	120	140	ND<5000 (5) (7)
7/27/06	670	ND<9	120	5	17	15	ND<5000 (5) (7)
1/25/07	650	ND<15	99	2.7	20	16	ND<5000 (5) (7)
7/19/07	4,200	ND<50	360	18	47	55	ND<5000 (5) (7)
2/15/08	2,100	ND<60	200	10	100	97	ND<5000 (5) (7)
7/25/08	370	ND<10	27	3.1	2.2	2.7	ND<5,000 (5) (7)
1/23/09	330	ND<20	69	3.6	11	8.1	ND<5,000 (5) (7)
7/21/09	290	ND<10	40	1.9	9.3	7.8	ND<5,000 (5) (7)
1/25/10	740	ND<30	80	4.9	54	62	ND<5,000 (5) (7)
MW-7 ("deep")							
6/23/97	8,700	ND<20	950	260	520	380	ND (5) (7)
10/7/97	7,500	ND<310	1,100	86	280	150	ND (5) (7)
12/12/98	5,000	ND<190	640	43	200	55	ND (5) (7)
4/24/99	5,500	ND<10	640	180	290	210	ND<5000 (5) (7)
12/18/99	5,500	ND<10	570	27	91	31	ND<5000 (5) (7)
7/22/00	7,400	ND<80	620	180	240	180	10,000 (5) (7)
1/29/01	4,000	ND<10	410	21	22	21	7,000 (5) (7)
7/28/01	4,200	ND<70	540	120	110	110	ND<5000 (5) (7)
2/3/02	6,300	ND<25	560	110	190	140	ND<5000 (5) (7)
7/23/02	3,400	ND<50	440	6.3	87	61	ND<5000 (5) (7)
1/20/03	4,500	ND<170	380	32	30	36	ND<5000 (5) (7)
7/30/03	5,300	ND<400	460	34	43	52	ND<5000 (5) (7)
1/27/04	3,000	ND<90	350	15	13	18	ND<5000 (5) (7)
7/22/04	3,600	ND<170	440	10	10	25	ND<5000 (5) (7)
1/20/05	3,200	ND<25	320	31	29	34	19,000 (5) (7)
7/20/05	8,400	ND<500	550	230	300	410	ND<5000 (5) (7)
1/26/06	3,300	ND<300	450	31	45	37	32,000 (5) (7)
7/27/06	3,800	ND<240	530	85	38	94	ND<5,000 (5) (7)
1/25/07	2,500	ND<60	320	6.9	3.3	10	ND<5,000 (5) (7)
7/19/07	2,700	ND<90	280	10.0	5.9	18	ND<5,000 (5) (7)
2/15/08	2,900	ND<120	230	15	12	18	27,000 (5) (7)
7/25/08	3,700	ND<100	400	25	26	87	ND<5,000 (5) (7)
1/23/09	2,500	ND<30	230	5.4	2.9	5.6	ND<5,000 (5) (7)
7/21/09	3,400	ND<180	230	75	33	140	ND<5,000 (5) (7)
1/25/10	3,900	ND<200	260	15	5.2	24	5,200 (5) (7)
MW-8 ("shallow")							
6/23/97	610	5.9	25	1.4	4.3	2.4	ND (5) (7)
10/7/97	120	ND	6.9	ND	ND	ND	ND (5) (7)
12/12/98	ND	ND	ND	ND	ND	ND	ND (5) (7)
4/24/99	ND	ND	ND	ND	ND	ND	ND<5000 (5) (7)
12/18/99	ND	ND	ND	ND	ND	ND	ND<5000 (5) (7)
7/22/00	ND	ND	ND	ND	ND	ND	ND<5000 (5) (7)
1/29/01	ND	ND<5	0.87	ND	ND	ND	ND<5000 (5) (7)
7/28/01	ND	ND<5	ND	ND	ND	ND	ND<5000 (5) (7)
2/3/02	ND	16	ND	ND	ND	ND	ND<5000 (5) (7)
7/23/02	ND<50	ND<5	0.87	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
1/20/03	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
7/30/03	ND<50	ND<5	2.0	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
1/27/04	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
7/22/04	ND<50	ND<5	1.2	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
1/20/05	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
7/20/05	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
1/26/06	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
7/27/06	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
1/25/07	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
7/19/07	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
2/15/08	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
7/25/08	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)

Well and Date	TPH Gasoline	MTBE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Oil & Grease
MW-8 ("shallow") continued							HVOC (7)
1/23/09	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
7/21/09	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
1/25/10	ND<50	ND<5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000 (5) (7)
MW-9 ("shallow")							
6/23/97	32,000	250	340	280	1,500	4,300	ND (5) (7)
10/7/97	33,000	ND<690	880	350	1900	4,700	ND (5) (7)
12/12/98	3,400	ND<78	160	14	220	210	ND (5) (7)
4/24/99	3,100	22	130	18	220	190	ND (5) (7)
12/18/99	7,500	100	220	44	440	650	ND<5000 (5) (7)
7/22/00	4,900	ND<10	93	15	240	250	71,000 (5) (7)
1/29/01	3,800	ND<10	160	35	260	310	5,000
7/28/01	5,700	ND<20	43	27	210	420	ND<5000 (5) (7)
2/3/02	7,800	ND<50	98	51	450	640	ND<5000 (5) (7)
7/23/02	2,300	ND<50	29	14	120	96	ND<5000 (5) (7)
1/20/03	5,000	ND<80	76	25	350	340	ND<5000 (5)
7/30/03	570	ND<5	7.2	1.2	14	4.8	ND<5000 (5) (7)
1/27/04	820	ND<20	14	2.6	35	35	ND<5000 (5) (7)
7/22/04	460	ND<25	5.3	1.2	4.0	7.2	ND<5000 (5) (7)
1/20/05a	330	ND<5	6.2	1.5	8.9	12	ND<5000 (5) (7)
1/20/05b (10)	150	ND<5	1.5	0.55	2.6	3.7	N/A
7/20/05	260	ND<5	1.7	2.0	ND<0.5	1.2	ND<5000 (5) (7)
1/26/06	260	ND<5	1.0	2.9	ND<0.5	0.64	ND<5000 (5)
7/27/06	410	ND<5	1.1	1.4	0.52	ND<0.5	ND<5000 (5)
1/25/07	440	ND<5	1.4	1.5	2.9	7.5	ND<5000 (5)
7/19/07	300	ND<20	1.4	2.4	0.51	ND<0.5	ND<5000 (5)
2/15/08	490	ND<5	2.8	5.2	7.1	22	ND<5000 (5)
7/25/08	520	ND<20	1.0	4.1	0.63	ND<0.5	ND<5000 (5)
1/23/09	250	ND<15	ND<0.5	3.7	ND<0.5	1.5	ND<5000 (5)
7/21/09	910	ND<25	2.5	4.8	2.6	2.4	ND<5000 (5) (7)
1/25/10	550	ND<25	2.2	6.5	11	33	ND<5000 (5) (7)
EB-4 ("grab" gw sample)							
3/8/96	15,000	NA	780	840	1,300	590	7,500 (5) (7)
MCL	NA	13/5 (9)	1	150	700	1,750	NA

Notes

(1) ND - non-detect; N/A - not applicable
(2) Kaldveer Associates report, September, 1990
(3) Sequoia Analytical Laboratory
(4) Applied Remediation Laboratory
(5) Gravimetric Method
(6) Infrared Method
(7) **HVOC detected**: see Table 3
(8) Free-phase product observed in bailer (additional sample)
(9) Primary and secondary MCL, respectively.
(10) Supplemental sample following initial bailer volume removal.
(11) Sample discharged from bottom of bailer (**A**); and top of bailer (**B**)
(12) Sample discharged from top of bailer (**A**); and bottom of bailer (**C**)
(13) Sample collected from top of water column below floating phase product (**1A**) and from well depth of 32' (**1D**)

TABLE 3

SUMMARY OF ANALYTICAL TEST RESULTS - GROUND WATER
Fuel Additive Compounds (Oxygenated Volatile Organics) (3)
(Results reported in parts per **billion** (ppb), ug/l) (1)

Sample	DIPE	ETBE	MTBE	TAME	TBA	EDB	1,2-DCA	Ethanol	Methanol
MW-1 ("deep")									
7/25/08	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1/23/09	ND<5.0	ND<5.0	ND<5.0	ND<5.0	**61**	ND<5.0	ND<5.0	ND<500	ND<5,000
7/21/09	ND<10.0	ND<10.0	ND<10.0	ND<10.0	**80**	ND<10.0	ND<10.0	ND<1,000	ND<10,000
1/25/10	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<20	ND<5.0	ND<5.0	ND<500	ND<5,000
MW-2 ("deep")									
7/25/08	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.0	ND<0.5	**1.3**	ND<50	ND<500
1/23/09	ND<0.5	ND<0.5	ND<0.5	ND<0.5	**2.4**	ND<0.5	**7.8**	ND<50	ND<500
7/21/09	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.0	ND<0.5	**9.7**	ND<50	ND<500
1/25/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.0	ND<0.5	**3.8**	ND<50	ND<500
MW-3 ("shallow")									
7/25/08	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.0	ND<0.5	ND<0.5	ND<50	ND<500
1/23/09	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.0	ND<0.5	ND<0.5	ND<50	ND<500
7/21/09	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.0	ND<0.5	ND<0.5	ND<50	ND<500
1/25/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	**2.4**	ND<0.5	ND<0.5	ND<50	ND<500
MW-4 ("deep")									
7/25/08	ND<2.5	ND<2.5	**12**	ND<2.5	**34**	ND<2.5	ND<2.5	ND<250	ND<2,500
1/23/09	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<20	ND<0.5	ND<5.0	ND<500	ND<5,000
7/21/09	ND<2.5	ND<2.5	**6.9**	ND<2.5	**19**	ND<2.5	ND<2.5	ND<250	ND<2,500
1/25/10	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<20	ND<0.5	ND<5.0	ND<500	ND<5,000
MW-5 ("deep")									
7/25/08	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<20	ND<0.5	ND<5.0	ND<500	ND<5,000
1/23/09	ND<1.0	ND<1.0	ND<1.0	ND<1.0	**16**	ND<1.0	**2.6**	ND<100	ND<1,000
7/21/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<10	ND<2.5	ND<2.5	ND<250	ND<2,500
1/25/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.0	ND<0.5	ND<0.5	ND<50	ND<500
MW-6 ("shallow")									
7/25/08	ND<0.5	ND<0.5	ND<0.5	ND<0.5	**9.1**	ND<0.5	**0.75**	ND<50	ND<500
1/23/09	ND<0.5	ND<0.5	ND<0.5	ND<0.5	**8.6**	ND<0.5	ND<0.5	ND<50	ND<500
7/21/09	ND<0.5	ND<0.5	ND<0.5	ND<0.5	**8.2**	ND<0.5	ND<0.5	ND<50	ND<500
1/25/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	**7.4**	ND<0.5	ND<0.5	ND<50	ND<500
MW-7 ("deep")									
7/25/08	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<20	ND<5.0	ND<5.0	ND<500	ND<5,000
1/23/09	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<20	ND<5.0	ND<5.0	ND<500	ND<5,000
7/21/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<10	ND<2.5	ND<2.5	ND<250	ND<2,500
1/25/10	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<20	ND<5.0	ND<5.0	ND<500	ND<5,000
MW-8 ("shallow")									
7/25/08	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.0	ND<0.5	ND<0.5	ND<50	ND<500
1/23/09	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.0	ND<0.5	ND<0.5	ND<50	ND<500
7/21/09	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.0	ND<0.5	ND<0.5	ND<50	ND<500
1/25/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.0	ND<0.5	ND<0.5	ND<50	ND<500
MW-9 ("shallow")									
7/25/08	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.0	ND<0.5	ND<0.5	ND<50	ND<500
1/23/09	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.0	ND<0.5	ND<0.5	ND<50	ND<500
7/21/09	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.0	ND<0.5	ND<0.5	ND<50	ND<500
1/25/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.0	ND<0.5	ND<0.5	ND<50	ND<500

Notes

1 - **ND** - non-detect.
2 - **N/A** - not applicable.
3 - Explanations of abbreviations:

Abbreviation	Explanation
MTBE	Methyl tertiary-Butyl Ether
Ethanol	Ethanol
Methanol	Methanol
TBA	tertiary-Butanol
DIPE	Di-isopropyl ether
ETBE	Ethyl tertiary-Butyl Ether
TAME	tertiary-Amyl Methyl Ether
EDB	Ethylene Dibromide (1,2-Dibromoethane)
1,2-DCA	1,2-Dichloroethane

TABLE 4

SUMMARY OF ANALYTICAL TEST RESULTS – GROUND WATER
Halogenated Volatile Organic Compounds (HVOC)
(Results reported in parts per **billion**, ppb/ug/l) (1) (2)

Well and Date	CA	1,2 DCB	1,2 DCA	cis 1,2 DCE	trns 1,2 DCE	1,2 DCP	PCE	TCE	VCL
MW-1 ("deep")									
3/25/96	ND<5	7.2	5.3	82	ND<5	ND<5	ND<5	7.8	25
10/8/96	ND<20	ND<20	ND<20	45	ND<20	ND<20	ND<20	ND<20	26
1/16/97	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/23/97	ND<2	10	4.1	130	3.7	ND<2	5.0	23	54
10/7/97	3.5	7.4	2.2	82	3.8	ND<2	ND<3	9.5	68
12/12/98	ND<2.5	7.4	ND<2.5	26	ND<2.5	ND<2.5	ND<2.7	ND<2.5	7.3
4/24/99 (8)	2.1	9.9	3.5	61	2.8	2.0	ND<4.2	ND<1.5	22
12/18/99 (9)	3.3	8.0	1.2	12	2.8	1.2	ND<0.5	ND<0.5	7.2
7/22/00 (10)	ND<2.5	16.0	ND<2.5	15	ND<2.5	ND<2.5	ND<5.0	ND<2.5	8.2
1/29/01 (11)	ND<10.0	23.0	ND<10	23	ND<10.0	ND<10.0	ND<10.0	ND<10.0	ND<10.0
7/28/01 (12)	7.4	9.0	0.97	14	6.4	0.95	ND<0.5	ND<0.5	15
2/3/02 (13)	5.5	10.0	1.4	23	5.5	0.59	ND<0.5	ND<0.5	7.4
7/23/02 (14)	ND<10.0	2.5	ND<10.0	15	ND<10.0	ND<10.0	ND<10.0	ND<10.0	ND<10.0
1/20/03	ND<10.0	11	ND<10.0	36	ND<10.0	ND<10.0	ND<10.0	ND<10.0	11
7/30/03	ND<20.0	ND<20.0	ND<20.0	ND<20.0	ND<20.0	ND<20.0	ND<20.0	ND<20.0	ND<20.0
1/27/04	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0
7/22/04	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0
1/20/05 (19)	81	ND<5.0	ND<5.0	27	ND<5.0	ND<5.0	ND<5.0	ND<5.0	32
7/20/05A (21)	ND<5.0	9.8	ND<5.0	14	ND<5.0	ND<5.0	ND<5.0	ND<5.0	15
7/20/05B (21)	17	ND<10.0	ND<10.0	12	ND<10.0	ND<10.0	ND<10.0	ND<10.0	21
1/26/06	ND<25	ND<25	ND<25	ND<25	ND<25	ND<25	ND<25	ND<25	ND<25
7/27/06A (24)	26	ND<10	ND<10	12	ND<10	ND<10	ND<10	ND<10	20
7/27/06C (24)	ND<10	ND<10	ND<10	10	ND<10	ND<10	ND<10	ND<10	42
1/25/07	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10
7/19/07	ND<500	ND<500	ND<500	ND<500	ND<500	ND<500	ND<500	ND<500	ND<500
2/15/08	ND<5	ND<5	ND<5	14	ND<5	ND<5	ND<5	ND<5	16
7/25/08(1C) (29)	ND<50,000	ND<50,000	ND<50,000	ND<50,000	ND<50,000	ND<50,000	ND<50,000	ND<50,000	ND<50,000
7/25/08(1E) (29)	ND<100	ND<100	ND<100	ND<100	ND<100	ND<100	ND<100	ND<100	ND<100
1/23/09	ND<5	ND<5	ND<5	6.4	ND<5	ND<5	ND<5	ND<5	ND<5
7/21/09	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10
1/25/10	ND<5	ND<5	ND<5	11	ND<5	ND<5	ND<5	ND<5	ND<5
MW-2 ("deep")									
3/25/96	ND<0.5	ND<0.5	8.7	11	ND<0.5	1.0	ND<0.5	3.2	0.92
10/8/96	ND<0.5	ND<0.5	15	9.6	ND<0.5	1.1	ND<0.5	6.6	ND<0.5
1/16/97	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/23/97	ND<0.5	ND<0.5	9.7	8.0	ND<0.5	0.86	ND<0.5	9.6	ND<0.5
10/7/97	ND<0.5	ND<0.5	18	11	ND<0.5	1.2	ND<0.5	15	ND<0.5
12/12/98	ND<0.5	ND<0.5	16	9.4	ND<0.5	1.1	ND<1	7.5	ND<0.5
4/24/99	ND<0.5	ND<0.5	13	7.8	ND<0.5	0.92	ND<0.5	8.4	ND<0.5
12/18/99	ND<0.5	ND<0.5	15	9.0	ND<0.5	1.5	ND<0.5	ND<0.5	ND<0.5
7/22/00	ND<0.5	ND<0.5	17	10	ND<0.5	1.2	ND<1.0	12.0	ND<0.5
1/29/01	ND<0.5	ND<0.5	12	9.1	ND<0.5	0.9	ND<5.0	12.0	ND<0.5
7/28/01	ND<0.5	ND<0.5	9.7	7.8	ND<0.5	0.95	ND<5.0	12.0	ND<0.5
2/3/02	ND<0.5	ND<0.5	7.1	6.7	ND<0.5	0.72	ND<0.5	9.0	ND<0.5
7/23/02	ND<0.5	ND<0.5	1.7	2.1	ND<0.5	ND<0.5	ND<0.5	0.97	ND<0.5
1/20/03	ND<0.5	ND<0.5	1.6	2.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/30/03	ND<0.5	ND<0.5	1.7	1.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/27/04	ND<0.5	ND<0.5	14	8.9	ND<0.5	ND<0.5	ND<0.5	9.4	ND<0.5
7/22/04	ND<0.5	ND<0.5	6.6	6.5	ND<0.5	ND<0.5	ND<0.5	8.0	ND<0.5
1/20/05	ND<0.5	ND<0.5	8.7	7.8	ND<0.5	0.69	ND<0.5	12.0	ND<0.5
7/20/05	ND<0.5	ND<0.5	2.0	2.1	ND<0.5	ND<0.5	ND<0.5	1.2	ND<0.5
1/26/06	ND<0.5	ND<0.5	10	7.7	ND<0.5	0.69	ND<0.5	13.0	ND<0.5
7/27/06	ND<0.5	ND<0.5	13	10	ND<0.5	0.88	ND<0.5	13.0	ND<0.5
1/25/07	ND<0.5	ND<0.5	5.5	9.1	ND<0.5	0.64	ND<0.5	16.0	ND<0.5
7/19/07	ND<0.5	ND<0.5	5.3	4.6	ND<0.5	ND<0.5	ND<0.5	7.5	ND<0.5
2/15/08	ND<0.5	ND<0.5	ND<0.5	2.0	ND<0.5	ND<0.5	ND<0.5	2.1	ND<0.5
7/25/08	ND<0.5	ND<0.5	1.3	1.5	ND<0.5	ND<0.5	ND<0.5	4.8	ND<0.5

Well and Date	CA	1,2 DCB	1,2 DCA	cis 1,2 DCE	trns 1,2 DCE	1,2 DCP	PCE	TCE	VCL
MW-2 ("deep") continued									
1/23/09	ND<0.5	ND<0.5	7.8	9.4	ND<0.5	0.88	ND<0.5	16	ND<0.5
7/21/09	ND<0.5	ND<0.5	9.7	8.3	ND<0.5	0.89	ND<0.5	15	ND<0.5
1/25/10	ND<0.5	ND<0.5	3.8	4.8	ND<0.5	ND<0.5	ND<0.5	9.0	ND<0.5
MW-3 ("shallow")									
3/25/96	ND<0.5	ND<0.5	0.56	1.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
10/8/96	ND<0.5	ND<0.5	1.1	0.87	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/16/97	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/23/97	ND<0.5	ND<0.5	0.54	0.76	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
10/7/97	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
12/12/98	ND<0.5	ND<0.5	0.51	0.82	ND<0.5	ND<0.5	ND<1	ND<0.5	ND<0.5
4/24/99	ND<0.5	ND<0.5	ND<0.5	0.65	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
12/18/99	ND<0.5	ND<0.5	0.72	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/22/00	ND<0.5	ND<0.5	0.52	ND<0.5	ND<0.5	ND<0.5	ND<1.0	ND<0.5	ND<0.5
1/29/01	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	ND<0.5	ND<0.5
7/28/01	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
2/3/02	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/23/02	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/20/03	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/30/03	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/27/04	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/22/04	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/20/05	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/20/05	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/26/06	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/27/06 **(25)**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/25/07	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/19/07	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
2/15/08	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/25/08	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/23/09	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/21/09	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/25/10 **(33)**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-4 ("deep")									
3/26/96	ND<8	22	ND<8	300	9.2	ND<8	38	150	44
10/8/96	ND<15	22	4.9	320	ND<15	ND<15	52	130	60
1/16/97	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/23/97 **(5)**	3.6	21	5.3	340	10	ND<3	11	110	83
10/7/97	ND<8.0	20	ND<8.0	380	9.9	ND<8.0	ND<12	56	56
12/12/98 **(7)**	ND<3.5	18	ND<3.5	150	12	ND<8	ND<4.5	12	57
4/24/99	ND<8.5	20	ND<8.5	390	12	ND<8.5	33	240	43
12/18/99	ND<10.0	27	ND<10.0	390	13	ND<10.0	ND<10.0	39	ND<10.0
7/22/00	ND<10.0	38	ND<10.0	620	ND<10.0	ND<10.0	ND<10.0	19	97
1/29/01	ND<5.0	35	ND<5.0	380	15	ND<5.0	ND<5.0	19	97
7/28/01	ND<7.5	29	ND<5.0	310	18	ND<5.0	ND<5.0	8.4	150
2/3/02 **(13)**	ND<7.0	22	ND<7.0	310	16	ND<7.0	ND<7.0	20	120
7/23/02	ND<0.5	30	ND<0.5	240	17	ND<0.5	ND<0.5	ND<0.5	230
1/20/03	ND<10.0	28	ND<10.0	200	16	ND<10.0	ND<10.0	69	84
7/30/03	ND<10.0	32	ND<10.0	230	13	ND<10.0	ND<10.0	13	290
1/27/04 **(17)**	ND<5.0	41	ND<5.0	370	25	ND<5.0	ND<5.0	32	310
7/22/04 **(18)**	ND<5.0	23	ND<5.0	120	13	ND<5.0	ND<5.0	9.6	280
1/20/05 **(19)**	ND<5.0	28	ND<5.0	320	23	ND<5.0	ND<5.0	81	130
7/20/05 **(22)**	ND<5.0	32	ND<5.0	230	18	ND<5.0	ND<5.0	ND<5.0	170
1/26/06 **(23)**	ND<5.0	31	ND<5.0	320	22	ND<5.0	ND<5.0	39	330
7/27/06 **(25)**	ND<5.0	24	ND<5.0	180	24	ND<5.0	ND<5.0	19	390
1/25/07	ND<5.0	25	ND<5.0	170	15	ND<5.0	ND<5.0	ND<10	380
7/19/07 **(27)**	ND<5.0	28	ND<5.0	180	27	ND<5.0	ND<5.0	21	460
2/15/08 **(28)**	ND<5.0	31	ND<5.0	200	25	ND<5.0	ND<5.0	22	130
7/25/08 **(30)**	5.5	18	ND<2.5	110	17	ND<2.5	ND<2.5	21	87
1/23/09 **(31)**	ND<5.0	27	ND<5.0	150	23	ND<5.0	ND<5.0	ND<5.0	190
7/21/09 **(32)**	ND<2.5	22	ND<2.5	84	14	ND<2.5	ND<2.5	15	150
1/25/10 **(33)**	ND<5.0	25	ND<5.0	210	28	ND<5.0	ND<5.0*	ND<5.0	240

Well and Date	CA	1,2 DCB	1,2 DCA	cis 1,2 DCE	trns 1,2 DCE	1,2 DCP	PCE	TCE	VCL
MW-5 ("deep")									
3/26/96	1.4	ND<0.5	2.1	6.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	10
10/8/96	ND<2.5	ND<2.5	4.9	4.4	ND<2.5	ND<2.5	ND<2.5	ND<2.5	9.4
1/16/97	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/23/97 (5)	2.0	2.1	2.0	7.2	0.71	ND<0.5	ND<0.5	ND<0.5	13
10/7/97	1.9	1.4	2.8	3.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	10
12/12/98	1.4	2.0	1.1	3.7	ND<1	ND<1	ND<1.5	ND<1	5.8
4/24/99	ND<1	1.9	1.9	4.8	ND<1	ND<1	ND<1	ND<1	6.3
12/18/99	1.6	1.7	1.8	1.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.9
7/22/00	1.8	2.4	1.4	2.6	ND<1.0	ND<1.0	ND<1.0	ND<1.0	5.0
1/29/01	ND<1.0	2.2	2.6	2.2	ND<1.0	ND<1.0	ND<1.0	ND<1.0	2.2
7/28/01	1.4	1.3	1.7	1.4	ND<1.0	ND<1.0	ND<1.0	ND<1.0	2.6
2/3/02 (13)	1.8	2.0	2.1	3.9	0.95	ND<0.5	ND<0.5	ND<0.5	4.6
7/23/02	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5
1/20/03	ND<1.0	1.4	1.4	1.6	ND<1.0	ND<1.0	ND<1.0	ND<1.0	1.3
7/30/03	ND<1.0	1.2	1.1	1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	2.0
1/27/04	ND<1.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
7/22/04	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
1/20/05	1.1	0.84	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
7/20/05	ND<1.0	ND<1.0	1.3	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
1/26/06	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5
7/27/06	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5
1/25/07 (26)	ND<0.5	ND<0.5	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/19/07	ND<0.5	0.51	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
2/15/08	ND<0.5	ND<0.5	ND<0.5	0.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/25/08	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
1/23/09	ND<1.0	ND<1.0	2.6	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
7/21/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5
1/25/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.6	ND<0.5	ND<0.5
MW-6 ("shallow")									
3/26/96	ND<0.5	ND<0.5	3.9	15	ND<0.5	1.9	0.77	2	ND<0.5
10/8/96	ND<0.5	ND<0.5	2.3	9.9	ND<0.5	ND<0.5	ND<0.5	0.57	ND<0.5
1/16/97	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/23/97	ND<0.5	ND<0.5	1.6	10	ND<0.5	ND<0.5	ND<0.5	0.63	0.50
10/7/97	ND<0.5	ND<0.5	3.4	7.9	ND<0.5	ND<0.5	ND<0.5	0.82	ND<0.5
12/12/98 (7)	ND<0.5	ND<0.5	1.5	8.4	ND<0.5	ND<0.5	ND<1	ND<0.5	ND<0.5
4/24/99	ND<0.5	ND<0.5	2.3	17	ND<0.5	0.89	ND<1	0.73	0.59
12/18/99	ND<0.5	ND<0.5	2.2	8.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.62
7/22/00	ND<0.5	ND<0.5	1.2	9.3	ND<0.5	ND<0.5	ND<1.0	ND<0.5	0.97
1/29/01	ND<0.5	ND<0.5	1.1	11	ND<0.5	ND<0.5	ND<5.0	ND<0.5	0.77
7/28/01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2/3/02	ND<0.5	ND<0.5	1.5	13	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/23/02	ND<1.0	ND<1.0	ND<1.0	9.3	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
1/20/03	ND<1.0	ND<1.0	1.8	14	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
7/30/03	ND<1.0	ND<0.5	1.3	7.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.7
1/27/04 (17)	ND<2.5	ND<2.5	ND<2.5	8.4	ND<2.5	ND<2.5	ND<2.5	ND<2.5	3.2
7/22/04	ND<0.5	ND<0.5	1.3	3.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/20/05	ND<0.5	ND<0.5	0.99	8.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
720/05	ND<0.5	ND<0.5	0.79	4.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.65
1/26/06	ND<0.5	ND<0.5	0.81	6.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.90
7/27/06	ND<0.5	ND<0.5	0.82	4.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.10
1/25/07	ND<0.5	ND<0.5	ND<0.5	2.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.30
7/19/07	ND<0.5	ND<0.5	0.73	2.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.30
2/15/08	ND<0.5	ND<0.5	ND<0.5	4.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.79
7/25/08	ND<0.5	ND<0.5	0.75	0.81	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/23/09	ND<0.5	ND<0.5	ND<0.5	0.53	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/21/09	ND<0.5	ND<0.5	ND<0.5	0.66	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/25/10	ND<0.5	ND<0.5	ND<0.5	0.94	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-7 ("deep")									
6/23/97	0.93	1.6	ND<0.5	2.4	1.2	ND<0.5	9.8	17	1.5
10/7/97	ND<2	ND<2	ND<2	8.5	2.4	ND<2	38	110	ND<2
12/12/98	ND<2	2.2	ND<2	97	ND<2	ND<2	ND<3.5	ND<2	ND<2
4/24/99	ND<2	2.4	ND<2	31	ND<2	ND<2	9.3	82	ND<2
12/18/99 (9)	ND<3	5.7	ND<3	120	ND<3	ND<3	ND<3	12	ND<3

Well and Date	CA	1,2 DCB	1,2 DCA	cis 1,2 DCE	trns 1,2 DCE	1,2 DCP	PCE	TCE	VCL
MW-7 ("deep") continued									
7/22/00 (10)	ND<5	18	ND<5	170	ND<5	ND<5	ND<5	8	ND<5
1/29/01 (11)	ND<5	18	ND<5	170	ND<5	ND<5	ND<5	8	ND<5
7/28/01 (12)	ND<5	11	ND<5	170	ND<5	ND<5	ND<5	6.9	6.1
2/3/02	ND<5.0	ND<5.0	ND<5.0	94	ND<5.0	ND<5.0	ND<5.0	30	ND<5.0
7/23/02	ND<10.0	12.0	ND<10.0	180	ND<10.0	ND<10.0	ND<10.0	ND<10.0	ND<10.0
1/20/03	ND<2.5	ND<2.5	ND<2.5	50	ND<2.5	ND<2.5	11	ND<2.5	ND<2.5
7/30/03	ND<2.5	ND<2.5	ND<2.5	130	ND<2.5	ND<2.5	ND<2.5	ND<2.5	9.5
1/27/04	ND<5.0	ND<5.0	ND<5.0	130	ND<5.0	ND<5.0	ND<5.0	20	24
7/22/04	ND<5.0	ND<5.0	ND<5.0	120	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
1/20/05	ND<2.5	2.7	ND<2.5	110	ND<2.5	ND<2.5	ND<2.5	20	28
7/20/05	ND<5.0	ND<5.0	ND<5.0	250	ND<5.0	ND<5.0	ND<5.0	ND<5.0	29
1/26/06	ND<5.0	ND<5.0	ND<5.0	110	ND<5.0	ND<5.0	ND<5.0	19	37
7/27/06	ND<5.0	ND<5.0	ND<5.0	350	ND<5.0	ND<5.0	ND<5.0	ND<5.0	55
1/25/07	ND<0.5	ND<0.5	ND<0.5	29	ND<0.5	ND<0.5	ND<0.5	ND<0.5	5.9
7/19/07 (27)	ND<0.5	ND<0.5	ND<0.5	210	ND<0.5	ND<0.5	ND<0.5	ND<0.5	31
2/15/08 (28)	ND<0.5	5.5	ND<0.5	220	ND<0.5	ND<0.5	ND<0.5	28	20
7/25/08	ND<5.0	ND<5.0	ND<5.0	99	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
1/23/09	ND<5.0	ND<5.0	ND<5.0	190	ND<5.0	ND<5.0	ND<5.0	ND<5.0	26
7/21/09	ND<2.5	ND<2.5	ND<2.5	82	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5
1/25/10	ND<5.0	ND<5.0	ND<5.0	98	ND<5.0	ND<5.0	ND<5.0	ND<5.0	19
MW-8 ("shallow")									
6/23/97	ND<1	5.4	ND<1	64	ND<1	ND<1	97	100	ND<1
10/7/97	ND<0.5	1.1	ND<0.5	16	ND<0.5	ND<0.5	30	27	ND<0.5
12/12/98	ND<0.5	ND<0.5	ND<0.5	3.4	ND<0.5	ND<0.5	4.8	4.7	ND<0.5
4/24/99	ND<0.5	ND<0.5	ND<0.5	1.9	ND<0.5	ND<0.5	3.4	3.4	ND<0.5
12/18/99	ND<0.5	ND<0.5	ND<0.5	5.3	ND<0.5	ND<0.5	5.9	6.4	ND<0.5
7/22/00	ND<0.5	ND<0.5	ND<0.5	1.7	ND<0.5	ND<0.5	2.4	1.6	ND<0.5
1/29/01	ND<0.5	ND<0.5	ND<0.5	10	ND<0.5	ND<0.5	ND<5.0	8.8	ND<0.5
7/28/01	ND<0.5	ND<0.5	ND<0.5	2.6	ND<0.5	ND<0.5	ND<1.5	2.1	ND<0.5
2/3/02	ND<0.5	ND<0.5	ND<0.5	6.6	ND<0.5	ND<0.5	3.3	4.6	ND<0.5
7/23/02	ND<0.5	ND<0.5	ND<0.5	8.4	ND<0.5	ND<0.5	3.5	5.2	ND<0.5
1/20/03	ND<0.5	ND<0.5	ND<0.5	7.3	ND<0.5	ND<0.5	6	6.7	ND<0.5
7/30/03	ND<0.5	ND<0.5	ND<0.5	25	ND<0.5	ND<0.5	15	20	ND<0.5
1/27/04	ND<0.5	ND<0.5	ND<0.5	4	ND<0.5	ND<0.5	3.1	3.1	ND<0.5
7/22/04	ND<0.5	ND<0.5	ND<0.5	20	ND<0.5	ND<0.5	8.3	13	ND<0.5
1/20/05	ND<0.5	ND<0.5	ND<0.5	6.5	ND<0.5	ND<0.5	5.2	5.1	ND<0.5
7/20/05	ND<0.5	ND<0.5	ND<0.5	1.7	ND<0.5	ND<0.5	1.4	1.2	ND<0.5
1/26/06	ND<0.5	ND<0.5	ND<0.5	7.3	ND<0.5	ND<0.5	6.6	6.2	ND<0.5
7/27/06	ND<0.5	ND<0.5	ND<0.5	10	ND<0.5	ND<0.5	6.8	7.3	ND<0.5
1/25/07	ND<0.5	ND<0.5	ND<0.5	11	ND<0.5	ND<0.5	6.3	6.9	ND<0.5
7/19/07	ND<0.5	ND<0.5	ND<0.5	0.52	ND<0.5	ND<0.5	0.94	0.73	ND<0.5
2/15/08	ND<0.5	ND<0.5	ND<0.5	7.5	ND<0.5	ND<0.5	5.6	5.4	ND<0.5
7/25/08	ND<0.5	ND<0.5	ND<0.5	0.58	ND<0.5	ND<0.5	ND<0.5	0.50	ND<0.5
1/23/09	ND<0.5	ND<0.5	ND<0.5	4.9	ND<0.5	ND<0.5	2.7	3.3	ND<0.5
7/21/09	ND<0.5	ND<0.5	ND<0.5	2.3	ND<0.5	ND<0.5	1.8	2.3	ND<0.5
1/25/10	ND<0.5	ND<0.5	ND<0.5	1.6	ND<0.5	ND<0.5	1.2	1.2	ND<0.5
MW-9 (shallow")									
6/23/97 (5)	ND<1	2.1	ND<1	7.4	ND<1	ND<1	3.5	1.4	ND<1
10/7/97 (6)	ND<0.5	1.6	2.1	21	ND<0.5	0.7	ND<2	0.53	2.7
12/12/98	ND<0.5	0.7	0.53	1.9	ND<0.5	ND<0.5	ND<1	ND<0.5	ND<0.5
4/24/99	ND<0.5	0.81	0.52	3.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
12/18/99	ND<0.5	1.1	0.67	3.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.63
7/22/00	ND<1	1.4	ND<1	1.6	ND<1	ND<1	ND<1	ND<1	ND<1
1/29/01	ND<0.5	1.2	0.71	ND<0.5	8.2	ND<0.5	ND<5.0	ND<0.5	0.53
7/28/01	ND<0.5	0.87	ND<0.5	0.92	ND<0.5	ND<0.5	ND<5.0	2.5	ND<0.5
2/3/02	ND<0.5	1.2	ND<0.5	2.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/23/02	ND<2.5	3.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5
1/20/03	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1
7/30/03	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/27/04	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/22/04	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/20/05a (19)	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/20/05b (20)	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5

Well and Date	CA	1,2 DCB	1,2 DCA	cis 1,2 DCE	trns 1,2 DCE	1,2 DCP	PCE	TCE	VCL
MW-9 ("shallow") continued									
7/20/05	ND<0.5	**0.59**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/26/06	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/27/06	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/25/07	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/19/07 (27)	ND<0.5	**0.68**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
2/15/08	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/25/08	ND<0.5	**0.52**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/23/09	ND<0.5	**0.69**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7/21/09	ND<0.5	**0.68**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1/25/10	ND<0.5	**0.68**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
EB-4 (grab)									
3/8/96	ND	ND	ND	**42**	ND	ND	**130**	**340**	ND
MCL	NA	**600**	**0.5**	**6**	**10**	**5**	**7**	**5**	**0.5**

Notes to Table 4

(1) ND = non-detect; reporting limit 0.5 ug/l (ppb) unless otherwise stated
(2) N/A = not applicable
(3) Composite
(4) Abbreviations as follows:

CA	Chloroethane	1,2 DCP	1,2 Dichloropropane
1,2 DCB	1,2 Dichlorobenzene	PCE	Tetrachloroethene (perchloroethene)
1,2 DCA	1,2 Dichloroethane	TCE	trichloroethene
cis 1,2 DCE	cis 1,2 Dichloroethene	VCL	vinyl chloride
trans 1,2 DCE	trans 1,2 Dichloroethene		

(5) 6/23/97 additional detections:
MW-4: 4.8 ppb 1,4-Dichlorobenzene
MW-5: 0.53 ppb 1,4-Dichlorobenzene
MW-9: 2.1 ppb chloroform (tetrachloromethane)
(6) 10/7/97 additional detections:
MW-9: 0.65 chloroform (tetrachloromethane)
(7) 12/12/98 additional detections:
MW-4: 6.2 ppb 1,3-Dichlorobenzene
MW-4: 4.8 ppb 1,4-Dichlorobenzene
MW-6: 8.9 ppb 1,1,1-Trichloroethane
(8) 4/24/99 additional detections:
MW-1: 1.6 ppb Chloroform
MW-1: 2.5 ppb 1,4-Dichlorobenzene
(9) 12/18/99 additional detections:
MW-1: 1.3 ppb Dibromochloromethane
MW-1: 1.2 ppb 1,3-Dichlorobenzene
MW-1: 2.2 ppb 1,4-Dichlorobenzene
MW-1: 9.9 ppb 1,4-Dichlorobenzene
(10) 7/22/00 additional detections:
MW-1: 5.0 ppb 1,4 Dichlorobenzene
MW-7: 6.1 ppb 1,4 Dichlorobenzene
(11) 1/29/01 additional detections:
MW-1: 23.0 ppb 1,3 Dichlorobenzene
MW-4: 6.3 ppb 1,3 Dichlorobenzene
MW-4: 9.0 ppb 1,4 Dichlorobenzene
(12) 7/28/01 additional detections:
MW-1: 0.60 ppb 2-Chloroethyl Vinyl Ether
MW-1: 1.2 ppb 1,3 Dichlorobenzene
MW-1: 3.0 ppb 1,4 Dichlorobenzene
MW-4: 26 ppb 1,4 Dichlorobenzene
MW-7: 5.9 ppb 1,4 Dichlorobenzene

Notes continued on following page

Notes to Table 4 continued

(13) 2/3/02 additional detections:
MW-1: 0.73 ppb 2-Chloroethyl Vinyl Ether
MW-1: 1.8 ppb 1,3 Dichlorobenzene
MW-1: 3.8 ppb 1,4 Dichlorobenzene
MW-4: 9.8 ppb 1,4 Dichlorobenzene
MW-5: 0.59 ppb 1,4 Dichlorobenzene
(14) 7/23/02 additional detections:
MW-1: 112 ppb 1,3 Dichlorobenzene
(15) 1/20/03 additional detections: (none)
(16) 7/30/03 additional detections: (none)
(17) 1/27/04 additional detections:
MW-4: 11 ppb 1,3-Dichlorobenzene
MW-4: 9.7 ppb 1,4-Dichlorobenzene
MW-4: 12 ppb 1,1,2-Trichloroethane
MW-6: 13 ppb 1,1,2-Trichloroethane
(18) 7/22/04 additional detections:
MW-4: 6.9 ppb 1,3-Dichlorobenzene
MW-4: 6.2 ppb 1,4-Dichlorobenzene
(19) 1/20/05 additional detections:
MW-1: 60 ppb Chloromethane
MW-4: 5.5 ppb 1,3-Dichlorobenzene
MW-4: 7.4 ppb 1,4-Dichlorobenzene
MW-9: 0.92 ppb Bromodichloromethane
(20) Supplemental sample following initial bailer volume removal
(21) Sample discharged from bottom of bailer (A); and top of bailer (B)
(22) 7/20/05 additional detections:
MW-4: 9.3 ppb 1,3-Dichlorobenzene
MW-4: 9.1 ppb 1,4-Dichlorobenzene
(23) 1/26/06 additional detections:
MW-4: 8.2 ppb 1,3-Dichlorobenzene
MW-4: 8.5 ppb 1,4-Dichlorobenzene
(24) Sample discharged from top of bailer (A); and bottom of bailer (C)
(25) 7/27/06 additional detections:
MW-3: 5.0 ppb 1,1,2 Trichloroethane
MW-4: 6.6 ppb 1,3-Dichlorobenzene
MW-4: 6.4 ppb 1,4-Dichlorobenzene
(26) 1/25/07 additional detections:
MW-5: 1.1 ppb Chloroform
(27) 7/19/07 additional detections
MW-4: 11 ppb 1,3-Dichlorobenzene
MW-4: 8.4 ppb 1,4-Dichlorobenzene
MW-7: 41 ppb 1,1,2-Trichloroethane
MW-9: 1.6 ppb bromodichloromethane
(28) 2/15/08 additional detections
MW-4: 10 ppb 1,3-Dichlorobenzene
MW-4: 8.9 ppb 1,4-Dichlorobenzene
MW-7: 6.2 ppb chloromethane
(29) Sample collected from top of water column below floating phase product (**1C**) and from well depth of 32' (**1E**)
(30) 7/25/08 additional detections
MW-4: 7.0 ppb 1,3-Dichlorobenzene
MW-4: 5.6 ppb 1,4-Dichlorobenzene
(31) 1/23/09 additional detections
MW-4: 11 ppb 1,3-Dichlorobenzene
MW-4: 7.3 ppb 1,4-Dichlorobenzene
(32) 7/21/09 additional detections
MW-4: 8.4 ppb 1,3-Dichlorobenzene
MW-4: 9.2 ppb 1,4-Dichlorobenzene
(33) MW-3: 2.4 ppb t-Butyl Alcohol (TBA)
MW-4: 9.6 ppb 1,3-Dichlorobenzene
MW-4: 7.8 ppb 1,4-Dichlorobenzene

TABLE 5

SUMMARY OF ANALYTICAL TEST RESULTS – GROUND WATER
Polynuclear Aromatic Hydrocarbons (PNA/PAH)
(Results reported in parts per **billion**, ppb/ug/l) (1) (2) (3)

Well and Date	Phenanthrene	Naphthalene
MW-1 ("deep")		
6/23/97	**12**	**2200**
10/7/97	ND<100	**810**
7/25/08	N/A	N/A
MW-2 ("deep")		
7/25/08 (4)	N/A	ND<0.5
MW-3 ("shallow")		
7/25/08 (4)	N/A	ND<0.5
MW-4 ("deep")		
7/25/08 (4)	N/A	**4.7**
MW-5 ("deep")		
7/25/08 (4)	N/A	**16**
MW-6 ("shallow")		
7/25/08 (4)	N/A	ND<0.5
MW-7 ("deep")		
7/25/08 (4)	N/A	**10**
MW-8 ("shallow")		
7/25/08 (4)	N/A	ND<0.5
MW-9 ("shallow")		
7/25/08 (4)	N/A	ND<0.5
MCL	N/A	N/A

Notes

(1) ND = non-detect
(2) N/A = not applicable
(3) Detected compounds only
(4) Analyte included in 8260B target list.

TABLE 6

SUMMARY OF ANALYTICAL TEST RESULTS – GROUND WATER
Additional Chemical Parameters
(Results reported in parts per million, mg/l) (1)

Well and Date	Dissolved Oxygen	Ferrous Iron	Nitrate	Sulfate
MW-1 ("deep")				
10/8/96	1.5 (3)	ND	ND	ND
1/16/97	1.4 (3)	3.6	ND	ND
1/23/09	N/A	N/A	N/A	N/A
MW-2 ("deep")				
10/8/96	3.7 (3)	ND	3	25
1/16/97	5.4 (3)	0.28	3	25
1/23/09	N/A	N/A	N/A	N/A
MW-3 ("shallow")				
10/8/96	3.8 (3)	ND	ND	5
1/16/97	5.2 (3)	ND	ND	5
1/23/09	0.01 (4)	N/A	N/A	N/A
MW-4 ("deep")				
10/8/96	3.0 (3)	ND	ND	ND
1/16/97	4.7 (3)	0.75	ND	5
1/23/09	N/A	N/A	N/A	N/A
MW-5 ("deep")				
10/8/96	2.8 (3)	ND	ND	8
1/16/97	3.4 (3)	0.38	ND	9
1/23/09	N/A	N/A	N/A	N/A
MW-6 ("shallow")				
10/8/96	2.7 (3)	ND	ND	6
1/16/97	2.7 (3)	0.28	ND	8
1/23/09	0.54 (4)	N/A	N/A	N/A
MW-7 ("deep")				
10/8/96	No data: well not in existence at time of testing.			
1/16/97	No data: well not in existence at time of testing.			
1/23/09	N/A	N/A	N/A	N/A
MW-8 ("shallow")				
10/8/96	No data: well not in existence at time of testing.			
1/16/97	No data: well not in existence at time of testing.			
1/23/09 (5.0')	1.78 (4)	N/A	N/A	N/A
1/23/09 (11.5')	1.59 (4)	N/A	N/A	N/A
MW-9 ("shallow")				
10/8/96	No data: well not in existence at time of testing.			
1/16/97	No data: well not in existence at time of testing.			
1/23/09	N/A	N/A	N/A	N/A

Notes on following page

Notes

(1) ND = non-detect
(2) N/A = not applicable
(3) Sample transmitted to analytical laboratory, measured in lab by EPA Method 360.1
(4) Field measurement (see report text)

TABLE 7

SUMMARY OF ANALYTICAL TEST RESULTS – GROUND WATER
Fuel Fingerprint With Silica Gel Clean Up

Well and Date	Fuel Fingerprint
MW-1 ("deep")	
2/3/02	Significant hydrocarbon pattern between C6 and C12 that resembles gasoline. Also shows a hydrocarbon pattern between C18 and C30 that resembles oil. (See note 2).
7/25/08	Analyzed sample MW-1B (floating phase fuel product). Significant hydrocarbon pattern within the gasoline range (C6-C12) and the stoddard solvent range (C9-C12). To a lesser degree an oil range (C18-C30) pattern is also observed. (See note 3). Analytical results (note: carbon ranges overlap and thus total detection greater than 100 per cent): TPH-G (C6-C12): 920,000 mg/L. TPH-D (C10-C23): 230,000mg/L TPH-MO (C18-C36): 160,000 mg/L.
MW-2 ("deep")	
2/3/02	ND < 50 ug/L
MW-3 ("shallow")	
2/3/02	ND < 50 ug/L
MW-4 ("deep")	
2/3/02	Significant hydrocarbon pattern between C9 and C12 that resembles stoddard solvent. Also shows a hydrocarbon pattern between C18 and C30 that resembles oil. (See note 2).
MW-5 ("deep")	
2/3/02	Significant hydrocarbon pattern between C6 and C12 that resembles fresh gasoline. (See note 2).
MW-6 ("shallow")	
2/3/02	Significant hydrocarbon pattern between C6 and C12 that resembles fresh gasoline. (See note 2).
MW-7 ("deep")	
2/3/02	Significant hydrocarbon pattern between C6 and C12 that resembles fresh gasoline. (See note 2).
MW-8 ("shallow")	
2/3/02	ND < 50 ug/L
MW-9 ("shallow")	
2/3/02	Significant hydrocarbon pattern between C6 and C12 that resembles fresh gasoline. (See note 2).

Notes

(1) ND = non-detect
(2) See laboratory report in February 26, 2002 ground water sampling report for chromatograms.
(3) See laboratory report in July 2008 ground water sampling report for chromatograms.

APPENDIX B

1997 DUAL PHASE EXTRACTION PILOT TEST REPORT PREPARED BY TERRA VAC CORPORATION

TERRA VAC

DUAL VAPOR EXTRACTION PILOT STUDY
GRIMIT AUTO AND REPAIR
1970 SEMINARY AVENUE
OAKLAND, CALIFORNIA

Prepared For:

Doyle Grimit
14366 Lark Street
San Leandro, California 94578

Prepared By:

Terra Vac Corporation
1651 Alvarado Street
San Leandro, California 94577

Robert Tarr
Staff Engineer

Mark P. Frye
Project Engineer

February 5,1997

DUAL VAPOR EXTRACTION PILOT STUDY
GRIMIT AUTO AND REPAIR
1970 SEMINARY AVENUE
OAKLAND, CALIFORNIA

1.0 Introduction

At the request of Doyle Grimit, Terra Vac performed a dual vapor extraction pilot study at the Grimit Auto and Repair site. The purpose of the study was to collect data on the performance of dual vapor extraction technology when applied at the site. Terra Vac understands that this report will be used to evaluate remedial options for addressing hydrocarbon impacted soil and groundwater beneath the site.

2.0 Site Description

The project site is located at 1970 Seminary Avenue in Oakland, California. The neighborhood generally consists of residential houses with nearby one, two, or three-story apartment buildings. The property is bordered by Seminary Avenue on the northwest and Harmon Avenue on the northeast. The site comprises an automobile service building with an office, an attached canopy, and a small detached storage building.

The site is paved throughout with the exception of an approximate 900 square foot area where the former underground storage tanks (UST) were located. The UST area was over-excavated and clean soil was used as backfill.

3.0 Pilot Study Summary

The pilot study was conducted to determine; (a) the radius of influence of an applied vacuum to an existing well on-site, and (b) the resultant groundwater flow rate from that well. To complete this, Terra Vac mobilized a system which comprised of:

- 10HP blower;
- Generator;
- Carbon canister;
- Well head adapting equipment;
- Knock out pot; and
- other miscellaneous equipment.

An existing on-site well was used as the extraction well for this pilot study. The extraction well was adapted with fittings for the 10HP blower to induce a vacuum of approximately 12" Hg. The fittings included a slurp tube that extended down the well that was used to extract

groundwater. The groundwater removed from the extraction well is separated from the knock out pot. Monitoring well MW-1 was selected because the screened interval allowed soil vapors to be drawn from the surrounding subsurface area.

The radius of influence was monitored from two 1-inch black iron pipes driven into the subsurface. The driven pipes are hereinafter, referred to as observation points. Vacuum gauges connected to the observation points were used to measure the amount of vacuum produced in the soil at different distances from the extraction well.

Monitoring well MW-1 has a two-inch casing and is screened across the interval extending approximately 15 to 35 feet below grade. Prior to the start of the study, groundwater was encountered at a depth of approximately 14 feet below grade. The observation points, OB-1 and OB-2, were driven approximately six feet into the subsurface. The locations of MW-1, OB-1, and OB-2 are shown on Figure 1.

Terra Vac mobilized test equipment to the site on January 28, 1997. A 34 foot-long slurp tube was set in MW-1 and the dual vapor extraction system was operated for slightly over three hours. Throughout the duration of the study, Terra Vac monitored the vacuum applied to the slurp tube, induced air flow rates out of the extraction well, the amount of vacuum applied to the well casing and formation, and the resultant vacuum at the observation points. The rate at which groundwater was extracted from MW-1 was also noted. Two samples of the extracted soil vapors were collected and analyzed by Terra Vac for total petroleum hydrocarbons and benzene, toluene, ethylbenzene, and xylenes. Tabulated field data is presented in Table 1.

4.0 Pilot Study Results

An evaluation of the monitoring data indicates the following:

- The induced air flow rate from the extraction well was approximately 11 standard cubic feet per minute with an applied vacuum of 12 inches of mercury column.

- A significant amount of bleed air was required to maintain air flow and groundwater removal within the extraction well casing. Extraction flow rates are expected to increase significantly with continuous application of vacuum to the low permeable materials as a result of dewatering. Wells screened exclusively for dual vacuum extraction will also enhance flow rates.

- The vacuum effectively applied to the well casing and formation was approximately 4 inches of mercury column.

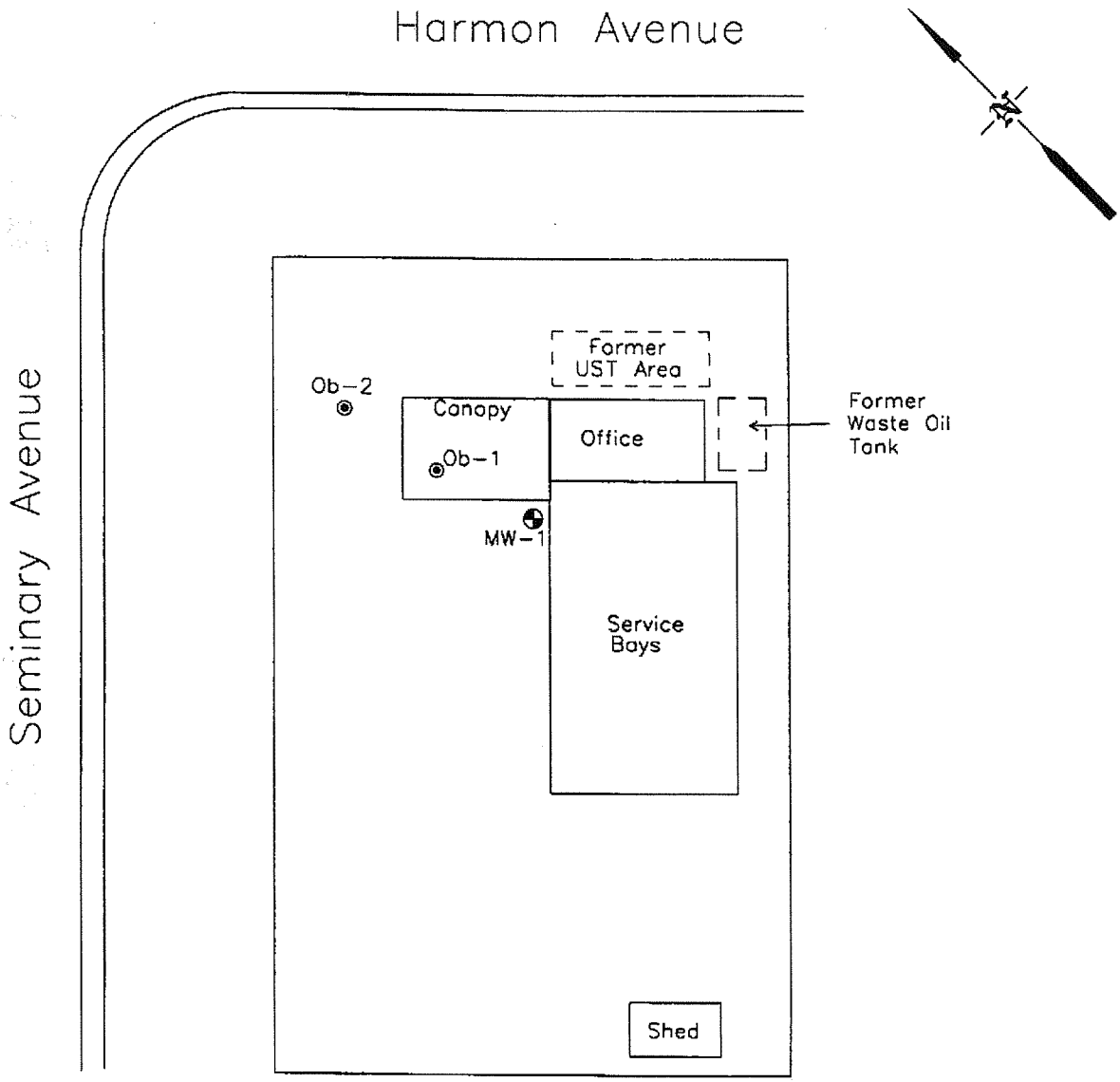
- A vacuum of approximately 0.2 inches of water column was observed in OB-1 at the end of three hours of test operation. OB-1 was located at a distance of approximately 14 feet from MW-1. At the same time, a vacuum of approximately 0.1 inches of water column

was observed in OB-2 which was located at a distance of approximately 25 feet from MW-1. The amount of vacuum observed in OB-1 is significant and is indicative of some degree of connectivity between MW-1 and OB-1. There appeared to be some connectively between MW-1 and OB-2, however the amount of induced vacuum was not as significant.

- A total of 130 gallons of groundwater were extracted during three hours of testing corresponding to an overall groundwater extraction rate of approximately 0.7 gallons per minute.

5.0 Conclusion

The radius of influence of operating the dual vapor extraction system extended to at least 14 feet, with a trace influence at approximately 25 feet from MW-1. The initial TPH-g concentrations decreased from 39.7 mg/L to to 12.6 mg/L during this study. Based on these facts, Terra Vac believes Dual Vapor Extraction, the process of extracting vapor and groundwater simultaneously, is a viable alternative to effectively and rapidly remove the subsurface contaminants at the Grimit Auto and Repair site.



LEGEND

◓ = Dual Vapor Extraction Well

Ob-1
◉ = Observation Well

Site Map
Grimit Auto and Repair
1970 Seminary Ave.
Oakland, CA

Project	30-0195	Drawn	RJT
Date	1/31/97	Revision	2/10/97
Scale	1"= 20'	Checked	

TERRA VAC 1651 Alvarado Street
San Leandro, CA 94577
(510) 351-8900 Fax: -0221

Figure 1

Table 1
Grimit Auto and Repair
Pilot Test Field Data
28 January 1997

Time	Vacuum ("Hg)	MW-1("Hg)	Ob-1 ("H2O)	Ob-2 ("H2O)	Bleed	Pitot	Remarks
1213	13.0	0.0	0.00	0.03	Open	0	Drawing H2O down
1214	(--)	0.0	0.00	(--)	Open	(--)	Stop system
1217	12.0	0.0	0.00	0.03	Open	0	Start system
1220	12.8	4.0	0.00	0.03	1/4 Open	0.8	Moderate water flow
1223	12.0	3.5	0.00	0.02	1/2 Open	0.3	**Took vapor sample 1**
1227	12.0	3.5	0.06	0.02	3/4 Open	0.2	Low water flow
1232	12.0	3.5	0.00	0.02	3/4 Open	0.6	Moderate water flow
1242	12.0	3.8	0.00	0.02	3/4 Open	0.2	Moderate water flow
1257	12.0	4.0	0.00	0.02	3/4 Open	0.2	Moderate water flow
1304	12.0	4.0	0.18	0.04	3/4 Open	0.2	Moderate water flow
1325	12.0	4.0	0.15	0.04	3/4 Open	0.4	Moderate water flow
1348	12.0	4.0	0.00	0.01	3/4 Open	0.3	Low water flow
1412	12.0	4.0	0.00	0.05	3/4 Open	3.6	Low water flow
1430	12.0	4.0	0.00	0.00	3/4 Open	5.6	Moderate water flow
1445	12.0	4.0	0.00	0.00	3/4 Open	5	Moderate water flow
1500	12.0	4.0	0.04	0.10	3/4 Open	5	Moderate water flow
1503	(--)	(--)	(--)	(--)	(--)	(--)	**Took vapor sample 2**
1504	12.0	4.0	0.10	0.10	3/4 Open	0.3	Moderate water flow
1510	12.0	4.0	0.20	0.09	3/4 Open	0.5	Moderate water flow
1515	12.0	4.0	0.18	0.08	3/4 Open	0.5	Moderate water flow
1520	12.0	4.0	0.18	0.08	3/4 Open	0.5	Moderate water flow