

C A M B R I A

RO 327

August 24, 2004

Mr. Amir Gholami
Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY
SEP 08 2004
ENVIRONMENTAL SERVICES

Re: **Feasibility Testing Work Plan**
Credit World Auto Sales
2345 International Boulevard (formerly E. 14th Street)
Oakland, California
ACHCS Case No. RO0000327
Cambria Project No. 513-1000



Dear Mr. Gholami:

On behalf of Mr. Stanley Wong, Cambria Environmental Technology, Inc. (Cambria) has prepared this *Feasibility Testing Work Plan* for the above-referenced site.

If you have any questions or comments regarding this work plan, please call me at (510) 420-3360.

Sincerely,
Cambria Environmental Technology, Inc.

Eugene Pak
Project Geologist

Attachment: Feasibility Testing Work Plan

cc: Mr. Stanley Wong, 2200 E. 12th Street, Oakland, California 94606

H:\Wong (Credit Auto), Oakland\Feasibility Test Work Plan\Feasibility Test Work Plan.doc

**Cambria
Environmental
Technology, Inc.**

5900 Hollis Street
Suite A
Emeryville, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

C A M B R I A

FEASIBILITY TESTING WORK PLAN

**Credit World Auto Sales
2345 International Boulevard
(Formerly E. 14th Street)
Oakland, California 94601
ACHCS Case No. RO0000327
Cambria Project No. 513-1000**

August 24, 2004



Prepared for:

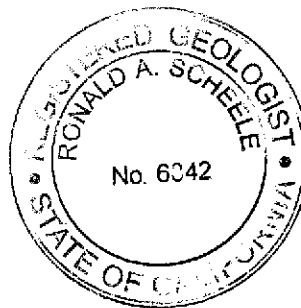
Mr. Stanley Wong
2200 East 12th Street
Oakland, California 94606

Prepared by:

Cambria Environmental Technology, Inc.
5900 Hollis Street, Suite A
Emeryville, California 94608

Written by:

Eugene Pak
Project Geologist



Ron Scheele, R.G.
Senior Geologist

**Cambria
Environmental
Technology, Inc.**

5900 Hollis Street
Suite A
Emeryville, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

Approved
SEP 03 2004
Michael J. ...

FEASIBILITY TESTING WORK PLAN
Credit World Auto Sales
2345 International Boulevard
(Formerly E. 14th Street)
Oakland, California

August 24, 2004

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FEASIBILITY TESTING WORK PLAN

Credit World Auto Sales
2345 International Boulevard
(Formerly E. 14th Street)
Oakland, California

August 24, 2004

1.0 INTRODUCTION



On behalf of Mr. Stanley Wong, Cambria Environmental Technology, Inc. (Cambria) has prepared this *Feasibility Testing Work Plan* (Work Plan) for the above-referenced site. In correspondence dated February 25, 2004, Mr. Amir Gholami of the Alameda County Health Care Services Agency (ACHCSA) approved the recommendations proposed in Cambria's *Site Summary Report* dated April 30, 2003 and requested a work plan for site assessment and feasibility testing (Appendix A). Cambria submitted the *Site Assessment Work Plan* under a separate cover dated April 13, 2004. Described herein is the proposed scope of work to complete the feasibility test. The site background, proposed scope of work, reporting details, and projected schedule are described below.

2.0 SITE BACKGROUND

2.1 Site Description


The site is located in a combined commercial and residential area on the southwest corner of the International Boulevard (formerly East 14th Street) and Miller Avenue intersection in Oakland, California (Figure 1). The site is at an elevation of approximately 23 feet above mean sea level, based on City of Oakland datum. The site is currently occupied by Credit World Auto Sales a used car dealership. An approximate 1,300 square foot building located near the southwest property boundary, is currently the only structural improvement on the site. The building is subdivided into an office space and an automotive service bay. The remainder of the site is a paved parking area (Figure 2).

The site is bound by International Boulevard to the northeast, Miller Avenue to the southeast, a car repair shop to the southwest, and a restaurant with second floor apartments to the northwest. Adjacent to the restaurant is a hotel and a residential dwelling.

2.2 Regional and Local Geology

The site is located within the Coast Range geomorphic province of California. In general, the

Coast Range province consists of Jurassic eugeosynclinal basement rocks and Cretaceous and Cenozoic sedimentary and volcanic rocks that have been faulted and folded with a northwest-southeast trend. The site lies within the Bay Plains Basin. Sediments beneath the site consist of coalescing alluvial deposits from the Diablo Range to the east known as the San Leandro Cone. According to the USGS Professional paper 943, the site is located on quaternary age alluvial deposits consisting of medium-grained, unconsolidated, moderately sorted, and permeable, fine sand, silt, and clayey silt with thin beds of coarse sand.



Previous investigations at the site encountered low to moderate permeability clays and silts with interbedded higher permeability sand and gravel layers to the maximum total depth explored [36 feet below ground surface (bgs)]. Approximately one-foot of asphalt and aggregate base material (fill) is underlain by a clay layer extending to approximately 11 to 17 feet bgs. This clay layer is underlain by a moderately permeable layer of silty to clayey sand to approximately 27 feet bgs and a gravelly clay layer to approximately 36.0 feet bgs. A highly permeable sand and/or gravel layer is sometimes present at depths ranging from 30.5 to 35.0 feet bgs. Logs for borings and wells drilled during previous investigations are presented in Appendix B. Cross sections A-A' and B-B' illustrating the stratigraphic and hydrogeologic conditions are included as Figures 3 and 4, respectively.

2.3 Regional and Local Hydrogeology

Major water-bearing zones beneath the Bay Plain Basin occur at depths ranging from 50 feet to more than 1,000 feet bgs. Groundwater from these zones is presently used largely for irrigation and industrial purposes. Regionally, groundwater flow is generally from the Diablo Range toward San Francisco Bay. The nearest surface water body to the site is Brooklyn Basin Tidal Canal located ½ mile to the west.

Two water-bearing zones are present beneath the site. The upper water-bearing zone exists at variable depths ranging from approximately 12 (MW-2) to 27 feet bgs (MW-1), and the lower water-bearing zone exists from approximately 30.5 to 35 feet bgs. The upper water-bearing zone appears to be under semi-confined or confined conditions and the two water-bearing zones are possibly hydraulically connected. Since 1991, the measured depth to groundwater beneath the site has ranged from approximately 6.6 to 17.8 feet bgs, but typically fluctuates between approximately 10 to 15 feet bgs. Historically, the groundwater flow direction has varied significantly, with groundwater flowing to the northwest or radially outward from the center of the site. The apparent radial groundwater flow direction may be explained by water mounding within the underground storage tank (UST) cavity (from August 1993 to September 1994) and within the UST excavation (after December 1994). The apparent radial groundwater flow

direction might also be explained by wells (MW-1, MW-3, and TMW-4) that are screened across two water-bearing zones. Well completion and groundwater level data are summarized on Table 1. Potentiometric surface elevation contours from the June 18, 2004 monitoring event are included on Figure 2.

2.4 Sensitive Receptors

The Alameda Harbor is located approximately 1.5 miles west of the site. The closest body of surface water is the Brooklyn Basin Tidal Canal, located ½ mile west of the site. A well survey has not been completed for the site.



2.5 Current Conditions

SPHs and elevated petroleum hydrocarbon concentrations are present in soil and groundwater throughout the site. The chemicals of concern are total petroleum hydrocarbons as gasoline (TPHg); benzene, toluene, ethylbenzene and total xylenes (BTEX); and total oil and grease (TOG). During the most recent groundwater monitoring event (June 2004), SPHs were observed in all six groundwater monitoring wells (MW-1 through MW-3, TMW-4, TMW-5 and MW-6).

Interim remedial activities have been conducted at the site since the removal of the underground storage tanks (USTs), product dispensers and associated piping in August 1988. Remedial measures implemented to date include soil excavation, groundwater bio-treatment, and passive and active SPH removal. Groundwater bio-treatment was halted in July 2002 due to ineffectiveness. SPH removal is currently ongoing with approximately 48 gallons of hydrocarbons having been removed through June 2004.

A summary of previous investigations and remedial activities are included in the *Site Assessment Work Plan*. Tabulated summaries of the well construction details, historical soil analytical data, historical groundwater analytical data, and separate-phase hydrocarbon (SPH) removal are included for reference as Tables 1 through 4, respectively.

3.0 PROPOSED SCOPE OF WORK

Cambria will conduct an aquifer test to estimate the hydraulic properties of the shallow water-bearing unit and to assist in further hydrogeological assessment. Additionally, a dual phase extraction (DPE) test will be performed to determine the feasibility of the technology.

Site Health and Safety Plan: Prior to conducting the proposed feasibility test, a comprehensive site safety plan will be prepared to protect site workers. The plan will be kept onsite and signed by each site worker prior to commencing field activities.

3.1 Objective

The objective of the proposed scope of work is to determine the feasibility and cost effectiveness of implementing either groundwater extraction (GWE) or dual-phase extraction (DPE) to remediate the site. This objective will be met by performing pilot tests that will involve the following:



- collecting hydrocarbon concentration and extraction flow rate data to estimate hydrocarbon mass removal rates;
- assessing subsurface soil conditions by collecting vapor and groundwater radius of influence data to determine the number and configuration of additional remediation wells; and
- comparing and evaluating test data and to assist in the appropriate selection and sizing of extraction and treatment equipment for use in designing a full scale remediation system.

3.2 Remediation Well Installation

The proposed feasibility test will require the installation of a remediation well (RW-1). Well RW-1 will be installed south of the former USTs and in between existing monitoring wells MW-1 and MW-6 (Figure 5). During the testing, wells MW-1 and MW-6 will serve as observation wells to measure the vacuum radius of influence and groundwater drawdown. The proposed location for RW-1 provides the optimal location for testing considering the location of the source area, the distribution of existing wells, and site access limitations.

Permits: A drilling permit will be obtained from the Alameda County Public Works Agency.

Utility Clearance: The proposed drilling location will be pre-marked and Underground Service Alert will be notified of Cambria's activities. A private subsurface utility locating contractor will be used to identify any conflicting subsurface utilities and the location will be cleared by hand auger or air knife prior to drilling.

Soil Sampling and Analysis: During drilling, soil samples will be collected continuously starting at 10 feet bgs to the completed depth. Soil samples will be collected for chemical analysis at approximate 5-foot intervals. Field screening of hydrocarbons and volatile organic compounds (VOCs) will include visual and olfactory observations, and/or photo-ionization detector (PID) readings. See Appendix C for Cambria's standard procedures for soil sampling. Select soil samples will be analyzed for TPHg by modified EPA Method 8015, and BTEX compounds and MTBE by EPA method 8021B. Samples will be submitted to a California-certified analytical laboratory for analysis.



Remediation Well Installation: Remediation well RW-1 will be installed using a hollow stem auger drill rig equipped with 10-inch diameter augers. The well will be constructed of 4-inch diameter, schedule 40 polyvinyl chloride (PVC) casing, and 0.010-inch factory slotted screen. The well will be screened from approximately 10 to 25 feet bgs to insure the screen interval includes approximately 5 feet of the vadose zone and at least 10 feet of the shallow water-bearing zone. The shallow water bearing zone is anticipated to be between 15 and 25 feet bgs. The actual well depth and screen interval will be determined based on field conditions. A filter pack consisting of No. 2/12 sand will be placed to six inches above the top of the well screen, overlain by one foot of hydrated bentonite. The remaining annulus will be filled with bentonite-cement grout to approximately 1 foot bgs. The well will be completed at the surface with a traffic-rated well box. Cambria's *Standard Field Procedures for Soil Borings and Monitoring Well Installation* is included as Appendix C.


Well Development: Cambria will develop the well by surge block agitation and groundwater evacuation. The screened interval will be surged using a 4-inch diameter vented surge block. Groundwater will be evacuated using a bailer or submersible pump until approximately ten well-casing volumes of water have been removed or the turbidity of water has been significantly reduced.

Well Survey: Following well installation, well RW-1 will be vertically and horizontally surveyed to a City of Oakland datum by a California licensed surveyor.

Monitoring Well Sampling and Analysis: Following well development activities, Cambria will collect samples from all site wells, including the newly installed well RW-1, as part of a quarterly groundwater monitoring event. However, the well will not be sampled in subsequent monitoring events. See Appendix C for Cambria's standard procedures for groundwater sampling. Groundwater samples will be analyzed for TPHg by modified EPA Method 8015, and BTEX by EPA method 8021B, with confirmation analysis for any MTBE detections by EPA Method 8260. Groundwater samples will be submitted to a California-certified analytical laboratory for analysis.

Investigation Derived Waste (IDW): Investigation derived waste (IDW) generated during field activities will be temporarily stored onsite. Following review of analytical results and disposal profiling, the IDW will be transported to an appropriate facility for disposal/recycling.

3.3 Aquifer Testing



Cambria proposes to conduct aquifer testing to estimate the hydraulic properties of the shallow water-bearing unit and to assess the feasibility of hydraulically controlling the hydrocarbon plume. The aquifer testing will include a step-drawdown test, a constant rate test, and a recovery test. Collectively, these tests will help determine aquifer hydraulic conductivity, sustainable groundwater pumping flow rates and effective groundwater drawdown. The data collected from the aquifer test will aid in the proper placement of extraction wells and sizing of system equipment.

Test Protocol: Cambria will perform a short-term step-drawdown test followed by a constant flow rate test, and rising head groundwater recovery test on proposed remediation well RW-1. At a minimum, the step-drawdown test will consist of two to four steps or cycles to estimate the optimal groundwater extraction rate for a potential groundwater extraction remediation system. The optimal extraction rate is the highest discharge required without exceeding the drawdown limit of the well (i.e. sustainable pumping rate). During the step-test, the pumping rate will be incrementally increased (stepped) until the groundwater level stabilizes. Each subsequent "step" will be predicated on data collected from the previous "step" and the height of remaining water column in the well.

If the groundwater does not quickly return to 80% of static conditions following step-drawdown testing, the constant rate test will likely be initiated the following day. The flow rate for the constant rate test will be predicated on the results of step discharge testing. The highest sustainable flow rate (with sufficient water column) from the remediation well will be used as the constant flow rate. The duration of the constant rate test will be based on the hydraulic response of the aquifer to pumping. The hydraulic response of the aquifer will be evaluated to determine if the constant rate test can be stopped. For the purpose of this constant rate test, Cambria views adequate hydraulic response as stabilized groundwater level in the observation wells (e.g. drawdown data depicts a straight line when plotted on semi-log paper). During constant rate testing, wells MW-1 through MW-6 and possibly other new groundwater monitoring wells (see *Site Assessment Report Work Plan* dated April 13, 2004) will be used as observation points. Cambria will assess radius of influence from distance-drawdown data collected during constant rate testing.

After the optimal extraction rate has been determined, the well will be quickly dewatered and a

groundwater recovery test will be conducted. The purpose of a recovery test is to determine the hydraulic conductivity of the aquifer. The groundwater recovery test will be performed by measuring the rising groundwater level at regular intervals. Groundwater level measurements will be collected every 30 seconds during the first 5 minutes of the test, followed by every 60 seconds during the next 5 to 15 minutes of the test, and finally every 5 minutes until the groundwater level in the well has recovered 90%.


The aquifer testing will be performed under the supervision of a registered geologist or professional engineer. All data from the aquifer testing will be recorded on standard field data sheets.



Equipment and Instrumentation: For all testing, groundwater will be extracted using a 2-inch diameter, variable speed Grundfos electric submersible pump. Groundwater will be pumped into a 6,500-gallon Baker Tank and stored onsite until disposal arrangements can be made. The following parameters will be monitored and recorded during each test: elapsed time, flow rate, volume pumped, well drawdown, and recharge. Except for drawdown and recharge, this data will be collected every 15 minutes, but the frequency may decrease if the data stream stabilizes. Cambria will use a flow totalizer and a rotometer to monitor the total gallons pumped and the flow rate. Drawdown and recharge will be calculated from pressure head measurements collected from each extraction and observation wells using a MiniTroll™ pressure transducer/data logger. The transducer/data logger will be programmed to record water levels a minimum of 48 hours before the aquifer pump test. The pressure transducers will be programmed to collect a data point every 1 to 5 minutes. Water level will also be checked manually with an electronic water level indicator from these and other wells to confirm pressure transducer accuracy and provide backup documentation. Barometric pressure will be monitored 48 hours preceding and throughout the aquifer pumping test by reviewing daily updates of hourly barometric pressure data collected at the Metro Oakland International Airport in Oakland, California.

Permits: Cambria will obtain the necessary approval or permits from the City of Oakland if activities require encroachment into a public right-of-way.

3.4 DPE Test



Cambria proposes a dual-phase extraction (DPE) test to confirm that hydrocarbon vapors and hydrocarbon-impacted groundwater can be effectively be extracted from the site subsurface. The DPE test will assess the air flow and hydrocarbon mass removal rates of the unsaturated zone and smear zone, and estimate the hydraulic properties of the shallow water-bearing zone near well RW-1. A DPE remedial approach will overcome the limitations of upwelling and low airflow rates created by shallow groundwater conditions. During the DPE pilot test, the groundwater table will be lowered approximately 5 feet to the base of the hydrocarbon smear zone, to expose the soil to airflow. Test data such as hydrocarbon vapor concentrations, vapor extraction flow rates, groundwater extraction flow rates, soil vapor chemistry, and radius of influence data will be collected.

Test Protocol: Prior to initiating the DPE test, a brief soil vapor extraction (SVE) test will be conducted on well RW-1. Of primary concern during this portion of the test is the vapor extraction flow rate. A portion of the proposed screen interval for well RW-1 will span the vadose zone which is reported as being a low permeability soil. The results of the SVE test under static groundwater conditions will assess the feasibility of vapor extraction in the vadose zone and additionally, allow for comparison of vapor extraction flow rates when the aquifer is dewatered. If low flow conditions and/or groundwater upwelling are observed the SVE test will be terminated.

For the DPE test, existing wells MW-1 and MW-6 will serve as the primary observation wells. To begin the test, background parameters consisting of hydrocarbon, oxygen, carbon dioxide concentrations, and depth to groundwater will be measured in all test wells. Depending on the anticipated aquifer yield, the groundwater table will be lowered using either a submersible pump (over a prior 24-hour period) or simultaneously using high vacuum pump connected to a 1-inch stinger inserted into the extraction well. Based on our understanding of the vertical extent of contaminants in soil, the groundwater table will be lowered to approximately 5 to 7 feet below the static groundwater level. The DPE test will consist of approximately four steps to determine the optimal vapor flow rate. The optimal vapor flow rate is defined by the vacuum level that produces the maximum vapor flow rate. The applied well vacuum will be increased sequentially starting at approximately 15 inches of water column (WC), and rising by increments of approximately 10-15 inches of WC until the optimal vapor flow rate is determined. The timing of subsequent well vacuum steps will be predicated on data collected from the previous step including the stabilized vacuum response observed in nearby observation wells.



After completion of the step test, Cambria will conduct a “constant vacuum” test at the optimal vapor flow rate. The test will be performed continuously for approximately 12 to 24 hours, depending upon the observation well vacuum responses. During this test, Cambria will measure the applied vacuum, hydrocarbon concentration, vapor flow rate, and depth to water in the extraction well. Vacuum in the observation wells will be measured near the end of the test. To confirm hydrocarbon concentration trends observed in field instruments, vapor samples will be collected from the vapor stream of the extraction well (prior to dilution) in Tedlar bags at the beginning and end of the test and submitted to a state certified laboratory for analysis. Test data will be compiled in specially developed field data sheets presented. The above scope of work will be performed under the supervision of a California registered geologist or professional engineer.

Equipment and Instrumentation: If the aquifer yield is anticipated to be less than 2.0 gpm based on the prior aquifer test, the DPE test will be performed using an oil-sealed liquid-ring blower for simultaneous soil vapor and groundwater extraction. If the aquifer yield is anticipated to be greater than 2.0 gpm, the DPE test will be performed using a positive displacement for soil vapor and a submersible pump for groundwater extraction. The blower will be capable of generating 20 inches of mercury vacuum and a flow rate of 400 actual cubic feet per minute (acfm). A thermal oxidizer burner will be used for soil vapor abatement. A thermal oxidizer was selected because of its ability to treat a wide range of soil vapor concentrations and its capacity to destroy up to 530 gallons of gasoline per day. A transfer pump will be used to pump groundwater from the air/water knockout tank to a 6,500-gallon baker tank. A trailer-mounted 70-kilowatt diesel generator will be used to provide electricity for the extraction and treatment equipment. A trailer mounted 500-lb propane tank will be used to provide supplemental fuel, if necessary.


A Horiba gas analyzer, calibrated to iso-butylene, will be used to field measure oxygen, carbon dioxide, and hydrocarbon vapor concentrations from the extraction well. A TSI thermoanemometer will be used to measure vapor extraction airflow rates and air temperature. Magnehelic gauges will be used to measure the vacuum applied at the wellhead and induced in the observation wells. A Solinst water level meter will be used to measure the depth of groundwater in the observation wells. A Thomas Industries vacuum pump will be used to collect soil vapor samples in one-liter Tedlar bags for laboratory analysis. Vapor samples will be analyzed for TPHg by EPA Method 8015 (Modified), and BTEX by EPA Method 8020.

Permits: Cambria will provide the necessary notification to the Bay Area Air Quality Management District (BAAQMD) prior to performing the DVE pilot test.

4.0 REPORTING

Cambria will prepare and submit a *Feasibility Testing Report* to the ACHCSA following the completion of both the aquifer test and the DPE test. The report will present the test results and evaluate whether either of the remedial approaches would be appropriate for site cleanup. The report will include tabulated field data, analytical reports and Chain-of-custody forms.

5.0 SCHEDULE

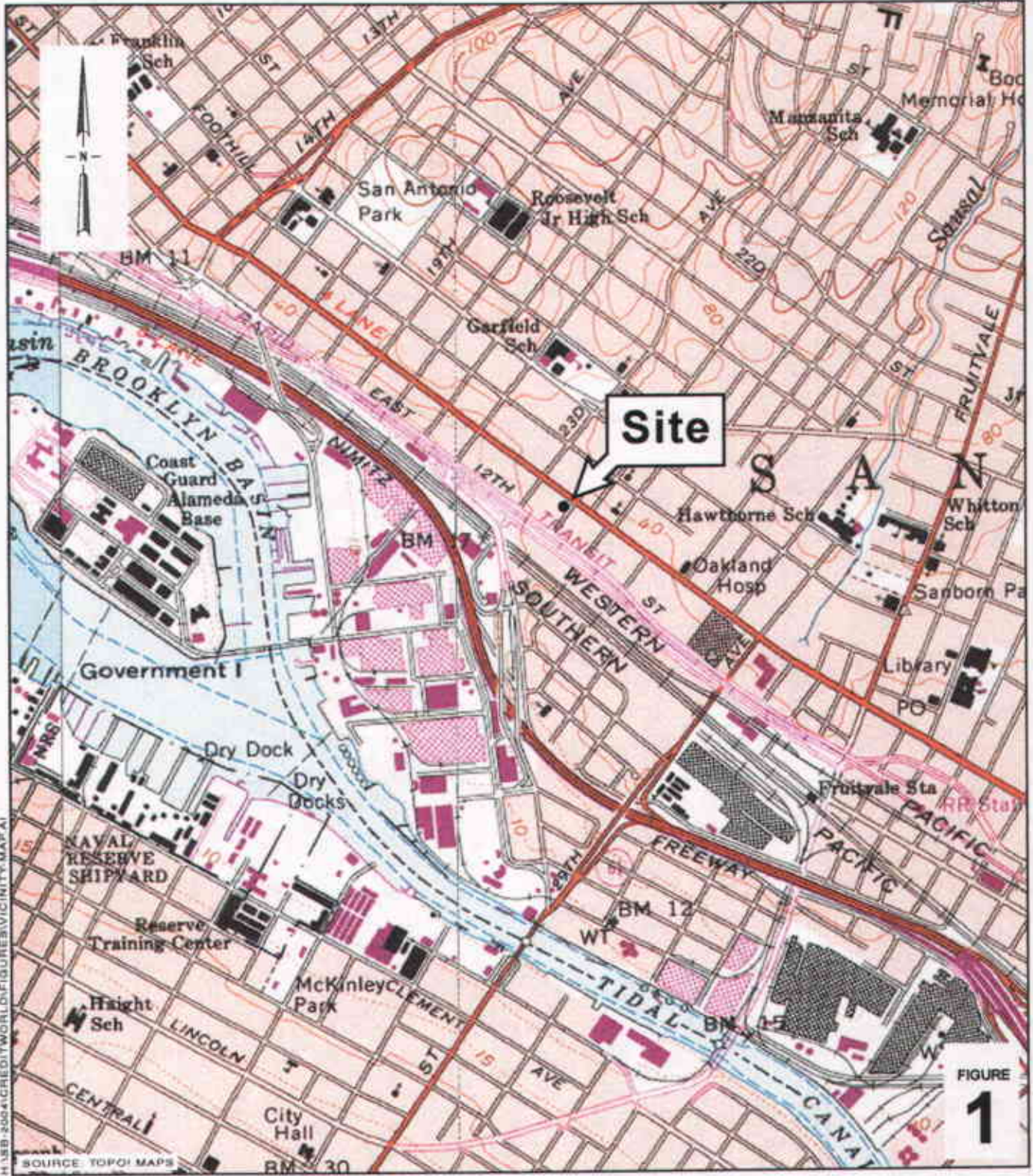


Upon receiving work plan approval from the ACHCSA, Cambria will prepare a project budget and obtain client approval of the proposed activities. The results of the feasibility test will ultimately be used in preparing a Feasibility Study/Corrective Action Plan (FS/CAP) for site remediation. Feasibility testing will be delayed until the scope of work proposed in the *Site Assessment Work Plan* has been completed. The *Site Assessment Work Plan* was submitted to the ACHCSA on April 13, 2004, and Cambria is still awaiting approval from ACHCSA. Cambria anticipates the planned testing activities and report to be completed approximately 12 to 14 weeks after completing the pending site assessment activities.

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Figures



Credit World Auto Sales
 2345 E. 14th Street
 Oakland, California



Vicinity Map

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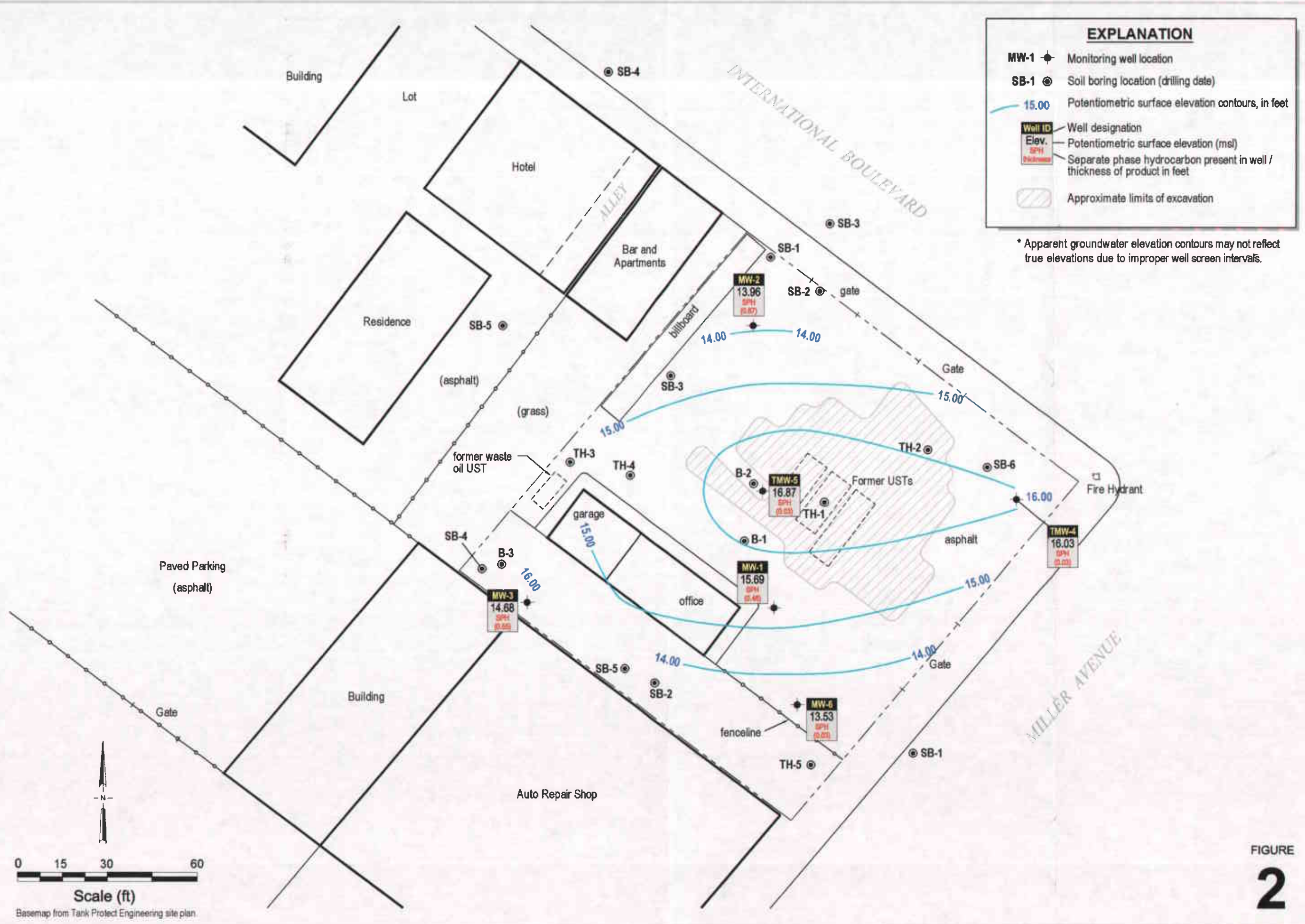
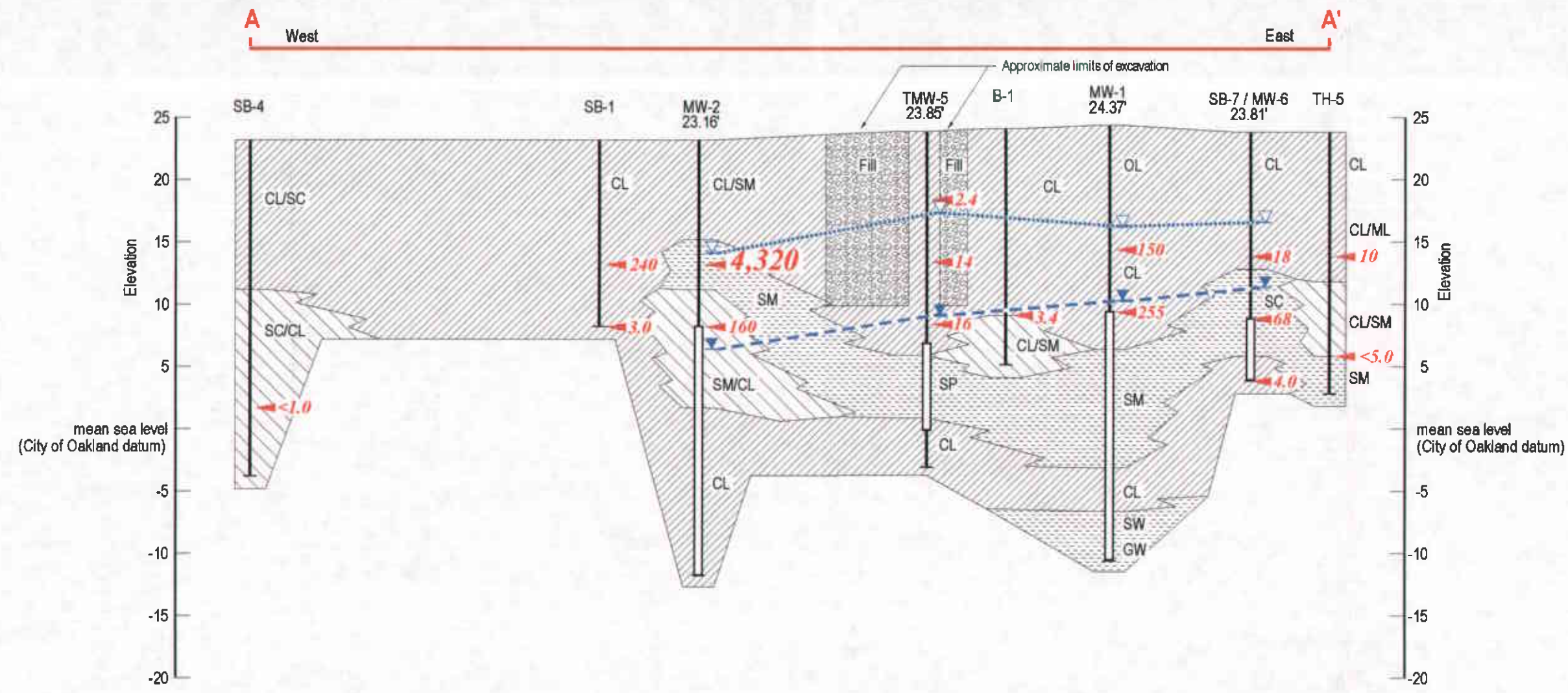


FIGURE 2





EXPLANATION

	= Low Permeability Soils CL, MH, SC, GC		Well Designation and Elevation		Highest Potentiometric Surface	CL = Clay
	= Moderate Permeability Soils SM		Groundwater Monitoring Well		Lowest Potentiometric Surface	MH = Diatomaceous Silt
	= High Permeability Soils GW, SW, SP		Well Screen Interval		Depth of Soil sample	SC = Clayey Sand
	= Fill		Bottom of boring		TPHg concentrations in soil (mg/kg), larger if above RBSL of 400 mg/kg	OL = Organic Silts
						SM = Silty Sand
						ML = Clayey Silt
						GW = Well Graded Gravel
						SW = Well Graded Sand

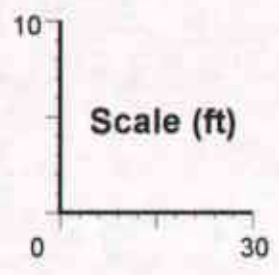
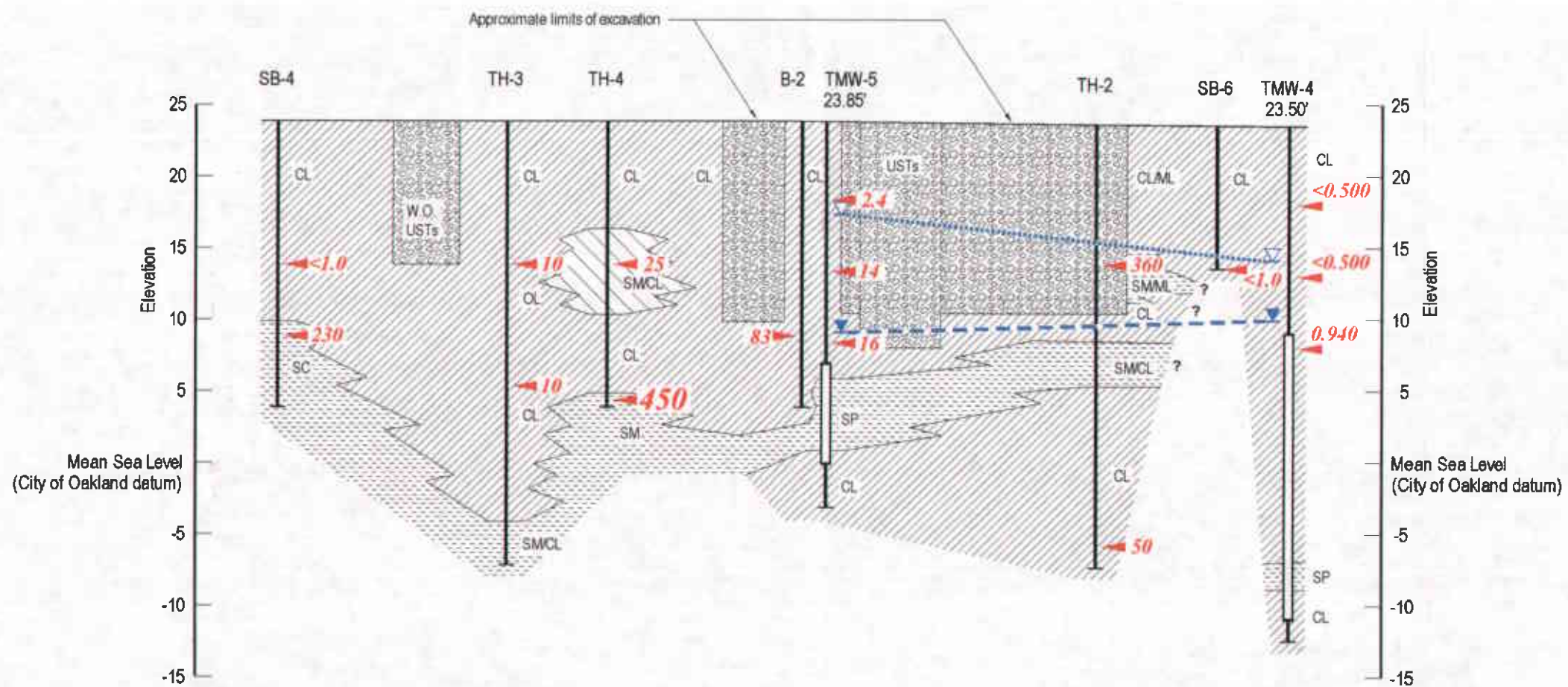


FIGURE 3

H:\SB-200\STANLEY WONG CREDIT WORLD\DWG\MESA_SECTION_A.DWG



B West East B'



Geologic Cross Section B - B'



CREDIT WORLD AUTO SALES
2345 International Boulevard
Oakland, California



EXPLANATION			
	= Low Permeability Soils CL, MH, SC, GC		Highest Potentiometric Surface
	= Moderate Permeability Soils SM, ML		Lowest Potentiometric Surface
	= High Permeability Soils GW, SW, SP		Depth of Soil sample
	= Fill (Tank Pit)	TPHg	TPHg concentrations in soil (mg/kg), larger if above RBSL of 400 mg/kg
Well ID Elev.	Well Designation and Elevation	CL	= Clay
	Groundwater Monitoring Well	OL	= Organic Silt
	Well Screen Interval	SC	= Clayey Sand
	Bottom of boring	SM	= Silty Sand
		ML	= Clayey Silt
		SP	= Poorly Graded Sand

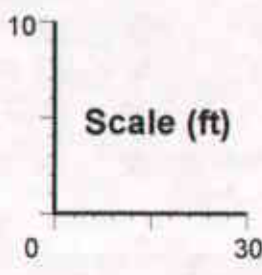


FIGURE
4

H:\SB-2004\STANLEY WONG CREDIT WORLD\FIGURE 4 SECTION B-B.DWG

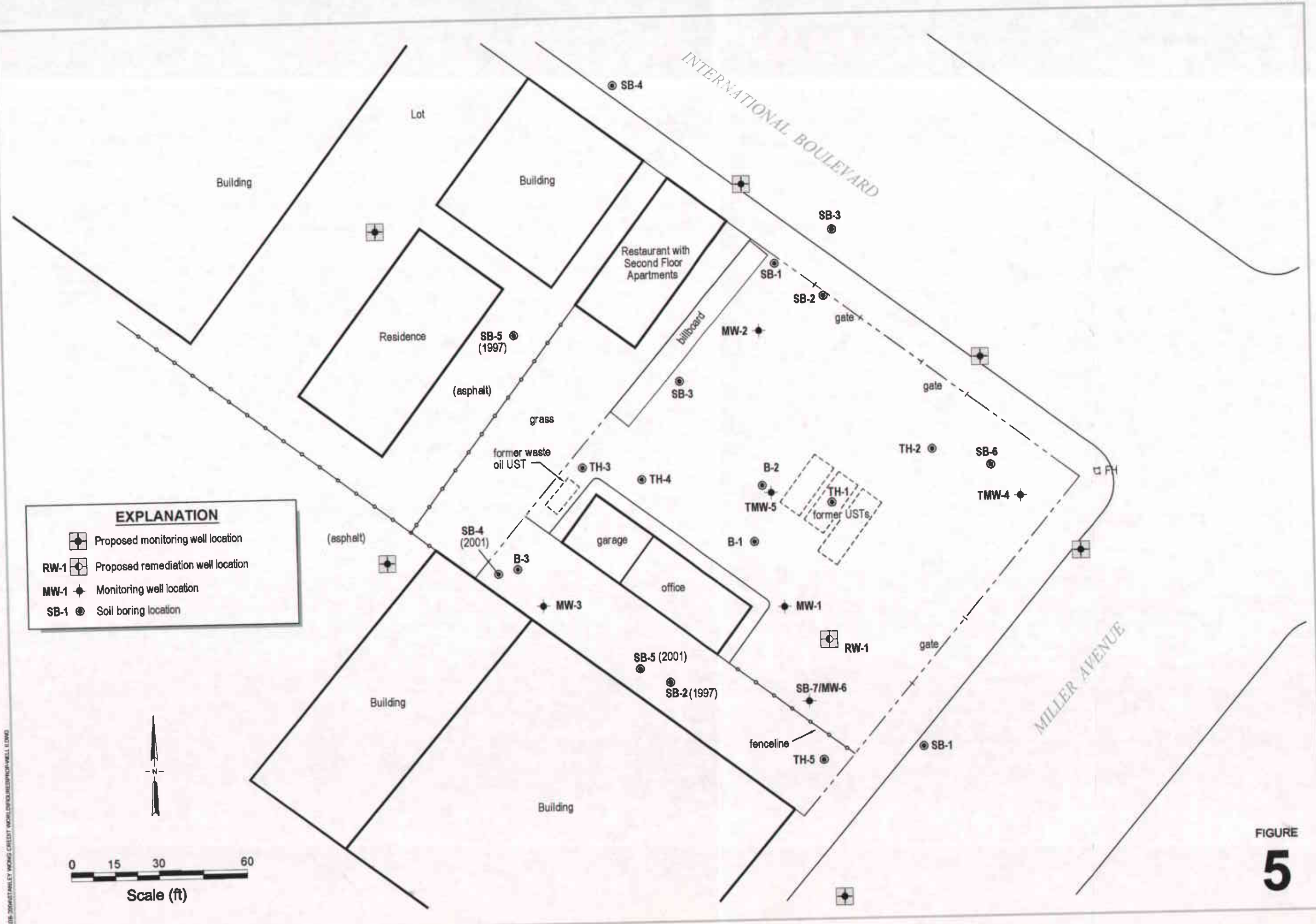


FIGURE
5

VT08 2008/04/01 11:00 AM CREDIT WORLD/PROJ/REMEDIATION/FIG 5.DWG

0 15 30 60
Scale (ft)



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Tables

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Table 1. Well Completion Data
Credit World Auto Sales 2345 International Boulevard, Oakland, California

Well No.	Installation Date	Boring Diameter (inches)	Well Diameter (inches)	Screen Size (inches)	Total Depth (feet bgs)	Surface Seal (feet bgs)	Sand Pack Interval (feet bgs)	Screened Interval (feet bgs)	First Encountered GW Depth (feet bgs)	Static GW Depth (feet bgs/date)
MW-1	5/22/1991	8	2	0.010	35	0-12	12-35	15-35	17.5	15.42 (8/23/91)
MW-2	8/21/1991	8	2	0.010	35	0-12	12-35	15-35	17.5	13.77 (8/23/91)
MW-3	8/22/1991	8	2	0.010	35	0-12	12-35	15-35	19.0	15.07 (8/23/91)
TMW-4	7/22/1993	8	2	0.010	36	0-12	12-34	14-34	~17	13.26 (8/17/93)
TMW-5	7/23/1993	8	2	0.010	27	0-15	15-24	17-24	~18	12.98 (8/17/93)
MW-6	5/22/2001	6.75	4	0.020	20	0-13	13-20	15-20	~20	12.47 (5/23/01)

bgs = below ground surface
GW = groundwater

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Table 2. Soil Analytical Data
Credit World Auto Sales 2345 International Boulevard, Oakland, California

Sample Location	Date Sampled	Depth (feet)	TPHg (mg/kg)	TPHd (mg/kg)	TOG (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	VOCs (mg/kg)	HVOCs (mg/kg)
SCS Engineers (UST Removal Sampling)												
B-1	8/25/1988	15	360	--	--	0.3	2.2	3.4	31	--	--	--
B-2	8/25/1988	15	1,500	--	--	3.0	6.4	2.5	160	--	--	--
B-3	8/25/1988	15	130	--	--	0.17	0.4	1.3	10	--	--	--
B-4	8/25/1988	--	150	--	--	0.8	1.9	8.7	86	--	--	--
B-5	8/25/1988	--	790	--	--	61	1.3	4.8	30	--	--	--
B-6	8/25/1988	--	1,300	--	--	1.5	4.7	9.6	75	--	--	--
B-7	8/25/1988	--	--	110	570	(<5.0)	(<5.0)	(5.0)	(48)	--	ND*	--
B-8	8/25/1988	--	--	65	780	(<5.0)	(<5.0)	(5.0)	(12)	--	ND*	--
California Environmental Consultants												
B-1	10/3/1988	15	3.4	--	--	0.31	<0.1	<0.1	0.14	--	--	--
B-2	10/3/1988	15	83	--	--	1.6	1.1	1.8	9.6	--	--	--
B-3	10/3/1988	15	--	--	88	(0.36)	(0.65)	(0.47)	(0.85)	--	ND*	ND
Earth Systems Environmental												
TH-1	8/21/1991	15-15.5	2,775	--	--	1.235	1.060	1.625	5.280	--	--	--
TH-2	8/21/1991	10-10.5	360	--	--	<0.005	<0.005	<0.005	0.770	--	--	--
TH-2	8/21/1991	29.5-30	50	--	--	<0.005	<0.005	<0.005	<0.005	--	--	--
TH-3	8/22/1991	10-10.5	10	--	60	<0.005	<0.005	<0.005	<0.005	--	--	--
TH-3	8/22/1991	18.5-19	10	--	20	<0.005	<0.005	<0.005	<0.005	--	--	--
TH-4	8/22/1991	10-10.5	25	--	40	<0.005	<0.005	<0.005	0.175	--	--	--
TH-4	8/22/1991	19.5-20	450	--	1,600	<0.005	<0.005	<0.005	<0.005	--	--	--
TH-5	8/22/1991	10-10.5	10	--	--	<0.005	<0.005	<0.005	<0.005	--	--	--
TH-5	8/22/1991	18-18.5	<5.0	--	--	<0.005	<0.005	<0.005	<0.005	--	--	--
MW-1	5/22/1991	10-10.5	150	--	--	0.460	0.365	0.305	0.960	--	--	--
MW-1	5/22/1991	15-15.5	255	--	--	1.505	4.255	4.015	4.270	--	--	--
MW-2	8/21/1991	10-10.5	4,320	--	--	7.275	6.620	3.470	13.815	--	--	--
MW-2	8/21/1991	15-15.5	160	--	--	<0.005	<0.005	<0.005	<0.005	--	--	--
MW-3	8/22/1991	10-10.5	50	--	90	<0.005	<0.005	<0.005	<0.005	--	--	--
MW-3	8/22/1991	15-15.5	25	--	40	<0.005	<0.005	<0.005	<0.005	--	--	--

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Table 2. Soil Analytical Data
Credit World Auto Sales 2345 International Boulevard, Oakland, California

Sample Location	Date Sampled	Depth (feet)	TPHg (mg/kg)	TPHd (mg/kg)	TOG (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	VOCs (mg/kg)	HVOCs (mg/kg)
Tank Protect Engineering												
TMW-4	7/22/1993	5.5-6	<0.500	--	--	<0.0050	<0.0050	<0.0050	<0.015	--	--	--
TMW-4	7/22/1993	10.5-11	<0.500	--	--	<0.0050	<0.0050	<0.0050	<0.015	--	--	--
TMW-4	7/22/1993	15.5-16	0.940	--	--	<0.0050	<0.0050	<0.0050	<0.015	--	--	--
TMW-5	7/23/1993	5.5-6	2.4	--	--	0.026	<0.0050	<0.0050	0.053	--	--	--
TMW-5	7/23/1993	10.5-11	14	--	--	0.900	<0.0050	1.6	<0.140	--	--	--
TMW-5	7/23/1993	15.5-16	16	--	--	0.840	<0.0050	0.690	1.3	--	--	--
SB-1	4/21/1997	26.5-27	<1.0	--	--	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
SB-2	4/21/1997	16.5-17	3.7	--	--	0.012	0.0071	0.042	<0.005	<0.05	--	--
SB-3	5/1/1997	21.5-22	<1.0	--	--	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
SB-4	5/1/1997	21.5-22	<1.0	--	--	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
SB-5	5/1/1997	11.5-12	91	--	--	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
Sequoia Environmental												
SB-1	5/22/2001	10	240	--	--	<0.04	0.19	0.19	0.45	<0.20	--	--
SB-1	5/22/2001	15	3.0	--	--	<0.005	0.005	0.009	0.013	<0.05	--	--
SB-2	5/22/2001	10	89	--	--	<0.005	<0.005	0.033	0.25	<0.10	--	--
SB-2	5/22/2001	15	<1.0	--	--	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
SB-2	5/22/2001	20	<1.0	--	--	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
SB-3	5/22/2001	10	300	--	--	<0.01	<0.01	0.76	1.2	<0.20	--	--
SB-3	5/22/2001	15	1,800	--	--	3.3	5.5	48	53	<2.0	--	--
SB-3	5/22/2001	20	8.5	--	--	0.009	0.023	0.10	0.12	<0.05	--	--
SB-4	5/22/2001	10	<1.0	--	--	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
SB-4	5/22/2001	15	230	--	--	0.23	<0.005	1.5	1.1	<0.10	--	--
SB-4	5/22/2001	20	<1.0	--	--	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
SB-5	5/22/2001	15	25	--	--	0.035	<0.005	0.10	0.11	<0.05	--	--
SB-5	5/22/2001	20	1.9	--	--	0.62	<0.005	<0.005	<0.005	<0.05	--	--
SB-6	5/22/2001	10	<1.0	--	--	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
SB-7 (MW-6)	5/22/2001	10	18	--	--	<0.005	<0.005	0.056	0.11	<0.05	--	--
SB-7 (MW-6)	5/22/2001	15	68	--	--	0.28	0.25	0.36	0.35	<0.10	--	--
SB-7 (MW-6)	5/22/2001	20	<1.0	--	--	<0.005	<0.005	<0.005	<0.005	<0.05	--	--

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Table 2. Soil Analytical Data
Credit World Auto Sales 2345 International Boulevard, Oakland, California

Sample Location	Date Sampled	Depth (feet)	TPHg (mg/kg)	TPHd (mg/kg)	TOG (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	VOCs (mg/kg)	HVOCs (mg/kg)
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Abbreviations and Notes:

1,300 = concentrations exceeding commercial final RBSLs shown in bold.

TPHg = Total petroleum hydrocarbons as gasoline

Benzene, Toluene, Ethylbenzene, Xylenes by EPA Method 8020, and by 8260 if in parenthesis

MTBE methyl tert butyl ether by EPA Method 8020

VOCs = volatile organic compounds by EPA Method 8260

ND = not detected above laboratory detection limits

ND* = not detected with the exception of reported concentrations for benzene, toluene, ethylbenzene and xylenes

HVOCs = halogenated volatile organic compounds by EPA Method 8010

mg/kg = Milligrams per kilogram

<n = Below detection limit of n mg/kg

-- = Not analyzed

Residential RBSLs = Table B-1 - Risk Based Screening Level Components for Surface Soil (Potentially Impacted Groundwater is not a Current or Potential Source of Drinking Water) for commercial/industrial reuse for established by the SFBRWQCB, Interim Final December 2001. (The risk driver is also shown). MTBE RBSL for coarse soil (fine soil).

Commercial RBSLs = Table B-2 - Risk Based Screening Level Components for Surface Soil (Potentially Impacted Groundwater is not a Current or Potential Source of Drinking Water) for commercial/industrial reuse for established by the SFBRWQCB, Interim Final December 2001. (The risk driver is also shown). MTBE RBSL for coarse soil (fine soil).

RBSLs for indoor air = Tables B-1 and B-2 from SFBRWQCB above, Interim Final December 2001

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Table 3. Potentiometric Surface Elevation and Analytical Data
Credit World Auto Sales, 2345 International Boulevard, Oakland, California

Well ID TOC	Date Sampled	Casing Elevation (feet)	Depth to GW (ft)	SPH Thickness (ft)	Potentiometric Surface Elevation (ft)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)
MW-1	12/30/1997	27.33 ^a	10.96	0.17	16.51	61,000	4,300	1,800	1,600	6,900	1,400
100.000 ^a	3/24/1998	27.33	9.33	0.00	18.00	24,000	1,000	1,000	1,300	4,300	2,000
27.33 ^b	6/29/1998	27.33	12.20	0.00	15.13	130,000	3,800	370	1,200	4,200	3,300
	10/2/1998	27.33	13.46	0.00	13.87	22,000	66	21	26	140	<0.50
	12/10/1998	27.33	10.49	0.00	16.84	32,000	4,600	970	1,700	4,900	<250
	3/26/1999	27.33	9.44	0.00	17.89	230,000	370	290	280	720	<0.50
	6/11/1999	27.33	12.56	0.01	14.78	180,000	210	170	220	400	<0.50
	9/15/1999	27.33	14.85	1.00	13.28	21,000	3,800	280	590	2,200	<250
	12/28/1999	27.33	14.50	1.32	13.89	27,000	48	36	46	83	<0.5
	6/13/2001	24.37 ^c	15.83	4.36	12.03	--	--	--	--	--	--
	12/27/2002	24.37	8.31	0.16	16.19	--	--	--	--	--	--
	3/23/2003	21.37	10.65	0.05	16.72	--	--	--	--	--	--
	5/29/2003	27.33	12.11	0.28	15.44	--	--	--	--	--	--
	9/26/2003	27.33	12.84	0.29	14.72	--	--	--	--	--	--
	12/4/2003	27.33	12.50	0.10	14.91	--	--	--	--	--	--
	3/12/2004	27.33	10.45	0.52	17.30	--	--	--	--	--	--
	6/18/2004	27.33	12.01	0.46	15.69	--	--	--	--	--	--
MW-2	8/23/1991	98.585 ^a	13.77	0.00	12.15	10,000	<5	<5	<5	<5	--
98.585 ^a	4/16/1992	25.92 ^b	15.38	2.81	12.79	--	--	--	--	--	--
25.92 ^b	6/11/1993	25.92	13.19	0.00	12.74	--	--	--	--	--	--
	8/17/1993	25.92	14.04	0.01	11.89	49,000	94	240	250	980	--
	3/28/1994	25.92	13.61	0.54	12.74	14,000	4,200	<250	910	1,400	--
	6/27/1994	25.92	14.24	0.80	12.32	24,000	4,400	72	1,100	1,700	--
	9/16/1994	25.92	17.82	4.46	11.67	40,000	2,300	250	2,000	4,100	--
	3/31/1995	25.92	16.72	7.44	15.15	28,000	4,000	<120	1,100	1,400	--
	6/28/1995	25.92	13.50	0.73	13.00	40,000	2,700	130	1,700	2,900	--
	9/28/1995	25.92	14.63	0.54	11.72	7,500	420	14	250	190	<62
	12/26/1995	25.92	12.58	0.90	14.06	22,000	1,300	88	950	1,800	<250
	3/22/1996	25.92	11.46	0.15	14.58	9,800	2,200	<120	400	<380	<1,200

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Table 3. Potentiometric Surface Elevation and Analytical Data
Credit World Auto Sales, 2345 International Boulevard, Oakland, California

Well ID TOC	Date Sampled	Casing Elevation (feet)	Depth to GW (ft)	SPH Thickness (ft)	Potentiometric	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)
					Surface Elevation (ft)						
MW-2	6/20/1996	25.92	13.08	0.37	13.14	35,000	770	<0.50	240	<0.50	550
(cont'd)	9/30/1996	25.92	16.67	3.75	12.25	58,000	1,600	230	2,200	4,000	<5.0
	12/27/1996	25.92	15.74	7.57	16.24	29,000	2,100	<0.50	1,200	1,800	<5.0
	3/7/1997	25.92	12.55	0.00	13.37	13,000	1,300	37	290	180	<5.0
	6/28/1997	25.92	11.98	0.04	13.97	12,000	840	<0.50	640	360	<5.0
	9/18/1997	25.92	13.44	0.00	12.48	12,000	680	<0.50	320	84	<5.0
	12/30/1997	25.92	11.31	0.00	14.61	13,000	1,100	40	350	220	<5.0
	3/25/1998	25.92	10.02	0.00	15.90	8,100	1,300	51	410	230	670
	6/29/1998	25.92	11.96	0.00	13.96	12,000	880	13	180	72	430
	10/2/1998	25.92	13.74	0.00	12.18	47,000	140	100	110	200	<0.50
	12/10/1998	25.92	12.91	2.10	14.69	26,000	1,000	210	1,500	1,900	<1,000
	3/26/1999	25.92	9.06	0.20	17.02	110,000	190	150	120	380	<0.50
	6/11/1999	25.92	12.18	0.00	13.74	190,000	310	250	320	540	<0.50
	9/15/1999	25.92	15.59	3.00	12.73	25,000	720	<100	1,300	1,600	<1,000
	12/28/1999	25.92	16.81	4.50	12.71	75,000	130	98	130	230	<0.50
	6/13/2001	23.16 ^c	14.84	3.15	10.84	--	--	--	--	--	--
	6/20/2002	23.16 ^c	14.80	0.70	8.92	53,000	2,200	140	3,300	3,000	<1,000
	10/21/2002	23.16 ^c	16.98	0.24	6.37	--	--	--	--	--	--
	12/27/2002	23.16 ^c	13.58	0.43	9.92	--	--	--	--	--	--
	3/23/2003	20.16e	15.49	0.29	10.66	--	--	--	--	--	--
	5/29/2003	20.16e	16.08	0.44	10.19	--	--	--	--	--	--
	9/26/2003	20.16e	17.14	0.87	9.48	--	--	--	--	--	--
	12/4/2003	20.16e	16.75	1.01	9.98	--	--	--	--	--	--
	3/12/2004	20.16e	11.19	2.14	16.44	--	--	--	--	--	--
	6/18/2004	20.16e	12.66	0.87	13.96	--	--	--	--	--	--

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Table 3. Potentiometric Surface Elevation and Analytical Data
Credit World Auto Sales, 2345 International Boulevard, Oakland, California

Well ID TOC	Date Sampled	Casing Elevation (feet)	Depth to GW (ft)	SPH Thickness (ft)	Potentiometric	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)
					Surface Elevation (ft)						
MW-3	8/23/1991	99.25 ^a	15.07	0.00	12.50	<5,000	<5	<5	<5	<5	--
99.25 ^a	4/16/1992	27.57 ^b	14.14	0.16	13.56	--	--	--	--	--	--
27.57 ^b	6/11/1993	27.57	14.28	0.00	13.30	--	--	--	--	--	--
	8/17/1993	27.57	15.77	0.00	11.80	9,600	4.1	17	28	54	--
	3/28/1994	27.57	14.35	0.00	13.22	8,400	2,400	56	67	200	--
	6/27/1994	27.57	14.77	0.00	12.80	9,900	3,300	<22	<25	73	--
	9/16/1994	27.57	15.42	0.05	12.19	16,000	2,300	80	620	240	--
	3/31/1995	27.57	12.98	0.46	14.96	16,000	2,800	70	<25	920	--
	6/28/1995	27.57	14.20	0.05	13.41	11,000	2,300	32	81	240	--
	9/28/1995	27.57	15.17	0.00	12.40	6,300	1,900	<42	200	<120	<420
	12/26/1995	27.57	13.33	0.06	14.29	25,000	3,800	97	94	1,600	<250
	3/22/1995	27.57	12.81	0.04	14.79	16,000	3,100	75	69	350	250
	6/20/1996	27.57	13.95	0.07	13.68	8,500	1,400	28	140	15	220
	9/24/1996	27.57	14.86	0.04	12.74	12,000	2,400	87	340	110	<5.0
	12/27/1996	27.57	11.04	0.06	16.58	5,800	1,700	28	<0.50	42	240
	3/10/1997	27.57	13.80	0.00	13.77	9,000	1,700	<0.50	110	<0.50	<5.0
	6/28/1997	27.57	13.72	0.06	13.90	15,000	2,200	<0.50	160	190	<5.0
	9/18/1997	27.57	14.76	0.00	12.81	28,000	3,800	<0.50	100	<0.50	<5.0
	12/30/1997	27.57	12.97	0.00	14.60	21,000	2,200	<0.50	31	<0.50	300
	3/24/1998	27.57	11.75	0.00	15.82	2,300	870	7.2	20	<0.50	85
	6/29/1998	27.57	13.38	0.00	14.19	6,500	1,300	12	62	14	140
	10/2/1998	27.57	14.42	0.00	13.15	11,000	31	27	35	69	<0.50
	12/10/1998	27.57	12.55	0.00	15.02	<2,500	2,800	68	42	55	<250
	3/26/1999	27.57	10.54	0.00	17.03	10,000	21	14	10	41	<0.50
	6/15/1999	27.57	13.91	0.00	13.66	87,000	90	71	92	180	<0.50
	9/15/1999	27.57	14.70	0.00	12.87	8,700	2,100	71	110	66	<100
	12/28/1999	27.57	15.16	0.25	12.61	4,300	7.7	5.2	7.2	13	<0.50
	6/13/2001	27.57	14.70	0.40	13.19	8,400	1,300	25	64	32	<20
	6/20/2002	27.57	14.68	0.02	12.91	7,800	1,100	23	66	15	<50
	12/27/2002	27.57	11.37	0.17	16.34	--	--	--	--	--	--

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Table 3. Potentiometric Surface Elevation and Analytical Data
Credit World Auto Sales, 2345 International Boulevard, Oakland, California

Well ID TOC	Date Sampled	Casing Elevation (feet)	Depth to GW (ft)	SPH Thickness (ft)	Potentiometric	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)
					Surface Elevation (ft)						
MW-3	3/23/2003	27.57	--	--	--	--	--	--	--	--	--
(cont'd)	5/29/2003	27.57	13.99	0.08	13.64	--	--	--	--	--	--
	9/26/2003	27.57	14.51	0.05	13.10	--	--	--	--	--	--
	12/4/2003	27.57	14.28	0.10	13.37	--	--	--	--	--	--
	3/12/2004	27.57	11.95	0.42	15.96	--	--	--	--	--	--
	6/18/2004	27.57	13.33	0.55	14.68	--	--	--	--	--	--
TMW-4	8/17/1993	26.50 ^b	13.26	0.00	13.24	150	<0.50	0.8	1.4	3.7	--
26.50 ^b	3/28/1994	26.50	12.40	0.00	14.10	<50	<0.50	<0.50	<0.50	<1.5	--
	6/27/1994	26.50	12.84	0.00	13.66	<50	<0.50	<0.50	<0.50	<1.5	--
	9/16/1994	26.50	13.58	0.00	12.92	<50	<0.50	<0.50	<0.50	<1.5	--
	3/31/1995	26.50	10.23	0.00	16.27	<50	<0.50	<0.50	<0.50	<1.5	--
	6/28/1995	26.50	12.21	0.00	14.29	<50	<0.50	<0.50	<0.50	<1.5	--
	9/28/1995	26.50	13.38	0.00	13.12	<50	<0.50	<0.50	<0.50	<1.5	<5.0
	12/26/1995	26.50	11.32	0.00	15.18	<50	<0.50	<0.50	<0.50	<1.5	<5.0
	3/22/1996	26.50	10.54	0.00	15.96	<50	<0.50	<0.50	<0.50	<1.5	<5.0
	6/20/1996	26.50	12.14	0.00	14.36	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	9/24/1996	26.50	13.01	0.00	13.49	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	12/27/1996	26.50	9.51	0.00	16.99	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	3/10/1997	26.50	11.92	0.00	14.58	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	6/27/1997	26.50	10.70	0.00	15.80	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	9/18/1997	26.50	12.94	0.00	13.56	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	12/30/1997	26.50	10.92	0.00	15.58	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	3/25/1998	26.50	9.60	0.00	16.90	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	6/29/1998	26.50	11.32	0.00	15.18	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	10/2/1998	26.50	12.56	0.00	13.94	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	12/10/1998	26.50	10.44	0.00	16.06	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	3/26/1999	26.50	9.38	0.00	17.12	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	6/15/1999	26.50	11.58	0.00	14.92	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	9/15/1999	26.50	12.89	0.00	13.61	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	12/28/1999	26.50	12.92	0.00	13.58	<50	<0.50	<0.50	<0.50	<0.50	<5.0

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Table 3. Potentiometric Surface Elevation and Analytical Data
Credit World Auto Sales, 2345 International Boulevard, Oakland, California

Well ID TOC	Date Sampled	Casing Elevation (feet)	Depth to GW (ft)	SPH Thickness (ft)	Potentiometric	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)
					Surface Elevation (ft)						
TMW-4 <i>(cont'd)</i>	10/21/2002	26.50	12.70	0.00	13.80	--	--	--	--	--	--
	12/27/2002	26.50	9.07	0.12	17.53	--	--	--	--	--	--
	3/23/2003	26.50	10.73	0.03	15.79	--	--	--	--	--	--
	5/29/2003	26.50	12.50	0.02	14.02	--	--	--	--	--	--
	9/26/2003	26.50	13.27	0.06	13.28	--	--	--	--	--	--
	12/4/2003	26.50	13.07	0.10	13.51	--	--	--	--	--	--
	3/12/2004	26.50	9.82	0.02	16.70	--	--	--	--	--	--
	6/18/2004	26.50	10.49	0.03	16.03	--	--	--	--	--	--
TMW-5 26.51 ^b	8/17/1993	26.51 ^b	12.98	0.03	13.55	120,000	640	730	790	3,600	--
	3/28/1994	26.51	11.39	0.00	15.12	70,000	23,000	1,500	4,100	15,000	--
	6/28/1994	26.51	12.24	0.00	14.27	56,000	26,000	940	5,500	26,000	--
	9/16/1994	26.51	13.02	0.05	13.53	96,000	17,000	720	3,500	12,000	--
	3/31/1995	26.51	7.38	0.00	19.13	64,000	13,000	470	3,500	6,100	--
	6/28/1995	26.51	11.31	0.06	15.25	65,000	9,000	240	2,600	5,300	--
	9/28/1995	26.51	14.42	0.00	12.09	79,000	17,000	1,800	2,700	7,000	<1,200
	12/26/1995	26.51	10.16	0.05	16.39	110,000	11,000	800	2,300	4,500	<1,200
	3/22/1996	26.51	7.59	0.05	18.96	--	--	--	--	--	--
	6/26/1996	--	7.12	0.00	--	30,000	4,000	180	1,500	2,500	830
	9/30/1996	--	7.42	0.00	--	6,900	1,600	79	130	370	<5.0
	12/27/1996	--	6.38	0.00	--	78,000	12,000	1,900	2,900	9,700	<5.0
	3/10/1997	--	11.12	0.00	--	84,000	9,900	1,100	2,600	8,800	<5.0
	8/17/1997	--	12.98	0.03	--	--	--	--	--	--	--
	9/18/1997	--	12.00	0.00	--	65,000	8,000	<0.5	2,000	4,700	<5.0
	12/30/1997	--	8.97	0.00	--	79,000	6,400	340	2,300	5,500	<5.0
	3/25/1998	--	7.32	0.00	--	20,000	6,000	260	2,700	5,800	2,400
	6/29/1998	--	11.50	0.00	--	--	--	--	--	--	--
	10/8/1998	--	12.56	0.00	--	46,000	120	98	120	240	<0.50
	12/8/1998	--	10.14	0.00	--	46,000	5,900	320	2,200	5,400	<1,200
3/26/1999	--	7.08	0.00	--	35,000	69	61	37	120	<0.50	
6/11/1999	--	11.40	0.00	--	26,000	29	32	43	72	<0.50	

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Table 3. Potentiometric Surface Elevation and Analytical Data
Credit World Auto Sales, 2345 International Boulevard, Oakland, California

Well ID TOC	Date Sampled	Casing Elevation (feet)	Depth to GW (ft)	SPH Thickness (ft)	Potentiometric Surface Elevation (ft)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)
TMW-5	9/15/1999	--	12.52	0.00	--	37,000	7,300	400	2,400	6,000	<1,000
(cont'd)	12/28/1999	--	12.44	0.00	--	25,000	44	32	41	75	<0.50
	5/23/2001	23.85 ^c	11.31	0.00	12.54	--	--	--	--	--	--
	6/20/2002	23.85	11.29	0.05	12.60	51,000	5,100	290	2,300	5,800	<250
	10/21/2002	23.85	13.60	0.10	10.33	--	--	--	--	--	--
	12/27/2002	23.85	6.60	0.07	17.31	--	--	--	--	--	--
	3/23/2003		9.79	0.04	16.75	--	--	--	--	--	--
	5/29/2003		11.29	0.04	15.25	--	--	--	--	--	--
	9/26/2003		12.47	0.07	14.10	--	--	--	--	--	--
	12/4/2003		12.35	0.10	14.24	--	--	--	--	--	--
	3/12/2004		8.15	0.02	18.38	--	--	--	--	--	--
	6/18/2004		9.66	0.03	16.87	--	--	--	--	--	--
MW-6	5/23/2001	23.81 ^c	12.47	0.00	11.34	--	--	--	--	--	--
23.81 ^c	6/13/2001	23.81	12.47	0.00	11.34	7,600	1,400	42	19	14	<10
	6/20/2002	23.81	12.45	0.00	11.36	79	5.7	<0.5	<0.5	<0.5	<5.0
	12/27/2002	23.81	7.24	0.04	16.60	--	--	--	--	--	--
	3/23/2003	20.81	--	--	--	--	--	--	--	--	--
	5/29/2003	23.81	11.95	0.02	11.88	--	--	--	--	--	--
	9/26/2003	23.81	13.11	0.03	10.72	--	--	--	--	--	--
	12/4/2003	23.81	13.14	0.10	10.75	--	--	--	--	--	--
	3/12/2004	23.81	8.93	0.02	14.90	--	--	--	--	--	--
	6/18/2004	23.81	10.30	0.03	13.53	--	--	--	--	--	--

Abbreviations and Methods:

TOC = Top of well casing elevation measured in feet below top of casing

Depth to GW = Depth to groundwater relative to top of casing

(ft) = measured in feet

SPH = Separate phase hydrocarbons

GW Elevation = Groundwater elevation in relation to mean sea level; calculated according to the relationship GW elevation = TOC - DTW + (0.8)(SPH thickness)

(ug/L) = micrograms per liter

TPHg = Total petroleum hydrocarbons as gasoline by modified EPA Method 8015

Benzene, Toluene, Ethylbenzene, Xylenes by EPA Method 8020, and by 8260 if in parenthesis

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Table 3. Potentiometric Surface Elevation and Analytical Data
Credit World Auto Sales, 2345 International Boulevard, Oakland, California

Well ID <i>TOC</i>	Date Sampled	Casing Elevation (feet)	Depth to GW (ft)	SPH Thickness (ft)	Potentiometric Surface Elevation (ft)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)
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MTBE = methyl tertiary butyl ether by EPA Method 8020

-- = Not available, not analyzed, or does not apply.

a = Relative to site datum established by Earth Systems Engineering surveyed August 1981

b = Top of casing elevation surveyed 8/10/93 by professional engineer (unknown datum)

c = Top of casing elevation surveyed 6/13/01 to City of Oakland datum by Renner Survey Company of Burlingame, CA. for Sequoia Environmental.

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Table 4. Separate-Phase Hydrocarbon Removal
Credit World Auto Sales, 2345 International Blvd, Oakland, California

Well ID	Date Sampled	Depth to SPH (feet bgs)	Depth to GW (feet bgs)	SPH Thickness (feet)	Hydrocarbons Removed (liters)	Hydrocarbons Removed (gallons)	Cumulative Hydrocarbons Removed (gallons)
MW-1	12/30/1997	10.79	10.96	0.17	0.10	0.027	0.027
	6/11/1999	12.55	12.56	0.01	0.01	0.002	0.029
	9/15/1999	13.85	14.85	1.00	0.60	0.159	0.187
	12/28/1999	8.15	8.31	0.16	0.10	0.025	0.212
	6/13/2001	8.15	8.31	0.16	0.10	0.025	0.238
	12/27/2003	8.15	8.31	0.16	3.00	0.793	1.030
	3/23/2003	10.60	10.65	0.05	1.26	0.333	1.363
	4/4/2003	10.19	10.23	0.04	0.94	0.250	1.613
	5/1/2003	9.80	9.85	0.05	0.49	0.125	1.738
	5/29/2003	11.83	12.11	0.28	1.00	0.264	2.002
	7/25/2003	11.99	12.24	0.25	0.50	0.132	2.135
	8/11/2003	12.07	12.37	0.30	0.50	0.132	2.267
	8/29/2003	12.07	12.40	0.33	0.50	0.132	2.399
	9/12/2003	12.59	12.90	0.31	0.48	0.127	2.526
	9/26/2003	12.55	12.84	0.29	0.50	0.132	2.658
	10/10/2003	12.61	12.72	0.11	0.11	0.029	2.687
	10/30/2003	12.68	12.75	0.07	0.08	0.021	2.708
	11/25/2003	12.59	12.69	0.10	0.10	0.026	2.734
	12/4/2003	12.40	12.50	0.10	0.10	0.026	2.761
	12/23/2003	11.97	12.08	0.11	0.10	0.026	2.787
	1/30/2004	9.64	10.05	0.41	0.75	0.198	2.985
	2/20/2004	9.50	9.97	0.47	0.50	0.132	3.117
	3/12/2004	9.93	10.45	0.52	1.00	0.264	3.381
	3/30/2004	10.35	11.21	0.86	1.11	0.293	3.675
	4/14/2004	11.77	12.65	0.88	1.00	0.264	3.939
4/23/2004	11.60	12.11	0.51	1.00	0.264	4.203	
5/7/2004	11.63	12.05	0.42	1.00	0.264	4.467	
5/28/2004	11.68	12.08	0.40	1.00	0.264	4.731	
6/4/2004	11.51	11.94	0.43	0.50	0.132	4.863	
6/18/2004	11.55	12.01	0.46	0.33	0.087	4.951	
MW-2	6/28/1995	12.77	13.50	0.73	0.44	0.116	2.118
	9/28/1995	14.09	14.63	0.54	0.32	0.086	2.204
	12/26/1995	11.68	12.58	0.90	0.54	0.143	2.346
	3/22/1996	11.31	11.46	0.15	0.09	0.024	2.370
	6/20/1996	12.71	13.08	0.37	0.22	0.059	2.429
	9/30/1996	12.92	16.67	3.75	2.25	0.594	3.023
	12/27/1996	8.17	15.74	7.57	4.54	1.200	4.223
	6/28/1997	11.94	11.98	0.04	0.02	0.006	4.229
	9/18/1997	13.44	13.44	0.00	0.00	0.000	4.229
	12/10/1998	10.81	12.91	2.10	1.26	0.333	4.562
	3/26/1999	8.86	9.06	0.20	0.12	0.032	4.594
	9/15/1999	12.59	15.59	3.00	1.80	0.476	5.069
	12/28/1999	12.31	16.81	4.50	2.70	0.713	5.783
	6/13/2001	11.69	14.84	3.15	1.89	0.499	6.282
	6/20/2002	14.10	14.80	0.70	0.42	0.111	6.393
	10/21/2002	16.74	16.98	0.24	0.14	0.038	6.431
	12/27/2002	13.15	13.58	0.43	3.00	0.793	7.224
	3/23/2003	15.20	15.49	0.29	5.68	1.500	8.724
	4/4/2003	14.72	14.80	0.08	3.78	1.000	9.724
	5/1/2003	13.59	13.63	0.04	0.49	0.125	9.849
5/29/2003	15.64	16.08	0.44	1.00	0.264	10.113	

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Table 4. Separate-Phase Hydrocarbon Removal
Credit World Auto Sales, 2345 International Blvd, Oakland, California

Well ID	Date Sampled	Depth to SPH (feet bgs)	Depth to GW (feet bgs)	SPH Thickness (feet)	Hydrocarbons Removed (liters)	Hydrocarbons Removed (gallons)	Cumulative Hydrocarbons Removed (gallons)
MW-2 (cont.)	7/25/2003	15.81	16.31	0.50	0.50	0.132	10.245
	8/11/2003	15.99	16.44	0.45	0.50	0.132	10.377
	8/29/2003	15.92	16.75	0.83	0.50	0.132	10.509
	9/12/2003	16.29	17.10	0.81	0.95	0.251	10.760
	9/26/2003	16.27	17.14	0.87	1.90	0.502	11.262
	10/10/2003	16.35	17.10	0.75	1.89	0.500	11.762
	10/30/2003	16.41	17.03	0.62	0.95	0.250	12.012
	11/25/2003	16.08	16.98	0.90	3.79	1.000	13.012
	12/4/2003	15.74	16.75	1.01	3.79	1.000	14.012
	12/11/2003	15.81	16.90	1.09	3.79	1.000	15.012
	12/23/2003	15.60	16.55	0.95	3.79	1.000	16.012
	1/30/2004	8.91	10.69	1.78	3.00	0.793	16.804
	2/20/2004	8.74	10.72	1.98	4.00	1.057	17.861
	3/12/2004	9.05	11.19	2.14	6.41	1.693	19.554
	3/30/2004	10.16	10.67	0.51	0.51	0.135	19.689
	4/14/2004	11.18	12.61	1.43	1.50	0.396	20.085
	4/23/2004	11.79	12.84	1.05	3.50	0.925	21.010
5/7/2004	11.75	12.89	1.14	5.00	1.321	22.331	
5/28/2004	11.83	12.77	0.94	5.00	1.321	23.652	
6/4/2004	11.77	12.62	0.85	4.50	1.189	24.841	
6/18/2004	11.79	12.66	0.87	5.00	1.321	26.161	
MW-3	4/16/1992	13.98	14.14	0.16	0.10	0.025	0.030
	9/16/1994	15.37	15.42	0.05	0.03	0.008	0.038
	3/31/1995	12.52	12.98	0.46	0.28	0.073	0.111
	6/28/1995	14.15	14.20	0.05	0.03	0.008	0.119
	12/26/1995	13.27	13.33	0.06	0.04	0.010	0.128
	3/22/1995	12.77	12.81	0.04	0.02	0.006	0.135
	6/20/1996	13.88	13.95	0.07	0.04	0.011	0.146
	9/24/1996	14.82	14.86	0.04	0.02	0.006	0.152
	12/27/1996	10.98	11.04	0.06	0.04	0.010	0.162
	6/28/1997	13.66	13.72	0.06	0.04	0.010	0.171
	12/28/1999	14.91	15.16	0.25	0.15	0.040	0.211
	6/13/2001	14.30	14.70	0.40	0.24	0.063	0.274
	6/20/2002	14.66	14.68	0.02	0.01	0.003	0.277
	12/27/2002	11.20	11.37	0.17	3.00	0.793	1.070
	5/29/2003	13.91	13.99	0.08	0.01	0.026	1.096
	7/25/2003	14.02	14.12	0.10	0.20	0.053	1.149
	8/11/2003	14.25	14.35	0.10	0.15	0.040	1.189
	8/29/2003	14.18	14.33	0.15	0.15	0.040	1.228
	9/12/2003	14.41	14.55	0.14	0.10	0.026	1.255
	9/26/2003	14.46	14.51	0.05	0.15	0.040	1.294
	10/10/2003	14.50	14.58	0.08	0.20	0.053	1.347
	10/30/2003	14.59	14.63	0.04	0.12	0.032	1.379
	11/25/2003	14.30	14.40	0.10	0.11	0.029	1.408
	12/4/2003	14.18	14.28	0.10	0.10	0.026	1.434
	12/23/2003	13.81	13.91	0.10	0.05	0.013	1.448
	1/30/2004	10.16	10.53	0.37	1.00	0.264	1.712
	2/20/2004	10.08	10.48	0.40	1.00	0.264	1.976
	3/12/2004	11.53	11.95	0.42	2.25	0.594	2.570
	3/30/2004	12.14	12.18	0.04	0.60	0.159	2.729
	4/14/2004	12.81	13.42	0.61	1.50	0.396	3.125
4/23/2004	12.94	13.53	0.59	3.50	0.925	4.050	
5/7/2004	12.99	13.43	0.44	4.50	1.189	5.238	
5/28/2004	12.74	13.32	0.58	5.00	1.321	6.559	
6/4/2004	12.70	13.29	0.59	5.00	1.321	7.880	
6/18/2004	12.78	13.33	0.55	5.00	1.321	9.201	

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Table 4. Separate-Phase Hydrocarbon Removal
Credit World Auto Sales, 2345 International Blvd, Oakland, California

Well ID	Date Sampled	Depth to SPH (feet bgs)	Depth to GW (feet bgs)	SPH Thickness (feet)	Hydrocarbons Removed (liters)	Hydrocarbons Removed (gallons)	Cumulative Hydrocarbons Removed (gallons)
TMW-4	12/27/2002	8.95	9.07	0.12	1.50	0.396	0.396
	3/23/2003	10.70	10.73	0.03	0.95	0.250	0.646
	4/4/2003	10.35	10.40	0.05	0.95	0.250	0.896
	5/1/2003	10.07	10.09	0.02	0.49	0.125	1.021
	5/29/2003	12.48	12.50	0.02	0.00	0.001	1.022
	7/25/2003	12.61	12.67	0.06	0.05	0.013	1.035
	8/11/2003	14.49	14.59	0.10	0.10	0.026	1.061
	8/29/2003	12.93	12.95	0.02	0.05	0.013	1.075
	9/12/2003	13.24	13.29	0.05	0.03	0.008	1.083
	9/26/2003	13.21	13.27	0.06	0.04	0.011	1.093
	10/10/2003	13.31	13.40	0.09	0.05	0.013	1.106
	10/30/2003	13.30	13.38	0.08	0.04	0.011	1.117
	11/25/2003	13.09	13.19	0.10	0.02	0.005	1.122
	12/4/2003	12.97	13.07	0.10	0.05	0.013	1.135
	12/23/2003	13.59	13.69	0.10	0.05	0.013	1.149
	1/30/2004	9.45	9.47	0.02	0.01	0.003	1.151
	2/20/2004	9.37	9.39	0.02	0.01	0.003	1.154
	3/12/2004	9.80	9.82	0.02	0.01	0.003	1.157
	3/30/2004	10.11	10.12	0.01	0.00	0.000	1.157
	4/14/2004	10.89	10.93	0.04	0.01	0.003	1.159
4/23/2004	10.68	10.71	0.03	0.01	0.003	1.162	
5/7/2004	10.50	10.53	0.03	0.04	0.011	1.172	
5/28/2004	10.56	10.60	0.04	0.01	0.003	1.175	
6/4/2004	10.49	10.52	0.03	0.01	0.003	1.178	
6/18/2004	10.46	10.49	0.03	0.01	0.003	1.180	
TMW-5	8/17/1993	12.95	12.98	0.03	0.02	0.005	0.000
	9/16/1994	12.97	13.02	0.05	0.03	0.008	0.008
	6/28/1995	11.25	11.31	0.06	0.04	0.010	0.017
	12/26/1995	10.11	10.16	0.05	0.03	0.008	0.025
	3/22/1996	7.54	7.59	0.05	0.03	0.008	0.033
	8/17/1997	12.95	12.98	0.03	0.02	0.005	0.038
	5/23/2001	--	11.31	0.00	0.00	0.000	0.038
	6/20/2002	11.24	11.29	0.05	0.03	0.008	0.046
	10/21/2002	13.50	13.60	0.10	0.06	0.016	0.062
	12/27/2002	13.50	13.60	0.10	1.50	0.396	0.458
	3/23/2003	9.75	9.79	0.04	0.95	0.250	0.708
	4/4/2003	9.40	9.45	0.05	0.49	0.125	0.833
	5/1/2003	8.93	8.95	0.02	0.38	0.100	0.933
	5/29/2003	11.25	11.29	0.04	0.01	0.013	0.946
	7/25/2003	11.33	11.37	0.04	0.02	0.005	0.952
	8/11/2003	11.47	11.49	0.02	0.01	0.003	0.954
	8/29/2003	12.10	12.17	0.07	0.02	0.005	0.959
	9/12/2003	12.45	12.50	0.05	0.03	0.008	0.967
	9/26/2003	12.40	12.47	0.07	0.02	0.005	0.973
	10/10/2003	12.51	12.61	0.10	0.02	0.005	0.978
	10/30/2003	12.65	12.70	0.05	0.01	0.003	0.981
	11/25/2003	12.39	12.49	0.10	0.01	0.003	0.983
	12/4/2003	12.25	12.35	0.10	0.01	0.001	0.985
	12/23/2003	13.78	13.88	0.10	0.01	0.003	0.987
	1/30/2004	7.63	7.65	0.02	0.01	0.003	0.990
	2/20/2004	7.65	7.67	0.02	0.01	0.003	0.993
	3/12/2004	8.13	8.15	0.02	0.01	0.003	0.995
	3/30/2004	9.09	9.09	0.00	0.00	0.000	0.995
4/14/2004	9.69	9.73	0.04	0.01	0.003	0.998	
4/23/2004	9.74	9.77	0.03	0.01	0.003	1.000	
5/7/2004	9.61	9.64	0.03	0.04	0.011	1.011	
5/28/2004	9.69	9.72	0.03	0.01	0.003	1.014	
6/4/2004	9.61	9.64	0.03	0.01	0.003	1.016	
6/18/2004	9.63	9.66	0.03	0.01	0.003	1.019	

CAMBRIA

Table 4. Separate-Phase Hydrocarbon Removal
Credit World Auto Sales, 2345 International Blvd, Oakland, California

Well ID	Date Sampled	Depth to SPH (feet bgs)	Depth to GW (feet bgs)	SPH Thickness (feet)	Hydrocarbons Removed (liters)	Hydrocarbons Removed (gallons)	Cumulative Hydrocarbons Removed (gallons)
MW-6	12/27/2002	7.20	7.24	0.04	1.50	0.390	0.390
	5/29/2003	11.93	11.95	0.02	0.01	0.013	0.403
	7/25/2003	12.05	12.07	0.02	0.02	0.005	0.408
	8/11/2003	12.18	12.20	0.02	0.01	0.003	0.411
	8/29/2003	12.74	12.77	0.03	0.05	0.013	0.424
	9/12/2003	13.09	13.15	0.06	0.05	0.013	0.438
	9/26/2003	13.08	13.11	0.03	0.05	0.013	0.451
	10/10/2003	13.27	13.43	0.16	0.08	0.021	0.472
	10/30/2003	13.32	13.40	0.08	0.05	0.013	0.485
	11/25/2003	13.09	13.24	0.15	0.04	0.011	0.496
	12/4/2003	13.04	13.14	0.10	0.02	0.005	0.501
	12/23/2003	13.50	13.60	0.10	0.01	0.003	0.504
	1/30/2004	8.42	8.44	0.02	0.01	0.003	0.506
	2/20/2004	8.38	8.40	0.02	0.01	0.003	0.509
	3/12/2004	8.91	8.93	0.02	0.01	0.003	0.512
	3/30/2004	9.68	9.69	0.01	0.00	0.000	0.512
	4/14/2004	10.14	10.18	0.04	0.01	0.003	0.514
	4/23/2004	10.19	10.22	0.03	0.01	0.003	0.517
	5/7/2004	10.25	10.28	0.03	0.04	0.011	0.527
	5/28/2004	10.27	10.30	0.03	0.01	0.003	0.530
6/4/2004	10.24	10.27	0.03	0.01	0.003	0.533	
6/18/2004	10.27	10.30	0.03	0.01	0.003	0.535	
<i>Hydrocarbons removed by bailing or purging (gallons) =</i>							43.05
<i>Hydrocarbons removed by Tank Protect (see below) (gallons) =</i>							5.0
<i>Total estimated hydrocarbons removed (gallons) =</i>							48.05

Note = approximately 3 to 5 gallons reported removed by Tank Protect between 8/20/97 and 1/14/98 with continuous free product removal system.
 GW = Groundwater
 bgs = below ground surface
 SPH = Separate phase hydrocarbons
 SPH removal volumes were provided for 5/23/01, 6/13/01, and 12/27/02 data.
 The volume of hydrocarbons removed prior to 12/27/2002 were estimated by multiplying the well casing volume (2" diameter casing = 0.60L/ft)
 by the SPH thickness (feet)

C A M B R I A



Appendix A

Agency Correspondence

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY
DAVID J. KEARS, Agency Director



ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway
Alameda, CA 94502-6577
(510) 567-6700
Fax (510) 337-9335

February 25, 2004

Mr. Stanley Wong
2200 E. 12th St.
Oakland CA 94606

Dear Mr. Wong:

Subject: Fuel Leak Case No. R00000327, 2345 E. 14th St., Oakland, CA94601

Alameda County Environmental Health, Local Oversight Program (LOP), has received and reviewed the Site Summary Report document dated April 30, 2003, regarding the above referenced site, prepared by Mr. Robert Clark-Riddell of Cambria Environmental. I have also called and discussed with Mr. Ron Scheele of Cambria Environmental. As you are aware, there had been a verbal approval of the recommendations and interim remedial activities per my discussions with Ms. Mary Holland-Ford of Cambria Environmental.

This office requests that you address the following technical comments, perform the proposed work, and send us the technical reports requested below:

TECHNICAL COMMENTS

This site summary report recommends continual monitoring, interim remedial activity, further assessment or investigation of the plume, along with feasibility studies.

This office concurs with your recommendations as specified above.

TECHNICAL REPORT REQUEST

Please submit the following technical reports to Alameda County Department of Environmental Health (Attention: Amir K. Gholami):

March 31, 2004 Work Plan

Should you have any questions, please do not hesitate to call me at (510) 567-6876.

Sincerely,

Amir K. Gholami
Hazardous Materials Specialist

C: A.gholami, D.Drogos
Mr. Robert Clark-Riddell of Cambria Environmental, 5900 Hollis
St., Suite A, Emeryville, CA 94608

C A M B R I A



Appendix B

Soil Boring Logs and Well Construction Details

WELL CONSTRUCTION		CHEMICAL ANALYSES				U.S.C.S. DESIGN.	SOIL DESCRIPTION
		Laboratory	Field	BLOW COUNT	DEPTH (feet)		
TPH (mg/kg)		PID (ppm)					
WELL COVERED					0		
2"	Hard Cement						
5'			5	5	5	OL	Organic Clay, trace silt, sand & gravel, dark gray to black, very slightly moist, medium dense, good plasticity, no stain, no odor
10'	Bentonite	150	35	10	10	OL	8014-1 Same as above, minor silt, shell fragments, moderate hydrocarbon like odor
15'			9	15	15	OL	8014-2 Fat Clay, trace silt, grayish brown, moist, medium dense, good plasticity, gray stain, strong odor
20'	2 1/2" Coarse Sand	255	45	20	20	SM	Silty Gravelly Sand, gray, saturated, loose, gray stain, moderate odor
25'				25	25	SM	Same as above, brown, no stain, no odor
30'				30	30	CL	Fat clay, minor sand brown, saturated, medium dense, good plasticity, no stain, no odor
35'				35	35	SW	well graded sand
						GW	well graded gravel
						V	TD 35'

Geologist: ESB - Mark Magarac, R/C.
 Wong's Taxi
 Project Number: 23-80147

Driller: Consolidated Testing
 LOG of BORING
 MW-1
 5/22/91

PLATE
 Page / of /

WELL CONSTRUCTION	CHEMICAL ANALYSES		BLOW COUNT	DEPTH (feet)	SAMPLE NUMBER	U.S.C.S. DESIGN.	SOIL DESCRIPTION
	Laboratory	Field					
	TPH (mg/kg)	PID (ppm)					
2" PVC BENTONITE			5	5		CL/SM	Silty Clay with minor gravelly sand, dark greenish gray, slightly moist, medium dense, good plasticity, no stain, very slight hydrocarbon like odor
Bentonite	4320	360	7	10	8014-6	SM	Silty sand, slightly moist, dark gray, loose, gray staining, strong odor
2" PVC BENTONITE			7	15	8014-7	SM/CL	Silty Clay, sand with minor gravel, light greenish gray, moist, medium dense, no stain, very slight odor
2" PVC BENTONITE	160	1250	7	20		SM/CL	same as above, saturated, no odor
2" PVC BENTONITE				25		CL	fat clay, greenish brown, saturated, medium dense good plasticity, no stain, no odor
2" PVC BENTONITE				30		CL	same as above
2" PVC BENTONITE				35		CL	same as above

Geologist: 655 - Mark Magarac, R. G.

Driller: SB/S

PLATE

Wong's Taxi

LOG of BORING

MW-2

Project Number: CB-8014-1

8/2/91

Page 1 of 1

WELL CONSTRUCTION	CHEMICAL ANALYSES		BLOW COUNT	DEPTH (feet)	SAMPLER	SAMPLE NUMBER	U.S.C.S. DESIGN.	SOIL DESCRIPTION
	Laboratory	Field						
	TPH (mg/kg)	PID (ppm)						
2" PVC Blank				0				
2" PVC Blank				5			CL/sm	Fat Clay, trace gravelly silt sand, dark greenish gray, slightly moist, medium dense, good plasticity, no stain, no odor
2 1/2" PVC Blank	50	nd		10	port 12		OL	Organic clay, greenish brown, moist, medium dense, good plasticity, no stain, no odor
2 1/2" PVC Blank	25	70		15	port 13		sm	silty sand, dark gray, moist, loose, no stain, no odor
2 1/2" PVC Blank				20			SM/CL	silty clayey sand, gray, saturated, medium dense, no stain, no odor
2 1/2" PVC Blank				25			CL	Fat Clay, greenish brown saturated, medium dense, good plasticity, no stain, no odor
2 1/2" PVC Blank				30			CL	Same as above
2 1/2" PVC Blank				35			SM	silty sand, light green, saturated, loose, no stain, no odor

Geologist: ESB - Mark Magruder, R.G. Driller: S O / S

Wong's Taxi

Project Number: EB-80147 8/2/91

LOG of BORING

MW-3

PLATE

Page 1 of 1

LOG OF EXPLORATORY BORING

PROJECT NUMBER 267

BORING NO. TMW-4

PROJECT NAME 2345 EAST 14TH STREET, OAKLAND CA.

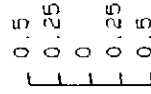
BY LNH

DATE 7/22/93

SURFACE ELEV. 27 FT

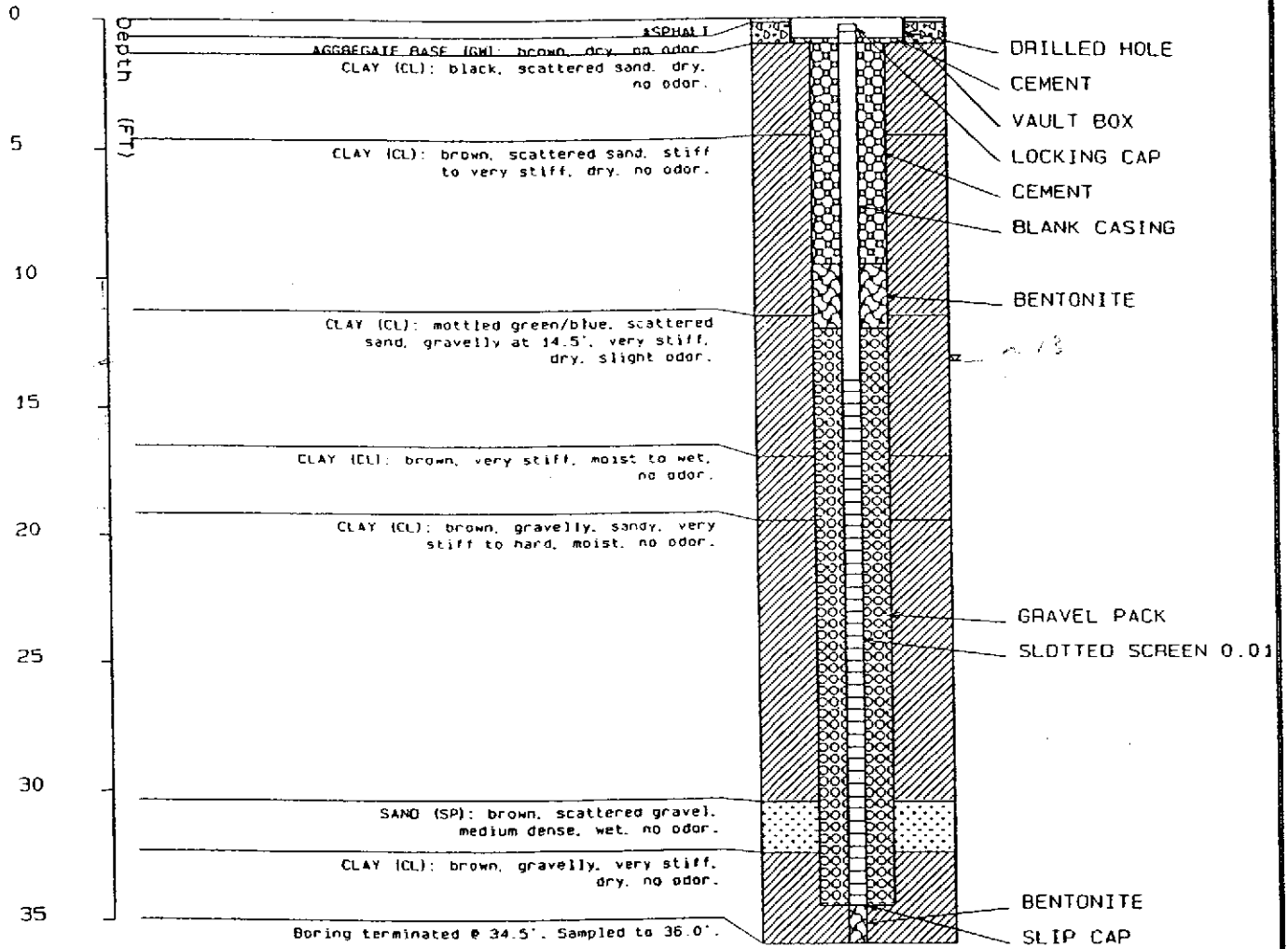
RECOVERY (FT/FT)	OVA (PPH)	PENETRA- TION (BLOWS/FT)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO- GRAPHIC COLUMN	DESCRIPTION
.75/1.5		9		5			ASPHALT AGGREGATE BASE (GW): brown, dry, no odor. CLAY (CL): black, scattered sand, dry, no odor. CLAY (CL): brown, scattered sand, stiff to very stiff, dry, no odor.
.75/1.5		20		10			CLAY (CL): mottled green/blue, scattered sand, gravelly at 14.5', very stiff, dry, slight odor.
1.5/1.5		26		15			CLAY (CL): brown, very stiff, moist to wet, no odor.
1.5/1.5		36		20			CLAY (CL): brown, gravelly, sandy, very stiff to hard, moist, no odor.
1.5/1.5		46					
1.5/1.5		43					
1.5/1.5		33		25			
1.5/1.5		44					
1.0/1.5		28					SAND (SP): brown, scattered gravel, medium dense, wet, no odor.
1.0/1.5		22		30			CLAY (CL): brown, gravelly, very stiff, dry, no odor.
							Boring terminated @ 34.5'. Sampled to 36.0'.
1.5/1.5		29		35			

REMARKS: Boring drilled with continuous-flight, hollow-stem, 8-inch O.D. augers. Samples collected in a 2.0-inch I.D. California and standard penetration sampler.



FT

TMW-4



LEGEND



WELL ID : TMW-4

2345 EAST 14TH STREET, OAKLAND, CA

TANK PROTECT ENGINEERING

Figure :

LOG OF EXPLORATORY BORING

PROJECT NUMBER 267

BORING NO. TMW-5

PROJECT NAME 2345 EAST 14TH STREET, OAKLAND CA.

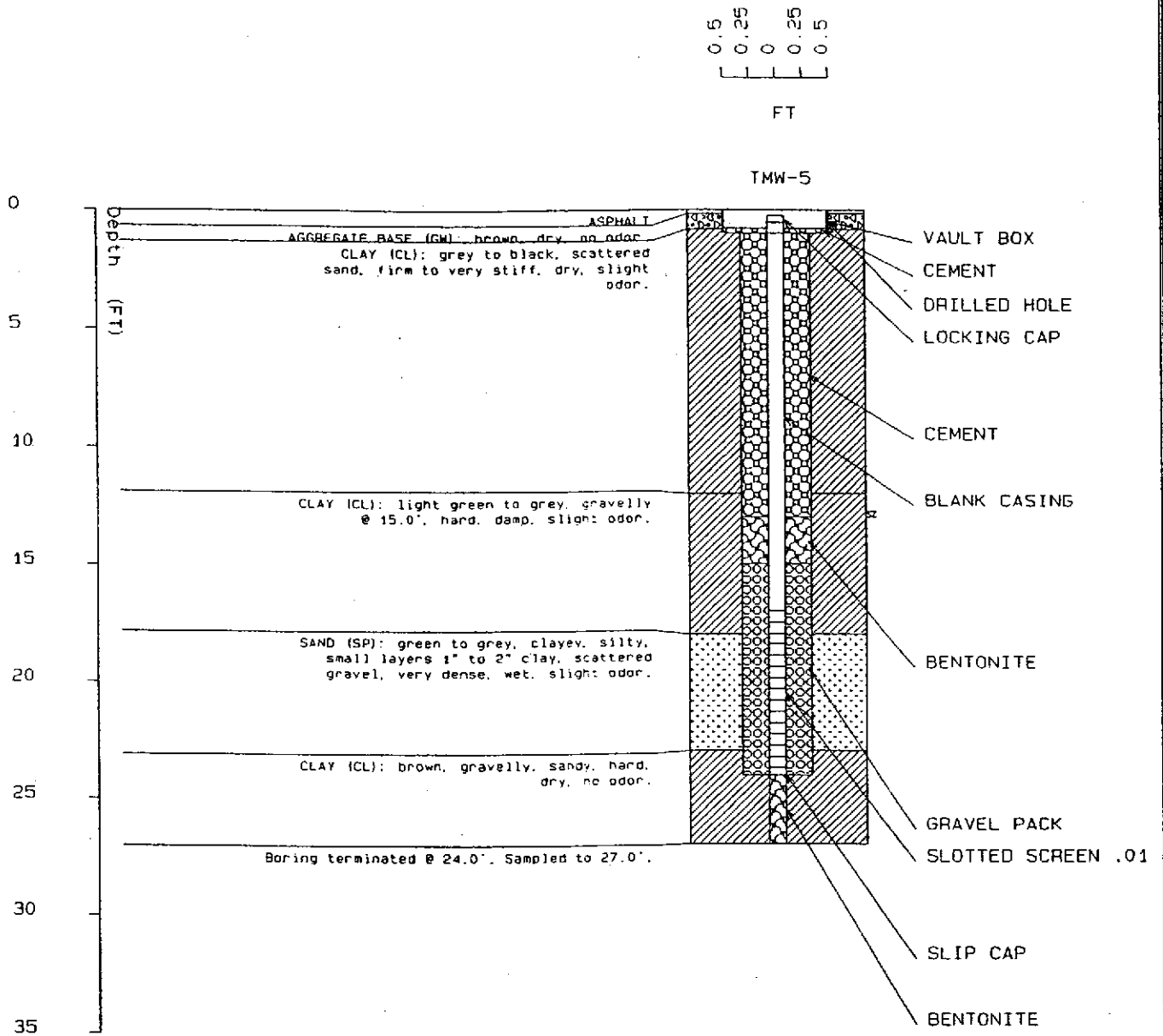
BY LNH

DATE 7/23/93

SURFACE ELEV. 27 FT

RECOVERY (FT/FT)	OVA (PPM)	PENETRA- TION (BLOWS/FT)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO- GRAPHIC COLUMN	DESCRIPTION
							<p>ASPHALT</p> <p>AGGREGATE BASE (GW): brown, dry, no odor.</p> <p>CLAY (CL): grey to black, scattered sand, firm to very stiff, dry, slight odor.</p>
.75/1.5	0	7		5			
1.5/1.5	>1000	20		10			
			X				CLAY (CL): light green to grey, gravelly @ 15.0', hard, damp, slight odor.
1.2/1.5	>1000	>50		15			
	750						SAND (SP): green to grey, clayey, silty, small layers 1" to 2" clay, scattered gravel, very dense, wet, slight odor.
1.5/1.5		>50		20			
1.5/1.5		>50					CLAY (CL): brown, gravelly, sandy, hard, dry, no odor.
1.2/1.5		39					Boring terminated @ 24.0'. Sampled to 27.0'.
1.5/1.5		>50					
1.5/1.5		49		25			

REMARKS: Boring drilled with continuous-flight, hollow-stem, 8-inch O.D. augers. Samples collected in a 2.0-inch I.D. California and standard penetration sampler.



LEGEND

- GW
- SP
- CL
- ASPHALT
- Static Water Level

WELL ID : TMW-5

2345 EAST 14TH STREET, OAKLAND, CA

TANK PROTECT ENGINEERING

Figure :

BORING & MONITORING WELL LOG

BOHIMS
WELL #SB-7

MW-6/53-7

CLIENT: Stanley Wong PROJECT NAME: Oakland
 PROJECT ADDRESS: 2345 International Boulevard, Oakland, California DATE DRILLED: May 22, 2001
 DRILLING METHOD: Hollow Stem Auger SAMPLER TYPE: CA Split Spoon Sampler
 TOTAL DEPTH OF BORING: 20 Feet WIDTH OF BORING: 6 3/4 - inches
 DEPTH TO GROUNDWATER AT THE TIME OF DRILLING: N/A STATIC WATER LEVEL: N/A
 CASING DIAMETER: 4 inches CASING LENGTH: 15 feet SCREEN DIAMETER: 4 inches
 SCREEN LENGTH: 5 feet SLOT SIZE: 0.02 inch
 DRILLING COMPANY: Bay Area Exploration DRILLING LIC.: C57-522125

CORE SAMPLE CONDITION LEGEND:



Undisturbed



Disturbed



No Recovery

LOGGED BY: Chris Webuzoh

REVIEWED BY: Ota Balogun

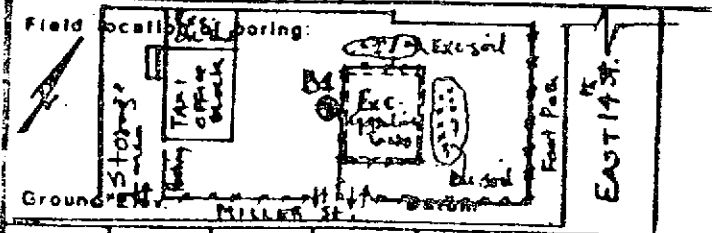
LOGGED BY: <u>Chris Webuzoh</u>	REVIEWED BY: <u>Ota Balogun</u>	DEPTH	SOIL TYPE	PID (ppm)	RECOVERY	CONSTRUCTION		
						SEAL	CASING	SCREEN
ASPHALT covering								
SANDY CLAY: Dark brown; about 40% coarse to fine, hard angular to subrounded sand; about 60% clay, moderate plasticity; moist; no hydrocarbon odor; no reaction with HCL.						3		
5						2,2,3	■	CEMENT GROUT
SANDY CLAY: Gray; about 30% coarse to fine, hard subangular to rounded sand; about 60% clay, moderate to high plasticity; moist; has hydrocarbon odor; no reaction with HCL.						36		
10						4,5,8	■	CASING
CLAYEY SAND: Gray; about 30% clay, moderate to high plasticity, about 60% coarse to fine, hard rounded sand; about 10% gravel size about 1/4 inch; moist; has hydrocarbon odor; no reaction with HCL.						370		
15						6,10,12	■	
SANDY CLAY: Brown; about 35% coarse to very fine, hard rounded sand; about 60% clay moderate to high plasticity; about 5% gravel size about 1/4 inch; moist to saturated; no hydrocarbon odor; no reaction with HCL.						2		
20						5,7,8	■	
7								
25								



LOG OF EXPLORATORY BORING

PROJECT No: CEC/SB17-86 DATE: 2 Oct 3, 88
 CLIENT: West Coast Tank Testing
 LOCATION: 2345 East 14th street
 LOGGED BY: TS DRILLER: Hew Drilling

BORING No: B1
 Sheet: 1 of 1



Drilling method: Solid Stem Auger
CME-55 Mobile Drill Rig Hole dia: 6 inches
 Casing installation date: _____

Pocket Torryvane TBF	Pocket Penetrometer TBF	Blows/ft. or Pressure PBI	Type of Sample	Sample Number	Depth Sample Ft.	Soil Group Symbol (U.S.C.S.)	DESCRIPTION
			1.94 inch dia. brass sleeves				0-2" Asphalt/Base rock
		3				CL	Damp silty clay. Soft and Blackish
		3					
		6	B1-5		5	CL	Blackish silty clay, soft to med. stiff with gasoline odor.
		4					
		6					
		10	B1-10		10	CL	Damp greenish to Black silty clay w/ some sand content. Slight discoloration observed. Med. stiff w/ gasoline odor.
		15					
		13					
		18	B1-15		15	CL & SM	Moist greenish silty sandy clay w/ fines Med. stiff to stiff w/ slight discoloration
							Ground water encountered at 19 feet. Boring bottom.



LOG OF EXPLORATORY BORING

PROJECT No CEC/SBW 2-88-2 Oct 3, 88

BORING No
B2

CLIENT West Coast Tank Testing

LOCATION 2345 East 14th Street

Sheet 1
of 1

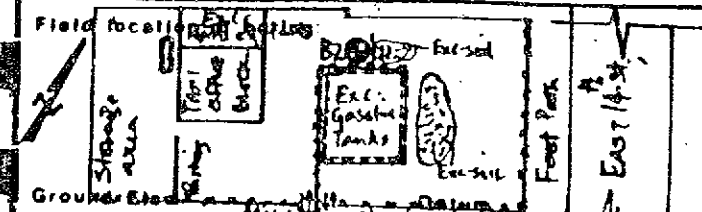
LOGGED BY TS DRILLER Hew Drilling

Drilling method Solid Stem Auger

CME-55 Mobile Drill Rig

Hole dia 6 inches

Casing installation data _____



Pocket Torque TSF	Pocket Penetrometer TSF	Blows/ft. or Pressure PSI	Type of Sample	Sample Number	Depth Ft.	Sample	Soil Group Symbol (U.S.C.S.)
			1.94 inch dia. brass sleeves				
		3					
		4					
		7	B2-5		5		CL
		3					
		8					
		10	B2-10		10		CL
		10					
		15					
		15	B2-15		15		CL

Water level	19 ft	16 ft.
Time	9.30 AM	
Date	10.03.88	

DESCRIPTION

0-9" Asphalt/Base rock

Black silty clay w/ gasoline odor. Damp

Black to greenish silty clay w/ gasoline odor. Damp, soft to med. stiff.

Greenish, soft to med. stiff silty clay w/ some sand. Slight discoloration and damp.

Greenish to brown silty clay w/ some sand. Med. stiff and Damp. Slight discoloration observed.

Water encountered at 19 feet. Boring bot c

CALIFORNIA

ENVIRONMENTAL

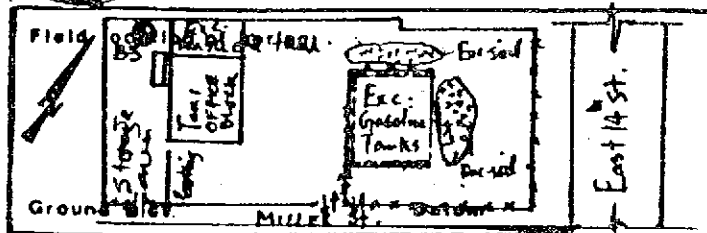
CONSULTANTS

1117 HAPPY VALLEY AVENUE • SAN JOSE, CA 95129 • (408) 725-2644



LOG OF EXPLORATORY BORING

PROJECT No. CRC/STW 2 DATE Oct 3, 1988 BORING No. B3
 CLIENT West Coast Tank Testing
 LOCATION 2345 East 14th Street
 LOGGED BY TS DRILLED Hew Drilling Sheet 1 of 1



Drilling method Solid Stem Auger
CME-55 Mobile Drill Rig Hole dia. 6 inches

Casing installation date _____

Pocket Torr vane TSF	Pocket Penetrometer TSF	Blows/ft. or Pressure PSI	Type of Sample	Sample Number	Depth Ft.	Sample	Soil Group Symbol (U.S.C.S.)
			1.94 inch dia brass sleeves				
		2					CL
		2					
		3	B3-5		5		CL
		2					
		3					
		7	B3-10		10		CL
		5					
		8					
		12	B3-15		15		CL

Water level	21ft	16 ft.
Time	10.35 AM	
Date	10.03.88	

DESCRIPTION

0-9" Asphalt/Base rock, dry.

Dry to damp black silty clay w/ sand. Some discoloration (reddish) & oily odor.

Blackish to brown damp silty clay, soft. w/ some reddish sand.

Damp, brown silty clay w/ reddish sand soft to med. stiff. Oily odor.

Damp, greenish and brown silty clay w/ fl Med stiff. Oily odor. Some discoloration observed.

Water encountered at 21 feet. Boring bott

WELL CONSTRUCTION	CHEMICAL ANALYSES		BLOW COUNT	DEPTH (feet)	INTERVAL	SAMPLE NUMBER	U.S.G.S. DESIGN.	SOIL DESCRIPTION
	Laboratory	Field						
	TPH (mg/kg)	PID (ppm)						
				0				
			4	5			m/s m	Sand, silt to silty sand with minor clay, dark green with gray, loose, dry, no stain, very slight odor
		20	6					
				10			g? m/c L	Ground water in back filled pit @ 9' Clay, silt to silty clay, dark green with gray, wet, loose, no stain, no odor
				15		20143	m/c L	Same as above
	2775	ND						to 16'

Geologist: BSE - Mark Magarsee, R.G.

Driller: S B / S

Wong's Taxi

LOG of BORING

Project Number: EB-80144

8/21/91

TH-1

PLATE

Page / of /

WELL CONSTRUCTION	CHEMICAL ANALYSES		BLOU COUNT	DEPTH (feet)	SAMPLE NUMBER	U.S.C.S. DESIGN.	SOIL DESCRIPTION
	Laboratory	Field					
	TPH (mg/Kg)	PID (PPM)					
				0			
			4 17	5		CL/ML	Silty Clay with trace fine sand, dark greenish gray, slightly moist, medium dense, good plasticity, no stain, trace hydrocarbon like odor
	360	1050	6 16	10	8014-4	SM/ML	Silty sand with minor clay, light grayish green, slightly moist, loose, no stain, strong odor
		200	7 12	15		CL SM/CL	Fat Clay, minor silt, grayish brown, moist, good plasticity, no stain, moderate odor gravelly sand, significant clay and silt, yellowish brown, slightly moist, no stain, very slight odor
		100	14 20 29	20		CL	Fat Clay, minor silt, grayish brown, moist, good plasticity, no stain, trace odor
		20	9 13 20	25		CL	Same as above, moist, no odor
	50	50	7 10 17	30	8014-5	CL	Same as above T031'

Geologist: ESE - Mark Magarac, R.G.

Driller: J B / S

Wong's Taxi

LOG of BORING

TH-2

Project Number: EB-8014-1

8/21/91

PLATE

Page 1 of 1

WELL CONSTRUCTION	CHEMICAL ANALYSES		BLOW COUNT	DEPTH (feet)	SAMPLE NUMBER	U.S.G.S. DESIGN.	SOIL DESCRIPTION
	Laboratory	Field					
	TPH (mg/kg)	PID (ppm)					
		ND	4	5		CL/ML	Clay, trace sandy silt, yellowish brown to dark greenish gray,
	10	ND	6	10	8014-8	OL	Organic clay, dark greenish gray, slightly moist, good plasticity, no stain, no odor
		70	13	15		CL	Red clay, minor silt, light green, moist, medium dense, good plasticity, no stain, no odor, no hydrocarbon like odor
	10	70	12	20	8014-9	CL	Same as above, light brownish yellow, slight odor
		ND	7	25		CL	Same as above, very moist, no odor
		ND	11	30		SM/CL	Silty gravelly sand, significant clay, light yellowish brown, very moist, medium dense, no stain, no odor

Geologist: 555 - Mark Maganger, R.C.

Driller: 5015

Wong's Taxi

LOG of BORING

TH-3

Project Number: 65-8014-1

8/2/91

PLATE

Page 1 of 1

WELL CONSTRUCTION	CHEMICAL ANALYSES		BLOW COUNT	DEPTH (feet)	SAMPLE NUMBER	U.S.G.S. DESIGN.	SOIL DESCRIPTION
	Laboratory	Field					
	TPH (mg/kg)	PID (ppm)					
				0			
			4	5		CL	Clay, dark greenish gray, slightly moist, medium dense, good plasticity, no stain
			6				
			10		8014-10	SM/CL	Generally clayey sand, dark gray to black, slightly moist, slightly dense, dark staining, moderate hydrocarbon like odor
	25	140	14	15		CL	Fat clay, minor silt, light green, moist, medium dense, good plasticity, no stain, slight odor
			16				
			17	20	8014-11	SM	Clayey silty sand, light green, saturated, medium dense, no stain, moderate odor
	450	20	17				TOZI

Geologist: ESB - Mark Mangano, R.G.

Driller: S B / S

PLATE

Wong's Taxi

LOG of BORING

TH-4

Project Number: EB-8014-1

8/21/91

Page / of /

WELL CONSTRUCTION	CHEMICAL ANALYSES		BLOW COUNT	DEPTH (Feet)	SAMPLE NUMBER	U.S.C.S. DESIGN.	SOIL DESCRIPTION
	Laboratory	Field					
	TPH (mg/kg)	PID (PPM)					
				0			
			3	5		CL	Fat Clay, minor fine sand, dark greenish gray, slightly moist, medium dense, good plasticity, no stain, no odor
	10	20	7 ¹⁰ 30	10	8014-14	CL/ML	Clay with silty sand, dark greenish gray, slightly moist, no stain, no odor
			13 ¹⁵ 32	15		CL/SM	Eng. grained sandy clay, light green, moist, medium dense, no stain, no odor
	ND	10	7 ²⁰ 24	20	8014-15	SM	Silty clayey sand, light yellowish gray, saturated, medium dense, no stain, no odor TO 21"

Geologist: ESE - Mark Magarac, R.G.
 Wong's Taxi
 Project Number: CB-8014-1 8/2/91

Driller: SB/S
 LOG of BORING
 TH-5

PLATE
 Page 1 of 1

LOG OF EXPLORATORY BORING

PROJECT NUMBER 267

BORING NO. SB-1

PROJECT NAME 2345 E. 14th Street, Oakland CA

PAGE 1

BY LNH

DATE 4/21/97

SURFACE ELEV. 27 FT

RECOVERY (FT/FT)	OVA (PPM)	PENETRA- TION (BLOWS/FT)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO- GRAPHIC COLUMN	DESCRIPTION
1.3/2.0	10	--		5			ASPHALT
							AGGREGATE BASE (GW): Brown, dry, no odor.
							CLAY (CL): Black mottled green, scattered sand, silty, dry, no odor.
							SAND (SP): Brown, fine-grained, moist to very moist, no odor.
.50/2.0	--	--		10			
1.5/2.0	10	--		15			
2.0/2.0	8	--		20			CLAYEY SAND (SC/SP): Brown, medium-grained, dry to moist, no odor.
1.5/2.0	--	--		25			
2.0/2.0	2	--		30			
				35			Boring terminated at 32 feet. Boring sampled to 32 feet. No water level was obtained due to caving.

REMARKS: Drilled using the "GeoProbe method", 2.0 inch diameter boreholes. Samples collected in 1.0-inch by 6.0-inch acetate tubes.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 267

BORING NO. SB-2

PROJECT NAME 2345 E. 14th Street, Oakland CA

PAGE 1

BY LNH

DATE 4/21/97

SURFACE ELEV. 27 FT

RECOVERY (FT/FT)	OVA (PPM)	PENETRA- TION (BLOWS/FT)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO- GRAPHIC COLUMN	DESCRIPTION
				0		ASPHALT	ASPHALT
				5		AGGREGATE BASE (GW)	AGGREGATE BASE (GW): Brown, dry, no odor.
1.3/2.0	8	-		10		CLAY (CL)	CLAY (CL): Brown, green at 11.5 feet, silty, stiff, dry to moist, hydrocarbon orodor at 11.5.
2.0/2.0	46	--	N	15		CLAYEY SAND (SC/CL)	CLAYEY SAND (SC/CL): Green, fine to medium-grained, moist, hydrocarbon odor.
2.0/2.0	340	--		20		SAND (SP)	SAND (SP): Brown, clayey, fine-grained, moist, no odor.
2.0/2.0	8	-		25		CLAYEY SAND (SC/SP)	CLAYEY SAND (SC/SP): Brown, fine-grained, wet, no odor.
1.0/2.0	8	--		30			Boring terminated at 32.0 feet. Boring sampled to 32.0 feet.
2.0/2.0	21	--		35			

REMARKS: Drilled using the "GeoProbe method", 2.0 inch diameter boreholes. Samples collected in 1.0-inch by 6.0-inch acetate tubes.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 267

BORING NO. SB-3

PROJECT NAME 2345 E. 14th Street, Oakland CA

PAGE 1

BY LNH

DATE 5/1/97

SURFACE ELEV. 27 FT

RECOVERY (FT/FT)	OVA (PPM)	PENETRA- TION (BLOWS/FT)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO- GRAPHIC COLUMN	DESCRIPTION
						ASPHALT	
						COBBLESTONE: Light brown, hard	
						CONCRETE	
1.0/2.0	39	-		5	■	CLAY (CL): Grey to black, sandy, stiff to very stiff, moist, no odor.	
1.0/2.0	40	-		10	■	CLAYEY SAND (SC/CL): Brown, scattered gravel, medium-grained, dry to moist, no odor.	
1.5/2.0	16	-		15	■		
1.5/2.0	56	-		20	■		
1.5/2.0	29	-		25	■		
2.0/2.0	18	-		30	■	SAND (SP): Brown, scattered gravel, fine-grained, moist to wet, no odor.	
				32.0		Boring terminated at 32.0 feet. Boring sampled to 32.0 feet.	
				35			

REMARKS: Drilled using the "GeoProbe method", 2.0 inch diameter boreholes. Samples collected in 1.0-inch by 6.0-inch acetate tubes.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 267

BORING NO. SB-4

PROJECT NAME 2345 E. 14th Street, Oakland CA

PAGE 1

BY LNH

DATE 5/1/97

SURFACE ELEV. 27 FT

RECOVERY (FT/FT)	OVA (PPM)	PENETRA- TION (BLOWS/FT)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO- GRAPHIC COLUMN	DESCRIPTION
				5	1		ASPHALT
2.0/2.0	12	-		10	2		SANDY CLAY (CL/SC): Brown mottled green, stiff, dry, no odor.
1.5/2.0	4	-	N	15	3		CLAYEY SAND (SC/CL): Brown, organics, fine to medium grained, dry to moist, no odor.
2.0/2.0	6	-		20	4		
1.5/2.0	14	-		25	5		
2.0/2.0	4	-		27.0	6		Boring terminated at 27.0 feet. Boring sampled to 27.0 feet.
				30			
				35			

REMARKS: Drilled using the "GeoProbe method", 2.0 inch diameter boreholes. Samples collected in 1.0-inch by 6.0-inch acetate tubes.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 267

BORING NO. SB-5

PROJECT NAME 2345 E. 14th Street, Oakland CA

PAGE 1

BY LNH

DATE 5/1/97

SURFACE ELEV. 27 FT

RECOVERY (FT/FT)	OVA (PPM)	PENETRA- TION (BLOWS/FT)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO- GRAPHIC COLUMN	DESCRIPTION
				0		CONCRETE	CONCRETE
				5		AGGREGATE BASE (GW)	AGGREGATE BASE (GW): Brown, dry, no odor.
1.0/2.0	12	-		5	CLAY (CL)	CLAY (CL)	CLAY (CL): Grey to black, sandy, soft, no odor.
				10		CLAYEY SAND (SC/CL)	CLAYEY SAND (SC/CL): Green, fine-grained, dry, hydrocarbon odor.
2.0/2.0	67	-		10		CLAYEY SAND (SC/CL)	CLAYEY SAND (SC/CL): Brown, fine-grained, moist, no odor.
				15		SANDY CLAY (CL/SC)	SANDY CLAY (CL/SC): Brown, organics, stiff, dry no odor.
2.0/2.0	6	-		15		SANDY CLAY (CL/SC)	SANDY CLAY (CL/SC): Brown, organics, stiff, dry no odor.
				20		CLAYEY SAND (SC/CL)	CLAYEY SAND (SC/CL): Brown, fine-grained, wet at 27.0 feet, no odor.
2.0/2.0	11	-		20		CLAYEY SAND (SC/CL)	CLAYEY SAND (SC/CL): Brown, fine-grained, wet at 27.0 feet, no odor.
				25		Boring terminated	Boring terminated at 27.0 feet. Boring sampled to 27.0 feet. A hydrocarbon sheen on the groundwater was observed.
2.0/2.0	6	-		25		Boring terminated	Boring terminated at 27.0 feet. Boring sampled to 27.0 feet. A hydrocarbon sheen on the groundwater was observed.
				30			
				35			

REMARKS: Drilled using the "GeoProbe method", 2.0 inch diameter boreholes. Samples collected in 1.0-inch by 6.0-inch acetate tubes.

BORING & MONITORING WELL LOG

BORING / WELL #SB-1

CLIENT: Stanley Wong PROJECT NAME: Oakland
 PROJECT ADDRESS: 2345 International Boulevard, Oakland, California DATE DRILLED: May 22, 2001
 DRILLING METHOD: Hollow Stem Auger SAMPLER TYPE: CA Split Spoon Sampler
 TOTAL DEPTH OF BORING: 15 Feet WIDTH OF BORING: 6 3/4 - inches
 DEPTH TO GROUNDWATER AT THE TIME OF DRILLING: N/A STATIC WATER LEVEL: N/A
 CASING DIAMETER: N/A CASING LENGTH: N/A SCREEN DIAMETER: N/A
 SCREEN LENGTH: N/A SLOT SIZE: N/A
 DRILLING COMPANY: Bay Area Exploration DRILLING LIC.: C57-522125

CORE SAMPLE CONDITION LEGEND:



Undisturbed



Disturbed



No Recovery

LOGGED BY: Chris Wabuzoh	REVIEWED BY: Ola Balogun	DEPTH	SOIL TYPE	PID (ppm)	RECOVERY	CONSTRUCTION						
						SEAL	CASING	SCREEN				
ASPHALT covering												
SANDY CLAY: Brown; about 40% coarse, coarse to fine, hard angular to rounded sand; about 60% clay, moderate plasticity; dry to moist; no hydrocarbon odor; no reaction with hydrochloric acid (HCL).						5	CL	0	2,3,5	<input checked="" type="checkbox"/>		
SANDY CLAY: Greenish; about 40% coarse to fine, hard subangular to rounded sand; about 60% clay, moderate to high plasticity, moist; has hydrocarbon odor; no reaction with HCL.						10	CL	264	5,11,17	<input checked="" type="checkbox"/>		
CLAYEY SAND: Brown; about 40% clay, moderate to high plasticity; about 50% coarse to fine, hard rounded sand; about 10% gravel size about 1/4 inch; moist to saturated; no hydrocarbon odor; Groundwater water encountered.						15	CL	4	5,11,13	<input checked="" type="checkbox"/>		
						20						
						25						

BORING & MONITORING WELL LOG

BORING
WEL #SB 2

CLIENT: Stanley Wong PROJECT NAME: Oakland
 PROJECT ADDRESS: 2345 International Boulevard, Oakland, California DATE DRILLED: May 22, 2001
 DRILLING METHOD: Hollow Stem Auger SAMPLER TYPE: CA Split Spoon Sampler
 TOTAL DEPTH OF BORING: 20 Feet WIDTH OF BORING: 6 3/4 - inches
 DEPTH TO GROUNDWATER AT THE TIME OF DRILLING: N/A STATIC WATER LEVEL: N/A
 CASING DIAMETER: N/A CASING LENGTH: N/A SCREEN DIAMETER: N/A
 SCREEN LENGTH: N/A SLOT SIZE: N/A
 DRILLING COMPANY: Bay Area Exploration DRILLING LIC.: C57-522125

CORE SAMPLE CONDITION LEGEND:







Undisturbed



Disturbed



No Recovery

LOGGED BY: <u>Chris Wabuzoh</u> REVIEWED BY: <u>Ola Balogun</u>	DEPTH	SOIL TYPE	PID (ppm)	RECOVERY	CONSTRUCTION		
					SEAL	CASING	SCREEN
ASPHALT covering							
SANDY CLAY: Brown; about 40% coarse to fine, hard angular to subrounded sand; about 60% clay, moderate plasticity; dry to moist; no hydrocarbon odor; no reaction with hydrochloric acid (HCL).	5	CL	0	4,6,9 			
SANDY CLAY: Gray with iron staining; about 40% coarse to fine, hard subangular to rounded sand; about 60% clay, moderate to high plasticity, moist; has hydrocarbon odor; no reaction with HCL.	10	CL	270	4,10,12 			
CLAYEY SAND: Brown; about 30% clay, moderate to high plasticity; about 60% coarse to fine, hard rounded sand; about 10% gravel size about 1/4 inch; moist; no hydrocarbon odor; no reaction with HCL.	15	SC	1	8,11,15 			
SANDY CLAY: Brown; about 30% coarse to very fine, hard rounded sand; about 70% clay moderate to high plasticity; moist to saturated; no hydrocarbon odor; no reaction with HCL.	20	SC	0	5,10,15 			
	25						

BORING & MONITORING WELL LOG

BORING:
WELL #SB-3

CLIENT: Stanley Wong PROJECT NAME: Oakland
 PROJECT ADDRESS: 2345 International Boulevard, Oakland, California DATE DRILLED: May 22, 2001
 DRILLING METHOD: Hollow Stem Auger SAMPLER TYPE: CA Split Spoon Sampler
 TOTAL DEPTH OF BORING: 20 Feet WIDTH OF BORING: 8 3/4 - inches
 DEPTH TO GROUNDWATER AT THE TIME OF DRILLING: N/A STATIC WATER LEVEL: N/A
 CASING DIAMETER: N/A CASING LENGTH: N/A SCREEN DIAMETER: N/A
 SCREEN LENGTH: N/A SLOT SIZE: N/A
 DRILLING COMPANY: Bay Area Exploration DRILLING LIC.: C57-522125

CORE SAMPLE CONDITION LEGEND: Undisturbed Disturbed No Recovery

LOGGED BY: <u>Chris Webuzoh</u>	REVIEWED BY: <u>Ola Balogun</u>	DEPTH	SOIL TYPE	PID (ppm)	RECOVERY	CONSTRUCTION		
						SEAL	CASING	SCREEN
ASPHALT covering								
NO RECOVERY		0		0	4,8,11			
SANDY CLAY: Gray; about 30% coarse to fine, hard subangular to rounded sand; about 60% clay, moderate to high plasticity, moist; has hydrocarbon odor; no reaction with HCL.		5	CL	348	<input type="checkbox"/>			
CLAYEY SAND: Gray; about 30% clay, moderate to high plasticity; about 60% coarse to fine, hard rounded sand; about 10% gravel size about 1/4 inch; moist; has hydrocarbon odor; no reaction with HCL.		10	SC	400	<input checked="" type="checkbox"/>			
SANDY CLAY: Brown; about 35% coarse to very fine, hard rounded sand; about 60% clay moderate to high plasticity; about 5% gravel size about 1/4 inch; moist to saturated; no hydrocarbon odor; no reaction with HCL.		15	SC	5	7,11,18	<input checked="" type="checkbox"/>		
		20			4,18,14	<input checked="" type="checkbox"/>		
		25						

BORING & MONITORING WELL LOG

BORING /
WEL #SB-1

CLIENT: Stanley Wong PROJECT NAME: Oakland
 PROJECT ADDRESS: 2345 International Boulevard, Oakland, California DATE DRILLED: May 22, 2001
 DRILLING METHOD: Hollow Stem Auger SAMPLER TYPE: CA Split Spoon Sampler
 TOTAL DEPTH OF BORING: 20 Feet WIDTH OF BORING: 6 3/4 - inches
 DEPTH TO GROUNDWATER AT THE TIME OF DRILLING: N/A STATIC WATER LEVEL: N/A
 CASING DIAMETER: N/A CASING LENGTH: N/A SCREEN DIAMETER: N/A
 SCREEN LENGTH: N/A SLOT SIZE: N/A
 DRILLING COMPANY: Bay Area Exploration DRILLING LIC.: C57-522125

CORE SAMPLE CONDITION LEGEND: Undisturbed Disturbed No Recovery

LOGGED BY: <u>Chris Wabuzoh</u> REVIEWED BY: <u>Ota Balogun</u>	DEPTH	SOIL TYPE	PID (ppm)	RECOVERY	CONSTRUCTION		
					SEAL	CASING	SCREEN
ASPHALT covering							
SANDY CLAY: Dark brown; about 40% coarse to fine, hard, angular to subrounded sand; about 60% clay, moderate plasticity; moist; no hydrocarbon odor; no reaction with HCL.	5	CL	0	2,2,3 <input checked="" type="checkbox"/>			
SANDY CLAY: Dark gray; about 30% coarse to fine, hard subangular to rounded sand; about 70% clay, moderate to high plasticity; moist; has slight hydrocarbon odor; no reaction with HCL.	10	CL	100	4,8,10 <input checked="" type="checkbox"/>			
CLAYEY SAND: Greenish gray; about 40% coarse to fine, hard subangular to rounded sand; about 60% clay; moderate to high plasticity; moist; has hydrocarbon odor; no reaction with HCL.	15	SC	169	8,12,15 <input checked="" type="checkbox"/>			
CLAYEY SAND: Light brown; about 40% coarse to very fine, hard rounded sand; about 60% clay, moderate to high plasticity; some gravel size about 1/4 inch; moist to saturated; groundwater encountered; no hydrocarbon odor; no reaction with HCL.	20	SC	0	3,6,8 <input checked="" type="checkbox"/>			
	25						

BORING & MONITORING WELL LOG

BORING: _____
WELL: SB-5

BENT: Stanley Wong PROJECT NAME: Oakland
 PROJECT ADDRESS: 2345 International Boulevard, Oakland, California DATE DRILLED: May 22, 2001
 DRILLING METHOD: Hollow Stem Auger SAMPLER TYPE: CA Split Spoon Sampler
 TOTAL DEPTH OF BORING: 20 Feet WIDTH OF BORING: 6 3/4 - inches
 DEPTH TO GROUNDWATER AT THE TIME OF DRILLING: N/A STATIC WATER LEVEL: N/A
 CASING DIAMETER: N/A CASING LENGTH: N/A SCREEN DIAMETER: N/A
 SCREEN LENGTH: N/A SLOT SIZE: N/A
 DRILLING COMPANY: Bry-Aren Exploration DRILLING LIC.: C57-522125

CORE SAMPLE CONDITION LEGEND: Undisturbed Disturbed No Recovery

LOGGED BY: <u>Chris Wabuzoh</u>	REVIEWED BY: <u>Ota Balogun</u>	DEPTH	SOIL TYPE	PID (ppm)	RECOVERY	CONSTRUCTION		
						SEAL	CASING	SCREEN
ASPHALT covering								
SANDY CLAY: Dark brown; about 40% coarse to fine, hard, angular to subrounded sand; about 60% clay, moderate plasticity, moist; no hydrocarbon odor; no reaction with HCL.		5	CL	0	2,3,5	<input checked="" type="checkbox"/>		
SANDY CLAY: Dark brown; about 30% coarse to fine, hard subangular to rounded sand; about 70% clay, moderate to high plasticity, moist; no hydrocarbon odor; no reaction with HCL.		10	CL	0	4,5,10	<input checked="" type="checkbox"/>		
CLAYEY SAND: Greenish; about 30% coarse to fine, hard subangular to rounded sand; 70% clay; moderate to high plasticity; some gravel; moist; has hydrocarbon odor; no reaction with HCL.		15	SC	40	5,13,16	<input checked="" type="checkbox"/>		
GRAVELLY SANDY CLAY: Brown; about 30% coarse to very fine, hard rounded sand; 50% clay, moderate to high plasticity; about 20% gravel size about 1/4 inch; moist to saturated; groundwater encountered; no hydrocarbon odor; no reaction with HCL.		20	CL	7	4,9,11	<input checked="" type="checkbox"/>		
		25						

BORING & MONITORING WELL LOG

BORING
WEL: SB-6

SB7 / MW-6

CLIENT: Stanley Wong PROJECT NAME: Oakland

PROJECT ADDRESS: 2345 International Boulevard, Oakland, California DATE DRILLED: May 22, 2001

DRILLING METHOD: Hollow Stem Auger SAMPLER TYPE: CA Split Spoon Sampler

TOTAL DEPTH OF BORING: 10 Feet WIDTH OF BORING: 6 3/4 - inches

DEPTH TO GROUNDWATER AT THE TIME OF DRILLING: N/A STATIC WATER LEVEL: N/A

CASING DIAMETER: N/A CASING LENGTH: N/A SCREEN DIAMETER: N/A

SCREEN LENGTH: N/A SLOT SIZE: N/A

DRILLING COMPANY: Bay Area Exploration DRILLING LIC.: C57-522125

CORE SAMPLE CONDITION LEGEND: Undisturbed Disturbed No Recovery

LOGGED BY: <u>Chris Wabuzoh</u>	REVIEWED BY: <u>Ota Balogun</u>	DEPTH	SOIL TYPE	PID (ppm)	RECOVERY	CONSTRUCTION						
						BEAL	CASING	SCREEN				
ASPHALT covering												
SANDY CLAY: Dark brown; about 40% coarse to fine, hard, angular to subrounded sand; about 60% clay, moderate plasticity, moist; no hydrocarbon odor; no reaction with HCL.						5	CL	0	2.22	<input checked="" type="checkbox"/>		
SANDY CLAY: Dark brown; about 30% coarse to fine, hard subangular to rounded sand; about 70% clay, moderate to high plasticity, moist; no hydrocarbon odor; no reaction with HCL.						10	CL	0	1.22	<input checked="" type="checkbox"/>		
						15						
						20						
						25						

C A M B R I A



Appendix C

Standard Field Procedures for Soil Boring
and Monitoring Well Installations

CAMBRIA

STANDARD FIELD PROCEDURES FOR SOIL BORING AND MONITORING WELL INSTALLATIONS

This document presents standard field methods for drilling and sampling soil borings and installing, developing and sampling groundwater monitoring wells. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

SOIL BORINGS

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor or staining, and to collect samples for analysis at a State-certified laboratory. All borings are logged using the Unified Soil Classification System by a trained geologist working under the supervision of a California Registered Geologist (RG).

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or direct-push technologies such as the Geoprobe®. Soil samples are collected at least every five ft to characterize the subsurface sediments and for possible chemical analysis. Additional soil samples are collected near the water table and at lithologic changes. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments at the bottom of the borehole.

Drilling and sampling equipment is steam-cleaned prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Analysis

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon tape and plastic end caps. Soil samples are labeled and stored at or below 4° C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

One of the remaining tubes is partially emptied leaving about one-third of the soil in the tube. The tube is capped with plastic end caps and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable volatile vapor analyzer measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. Volatile vapor analyzer measurements are used along with the field observations, odors, stratigraphy and groundwater depth to select soil samples for analysis.

CAMBRIA

Water Sampling

Water samples, if they are collected from the boring, are either collected using a driven Hydropunch® type sampler or are collected from the open borehole using bailers. The groundwater samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

Well Construction and Surveying

Groundwater monitoring wells are installed to monitor groundwater quality and determine the groundwater elevation, flow direction and gradient. Well depths and screen lengths are based on groundwater depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and State and local regulatory guidelines. Well screens typically extend 10 to 15 feet below and 5 feet above the static water level at the time of drilling. However, the well screen will generally not extend into or through a clay layer that is at least three feet thick.

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about one to two feet above the well screen. A two feet thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of Portland type I,II cement.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security.

The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

CAMBRIA

Well Development

Wells are generally developed using a combination of groundwater surging and extraction. Surging agitates the groundwater and dislodges fine sediments from the sand pack. After about ten minutes of surging, groundwater is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of groundwater are extracted and the sediment volume in the groundwater is negligible. This process usually occurs prior to installing the sanitary surface seal to ensure sand pack stabilization. If development occurs after surface seal installation, then development occurs 24 to 72 hours after seal installation to ensure that the Portland cement has set up correctly.

All equipment is steam-cleaned prior to use and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 24 hours after they are developed.

Groundwater Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of groundwater are purged prior to sampling. Purging continues until groundwater pH, conductivity, and temperature have stabilized. Groundwater samples are collected using bailers or pumps and are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite and covered by plastic sheeting. At least three individual soil samples are collected from the stockpiles and composited at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples in addition to any analytes required by the receiving disposal facility. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Groundwater removed during development and sampling is typically stored onsite in sealed 55-gallon drums. Each drum is labeled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Upon receipt of analytic results, the water is either pumped out using a vacuum truck for transport to a licensed waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.