ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

May 20, 2009

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

Michael Benner, Trustee
Benner Family Trust
488 25th Street
Oakland, CA 94612

Barbara Roberts
Benner Family Trust
488 25th Street
Oakland, CA 94612

Subject: Fuel Leak Case No. RO0002518 and GeoTracker Global ID T0600114301 Benner Automotive, 488 25TH Street, Oakland, CA 94612

Dear Mr. Benner & Ms. Roberts:

This letter transmits the enclosed underground storage tank (UST) case closure letter in accordance with Chapter 6.75 (Article 4, Section 25299.37[h]). The State Water Resources Control Board adopted this letter on February 20, 1997. As of March 1, 1997, the Alameda County Environmental Health (ACEH) is required to use this case closure letter for all UST leak sites. We are also transmitting to you the enclosed case closure summary. These documents confirm the completion of the investigation and cleanup of the reported release at the subject site. The subject fuel leak case is closed.

SITE INVESTIGATION AND CLEANUP SUMMARY

Please be advised that the following conditions exist at the site:

- Residual pollution remaining in soil beneath the site includes TPH as gasoline at a concentration of 2,500 mg/kg.
- Maximum concentrations of TPH-g and EDC at concentrations up to 7,700 µg/L and 0.84 µg/L, respectively, remain in groundwater beneath the site near the sidewalk.

If you have any questions, please call Paresh Khatri at (510) 777-2478. Thank you.

Sincerely,

Donna L. Drogos, P.E.
LOP and Toxics Program Manager

Enclosures:
1. Remedial Action Completion Certificate
2. Case Closure Summary

cc:
Ms. Cherie McCaulou (w/enc)
SF- Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Closure Unit (w/enc)
State Water Resources Control Board
UST Cleanup Fund
P.O. Box 944212
Sacramento, CA 94244-2120

Paresh Khatri (w/orig enc), D. Drogos (w/enc), R. Garcia (w/enc)

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REMEDIAL ACTION COMPLETION CERTIFICATE

Subject: Fuel Leak Case No. RO0002518 and GeoTracker Global ID T0600114301 Benner Automotive, 488 25TH Street, Oakland, CA 94612

Dear Mr. Benner & Ms. Roberts:

This letter confirms the completion of a site investigation and remedial action for the underground storage tanks formerly located at the above-described location. Thank you for your cooperation throughout this investigation. Your willingness and promptness in responding to our inquiries concerning the former underground storage tank(s) are greatly appreciated.

Based on information in the above-referenced file and with the provision that the information provided to this agency was accurate and representative of site conditions, this agency finds that the site investigation and corrective action carried out at your underground storage tank(s) site is in compliance with the requirements of subdivisions (a) and (b) of Section 25296.10 of the Health and Safety Code and with corrective action regulations adopted pursuant to Section 25299.3 of the Health and Safety Code and that no further action related to the petroleum release(s) at the site is required.

This notice is issued pursuant to subdivision (h) of Section 25299.37 of the Health and Safety Code.

Please contact our office if you have any questions regarding this matter.

Sincerely,

Ariu Levi
Director
Alameda County Environmental Health

CASE CLOSURE SUMMARY
LEAKING UNDERGROUND FUEL STORAGE TANK - LOCAL OVERSIGHT PROGRAM

I. AGENCY INFORMATION

Date: November 5, 2008

Agency Name: Alameda County Environmental Health	Address: 1131 Harbor Bay Parkway
City/State/Zip: Alameda, CA 94502-6577	Phone: (510) 777-2478
Responsible Staff Person: Paresh Khatri	Title: Hazardous Materials Specialist

II. CASE INFORMATION

Site Facility Name: Benner Automotive		
Site Facility Address: 488 25th Street, Oakland, California 94612		
RB Case No.: NA	Local Case No.: NA	LOP Case No.: RO0002518
URF Filing Date: 07/01/2003	Global ID No.: T0600114301	APN: 009-0683-017-00

Responsible Parties	Addresses	Phone Numbers
Benner Family Trust Michael Benner, Trustee	488 25th Street, Oakland, CA 94612-2409	
Benner Family Trust Barbara Roberts, Trustee	488 25th Street, Oakland, CA 94612-2409	

Tank I.D. No	Size in Gallons	Contents	Closed In Place/Removed?	Date
1	1 x 1,000-gallon	Gasoline	Removed	01/07/2003
Piping			Removed	01/07/2003

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and Type of Release: Unknown, UST appeared intact upon removal.		
Site characterization complete? Yes	Date Approved By Oversight Agency: --	
Monitoring wells installed? Yes	Number: 3	Proper screened interval? Yes
Highest GW Depth Below Ground Surface: 8.8 ft bgs	Lowest Depth: 15.21 ft bgs	Flow Direction: Southwesterly
Most Sensitive Current Use: Potential drinking water source.		

Summary of Production Wells in Vicinity: A ¼ mile well survey was conducted. A DWR search identified 117 wells within the survey radius. Only five of the 117 wells identified are located within 500 feet of the site. No water supply wells were identified within a ¼ mile radius of the site.

Based on the extent of the hydrocarbon plume documented by the groundwater monitoring analytical results, no water wells, deeper drinking water aquifers, surface water or other sensitive receptors are likely to be impacted.

Are drinking water wells affected? No	Aquifer Name: East Bay Plain Groundwater Basin
Is surface water affected? No	Nearest SW Name: Lake Merritt located 2,000 feet southeast and the San Francisco Bay, located approximately 2 miles southwest of the site.
Off-Site Beneficial Use Impacts (Addresses/Locations): None	
Reports on file? Yes	Where are reports filed? Alameda County Environmental Health & Oakland Fire Department, Fire Prevention Bureau

TREATMENT AND DISPOSAL OF AFFECTED MATERIAL

Material	Amount (Include Units)	Action (Treatment or Disposal w/Destination)	Date
Tank	One 1,000-gallon	Disposal to Ecology Control Industries 255 Parr Blvd., Richmond, CA 94801	01/07/2003
Piping	Not reported	Disposal to Ecology Control Industries 255 Parr Blvd., Richmond, CA 94801	01/07/2003
Free Product	None reported	---	---
Soil	22.24 Tons	Keller Canyon Landfill 901 Bailey Road Pittsburg, CA	01/14/2003
Groundwater	None reported	---	---

MAXIMUM DOCUMENTED CONTAMINANT CONCENTRATIONS BEFORE AND AFTER CLEANUP
(Please see Attachments for additional information on contaminant locations and concentrations)

Contaminant	Soil (ppm)		Water (ppb)	
	Before	After	Before	After
TPH (Gas)	2,500[1] (USFT Base-east, 9.0 ft bgs, 01/07/2003)	2,500[1] (USFT Base-east, 9.0 ft bgs, 01/07/2003)	120,000 (BH-06 GW, 07/2004)	120,000[6]/<50 (BH-06 GW, 07/2004/MW-3, 2/27/2006)
TPH (Diesel/Kerosene)	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
TPH (Motor Oil)/TOG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Benzene	<1.7[1] (USFT Base-east, 9.0 ft bgs, 01/07/2003)	<1.7[1] (USFT Base-east, 9.0 ft bgs, 01/07/2003)	<13 (BH-06 GW, 07/2004)	<13[6]/<0.5 (BH-06 GW, 07/2004/MW-3, 2/27/2006)
Toluene	<1.7[1] (USFT Base-east, 9.0 ft bgs, 01/07/2003)	<1.7[1] (USFT Base-east, 9.0 ft bgs, 01/07/2003)	<13 (BH-06 GW, 07/2004)	<13[6]/<0.5 (BH-06 GW, 07/2004/MW-3, 2/27/2006)
Ethylbenzene	<1.7[1] (USFT Base-east, 9.0 ft bgs, 01/07/2003)	<1.7[1] (USFT Base-east, 9.0 ft bgs, 01/07/2003)	70 (BH-06 GW, 07/2004)	70[6]/<0.5 (BH-06 GW, 07/2004/MW-3, 2/27/2006))
Xylenes	<1.7[1] (USFT Base-east, 9.0 ft bgs, 01/07/2003)	<1.7[1] (USFT Base-east, 9.0 ft bgs, 01/07/2003)	540 (BH-06 GW, 07/2004)	540[6]/<0.5 (BH-06 GW, 07/2004/MW-3, 2/27/2006)
MTBE (EPA 8020/EPA 8260)	<1.7[5] (USFT Base-east, 9.0 ft bgs, 01/07/2003)	<1.7[4] (USFT Base-east, 9.0 ft bgs, 01/07/2003)	8.2[3] (BH-11 GW, 07/2004)	<5[2] (MW-3, 2/27/2006)
Heavy Metals (Lead only)	29 (USFT Base-east, 9.0 ft bgs, 01/07/2003)	29 (USFT Base-east, 9.0 ft bgs, 01/07/2003)	Not Analyzed	Not Analyzed
EDB	<0.005	<0.005	<0.5	<0.5 (MW-3, 2/27/2006)
EDC	<0.005	<0.005	0.84 (MW-3, 2/27/2006)	0.84 (MW-3, 2/27/2006)
Other (8240/8260)	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

[1] Soil sample collected below the UST. DTW ranges between 8.8 to 15.21 ft bgs. Therefore, soil sample may be saturated and may not be representative of vadoze zone soil conditions.
[2] Other VOCs analyzed (groundwater µg/L after cleanup): <0.5 MtBE, NA TBA, NA DIPE, NA ETBE, NA TAME, <0.5 EDB, 0.84 EDC, NA EtOH
[3] Other VOCs not analyzed (groundwater ppb before cleanup): 8.2 MtBE, NA TBA, NA DIPE, NA ETBE, NA TAME, <0.5 EDB, <0.5, NA EtOH
[4] Other VOCs (Soil mg/kg after cleanup): NA TBA, NA DIPE, NA ETBE, NA TAME, NA EtOH,
[5] Other VOCs (Soil mg/kg before cleanup): NA MtBE, NA TBA, NA TAME, < NA DIPE, NA EtOH
[6] Grab GW sample detected 120,000 µg/L TPH-g in sample BH-06 GW, located across the street. Monitoring well subsequently installed adjacent to BH-06 did not detect TPH-g above the laboratory detection limit.
NA - Not Analyzed

Site History and Description of Corrective Actions:

The Brenner Automotive site is located at the 488 25th Street in downtown Oakland on the north side of 25th Street approximately 500 feet east of Telegraph Avenue. The site and immediately adjacent properties are currently zoned commercial. However for contaminant risk comparison purposes, the residual contamination has been compared to future residential land-use scenario. The general terrain in the Site vicinity is flat with a gradual surface gradient to the southwest towards San Francisco Bay. Groundwater studies conducted on-site have verified that the groundwater flow direction is towards the southwest.

According to a site plan provided to the consultant by the property owner, the UST was installed on or before 1937 and had not been utilized since approximately the mid 1960's when the building use changed from a limousine/hearse rental operation to its current use. At that time, the dispenser (formerly located just inside the roll-up door within 8 feet of the

former UST) was removed. The 1,000-gallon capacity UST was cylindrical, single-walled, steel with tar paper wrapping, and was installed in a sand backfilled excavation measuring approximately 14 feet long by 5 feet wide by 9 feet in depth. The top of the UST was approximately 3 feet below the concrete sidewalk and approximately 2 feet above the top of the native soil.

Excavation confirmation sampling was conducted immediately following the UST removal. The former backfill material was removed to expose native soil at a depth of 9 feet bgs directly beneath the east and west ends of the former UST. On January 9, 2003, the excavation was backfilled with clean, imported fill material.

The two confirmation soil samples were analyzed for TPH-g, BTEX, MtBE, and total lead. TPH-g was detected at 2,500 mg/kg in the east end of the UST. Neither BTEX or MtBE were detected above the laboratory detection limit in this sample. However, the elevated gasoline concentration required a 333 percent dilution, which raised the reporting limit to 1.7 mg/kg for BTEX & MtBE. Analytical results are summarized in the attached tables.

In July 2003, a preliminary site investigation consisting of five direct push borings drilled to depths of 16 to 25 feet bgs was conducted. TPH-g and benzene were detected at a maximum concentration of 49 mg/kg and <0.010 mg/kg, respectively. Grab groundwater sample analytical results detected a maximum 7,900 µg/L TPH-g, <13 µg/L benzene, and 3.1 µg/L MtBE.

In July 2004, six additional borings were installed in the vicinity of the former UST to further define the extent of soil and groundwater contamination. TPH-g and benzene were detected at a maximum concentration of 150 mg/kg and <0.050 mg/kg, respectively. Grab groundwater sample analytical results detected a maximum 120,000 µg/L TPH-g, <13 µg/L benzene, and 8.2 µg/L MtBE. A preferential pathway evaluation was also conducted to identify underground utility trenches that may act as preferential pathways for groundwater contamination. Only sanitary and storm sewer lines located approximately 150 feet west (cross-gradient) of the subject site were potentially at the depth of groundwater. Based on the distance of these utilities, it is believed that it is unlikely to intercept impacted groundwater from the source area and act as preferential contaminant migration pathways.

In May 2005, three groundwater monitoring wells were installed, developed, surveyed, and sampled. Groundwater monitoring occurred for four consecutive quarters from May 2005 through February 2006. The most recent groundwater sampling event detected <50 µg/L TPH-g, <0.5 µg/L benzene, <1.0 µg/L MtBE, and 0.84 µg/L EDC. Based on a review of the boring logs, groundwater was typically encountered between 10 to 14 feet bgs in what is reported in some boring logs as gravelly clay (1st water bearing zone) underlain by sitly clay to approximately 20 feet bgs, with a more permeable clayey sand at a depth of approximately 20 to 25 feet bgs (2nd water bearing zone) at the site. The elevated PID hits are also consistent with the 1st water bearing zone. The "grab" groundwater samples appear to have typically been collected in the first water bearing zone depth. Groundwater monitoring wells are screened from 10 to 25 feet bgs. The screens appear to encompass the first and second water bearing zones tentatively identified at the site in monitoring wells MW-2 and MW-3. Although the wells screens may intersect the first and second water bearing zones, cross-connecting and potentially diluting the concentrations of contaminants that may be present in the first water bearing zone, the concentrations of contaminants detected in soil and "grab" groundwater generally do not indicate that a significant release had occurred. Therefore, based on the monitoring well, "grab" groundwater, and soil samples analytical results, the impact to soil and groundwater appears adequately assessed.

Site concentrations were compared to applicable RWQCB ESLs. Residual concentrations of TPH-g (2,500 mg/kg) benzene (<1.7 mg/kg), exceed the applicable ESL of 83 for TPH-g, 0.044 mg/kg for benzene, for residential land-use risk scenario where groundwater is a current or potential drinking water resource. However, BH-01 installed in July 2003 located within the former UST pit detected 14 mg/kg TPH-g and <0.0054 mg/kg benzene at 10 feet bgs. Soil samples from BH-2, BH-3, & BH-4 located approximately 5 to 7 ft from the excavation perimeter did not detect TPH-g or BTEX above the laboratory detection limit. Therefore, soil impact appears to be limited to the east side of the excavation.

The only other contaminant concentration in soil detected above the ESLs was TPH-g at a concentration of 150 mg/kg collected from BH-09 at 11 feet bgs. Therefore, the residual concentrations of contaminants in soil do not appear to pose appreciable risk to human health or the environment under the current commercial land use and building configuration.

Gasoline and benzene were detected at a maximum concentration of 120,000 µg/L and <13 µg/L, respectively, in a "grab" groundwater sample collected from boring BH-06, located across the street from the subject site. A groundwater monitoring well MW-3 was installed within five feet of boring BH-06. Concentrations of contaminants were not detected above the laboratory detection limit except for EDC which was detected at 0.84 µg/L. The elevated "grab" groundwater sample may be attributed to potentially contaminated drilling equipment during boring installation or the sampling methodology.

Typically drilling equipment is steam cleaned at the drilling company's yard and then loaded onto the drill rig or sometimes, it is steam cleaned onsite. Therefore, it is a possibility that the drilling equipment was not adequately cleaned and contamination detect at the subject is attributed to contaminated equipment.

Another possibility is sampling methodology. "Grab" samples are collected by lowering a bailer in the boring to groundwater shortly after reaching total depth by the drill rig (i.e., a few feet below first encountered groundwater). In areas of a petroleum release, there is generally a zone of petroleum impacted soil at the historic top of groundwater, sometimes referred to as the "smear zone." Because of soil disturbance caused by the drill rig, the groundwater in the boring and, thus, a "grab" groundwater sample collected from the boring, would tend to contain a high amount of suspended sediment, and petroleum, if gasoline is present in the soil and the "smear zone" at the boring location. The analysis of a turbid groundwater sample at the analytical laboratory would include analysis of the soil particles contained in the sample as well as the groundwater. Thus, the analytical results of the sample may reflect the presence of gasoline associated with the soil particles including dissolved phase in groundwater and tend not be representative of the actual concentration of dissolved gasoline in the groundwater at the boring location. Therefore, reported concentration would tend to be higher than actual groundwater quality conditions. TPH-g and BTEX were not detected above their respective ESLs in groundwater samples collected from site monitoring wells. Although 0.84 µg/L EDC exceeds the ESL of 0.05 µg/L, the concentration is below the contaminant volatilization to indoor air residential land-use scenario and aquatic habitat protection ESLs of 150 µg/L and 1,400 µg/L, respectively. Therefore, the residual concentrations of contaminants detected in groundwater do not appear to pose an appreciable risk to human health or the environment under the current commercial land use and building configuration.

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? Yes		
Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? Yes		
Does corrective action protect public health for current land use? Alameda County Environmental Health staff does not make specific determinations concerning public health risk. However, based upon the information available in our files to date, it does not appear that the release would present a significant risk to human health based upon current land use and conditions.		
Site Management Requirements: City of Oakland Building Department has been notified that should excavation or development of the property be proposed that may encounter impacted soil or groundwater, Alameda County Environmental Health must be notified as required by Government Code Section 65850.2.2. The current property owner/developer must submit a soil and groundwater management plan for review prior to any construction activities. Please note that case closure for the fuel leak site is granted for commercial land use. If a change in land use to residential or other conservative scenario occurs at this property, Alameda County Environmental Health must be notified and the case needs to be re-evaluated.		
Should corrective action be reviewed if land use changes? Yes.		
Was a deed restriction or deed notification filed? No		Date Recorded: --
Monitoring Wells Decommissioned: No	Number Decommissioned: 3	Number Retained: 0
List Enforcement Actions Taken: None		
List Enforcement Actions Rescinded: --		

V. ADDITIONAL COMMENTS, DATA, ETC.

Considerations and/or Variances:
Residual concentrations of petroleum hydrocarbons detected in soil are follows:

- 2,500 mg/kg TPH-g.

Residual concentrations of petroleum hydrocarbons detected in groundwater are as follows:

- 7,700 µg/L TPH-g near the sidewalk.
- 0.84 µg/L EDC

The residual concentrations detected exceed the ESLs where groundwater is a potential drinking water source. The concentrations of gasoline range petroleum hydrocarbons are expected to decrease over time as a result of biodegradation and natural attenuation processes. ETBE, TAME, TBA, DIPE, and EtOH, were not analyzed for in soil or groundwater. Please note that case closure for the fuel leak site is granted for commercial land use. If a change in land use to residential or other conservative scenario occurs at this property, Alameda County Environmental Health must be notified and the case needs to be re-evaluated.

Conclusion:
Alameda County Environmental Health staff consider that the levels of residual contamination do not pose a significant threat to water resources, public health and safety, and the environment for the current commercial land use based upon the information available in our files to date. No further investigation or cleanup is necessary. ACEH staff recommend case closure for this site based on the current commercial use of the site only.

VI. LOCAL AGENCY REPRESENTATIVE DATA

Prepared by: Paresh Khatri	Title: Hazardous Materials Specialist
Signature:	Date: November 5, 2008
Approved by: Donna L. Drogos, P.E.	Title: Supervising Hazardous Materials Specialist
Signature:	Date: 11/06/08

This closure approval is based upon the available information and with the provision that the information provided to this agency was accurate and representative of site conditions.

VII. REGIONAL BOARD NOTIFICATION

Regional Board Staff Name: Cherie McCaulou	Title: Engineering Geologist
RB Response: Concur, based solely upon information contained in this case closure summary.	Date Submitted to RB:
Signature:	Date: 1/21/09

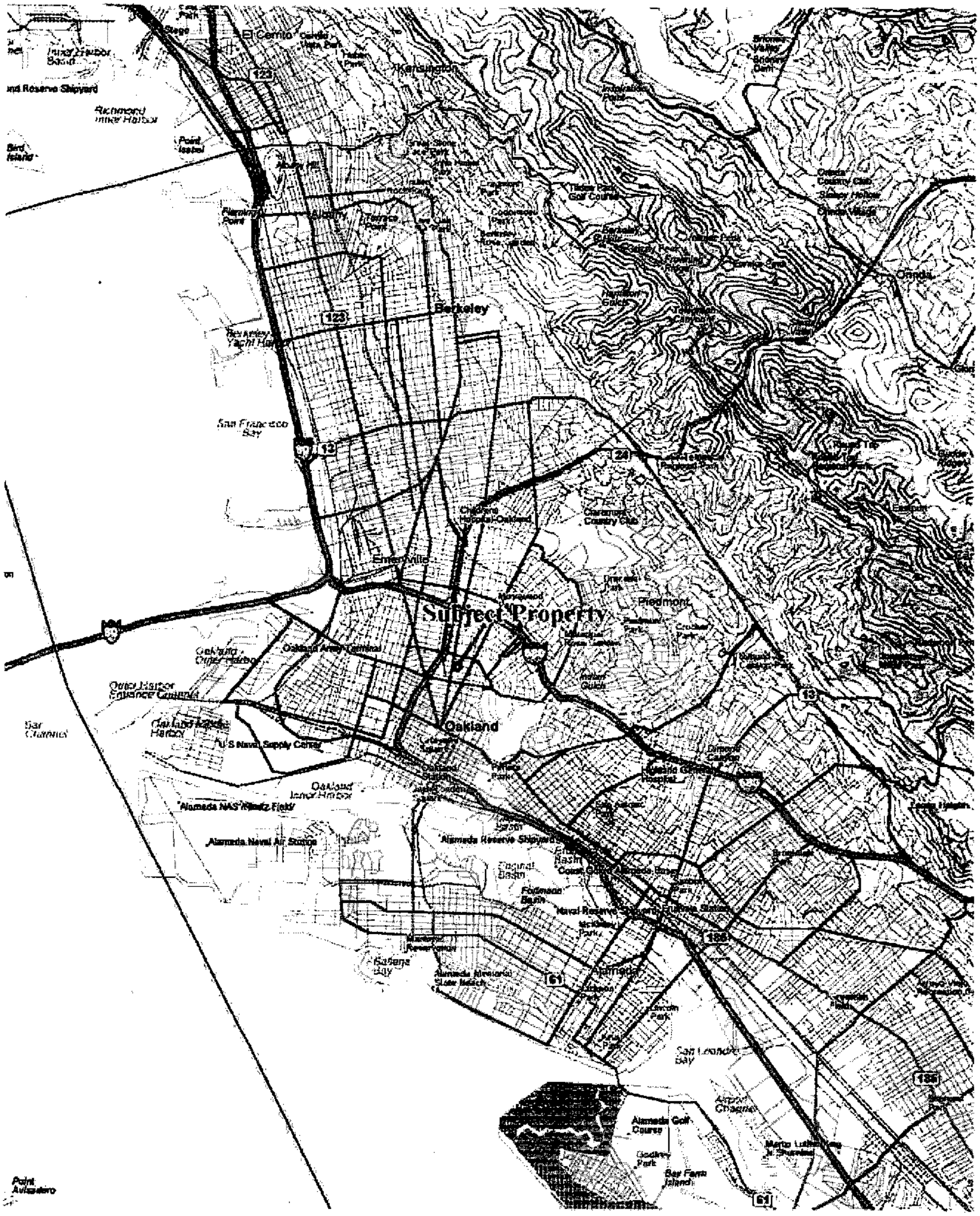
VIII. MONITORING WELL DECOMMISSIONING

Date Requested by ACEH:	Date of Well Decommissioning Report:	
All Monitoring Wells Decommissioned: No	Number Decommissioned:	Number Retained:
Reason Wells Retained:		
Additional requirements for submittal of groundwater data from retained wells: None		
ACEH Concurrence - Signature:		Date:

Attachments:

1. Site Vicinity Map (1 page)
2. Site Plan with Sample Locations & GW flow direction (7 pages)
3. Site Plan depicting Subsurface Utilities (1 page)
4. Site Plan with Cross-sections (3 pages)
5. Soil and Groundwater Analytical Data (5 pages)
6. Groundwater Elevation Table (1 page)
7. Preferential Pathway Survey Findings Table (1 page)
8. Tables 1 & 2 (Comparison of residual contamination to applicable ESLs) [2 pages]
9. Monitoring Well Construction Details and Boring Logs (33 pages)

This document and the related CASE CLOSURE LETTER & REMEDIAL ACTION COMPLETION CERTIFICATE shall be retained by the lead agency as part of the official site file.

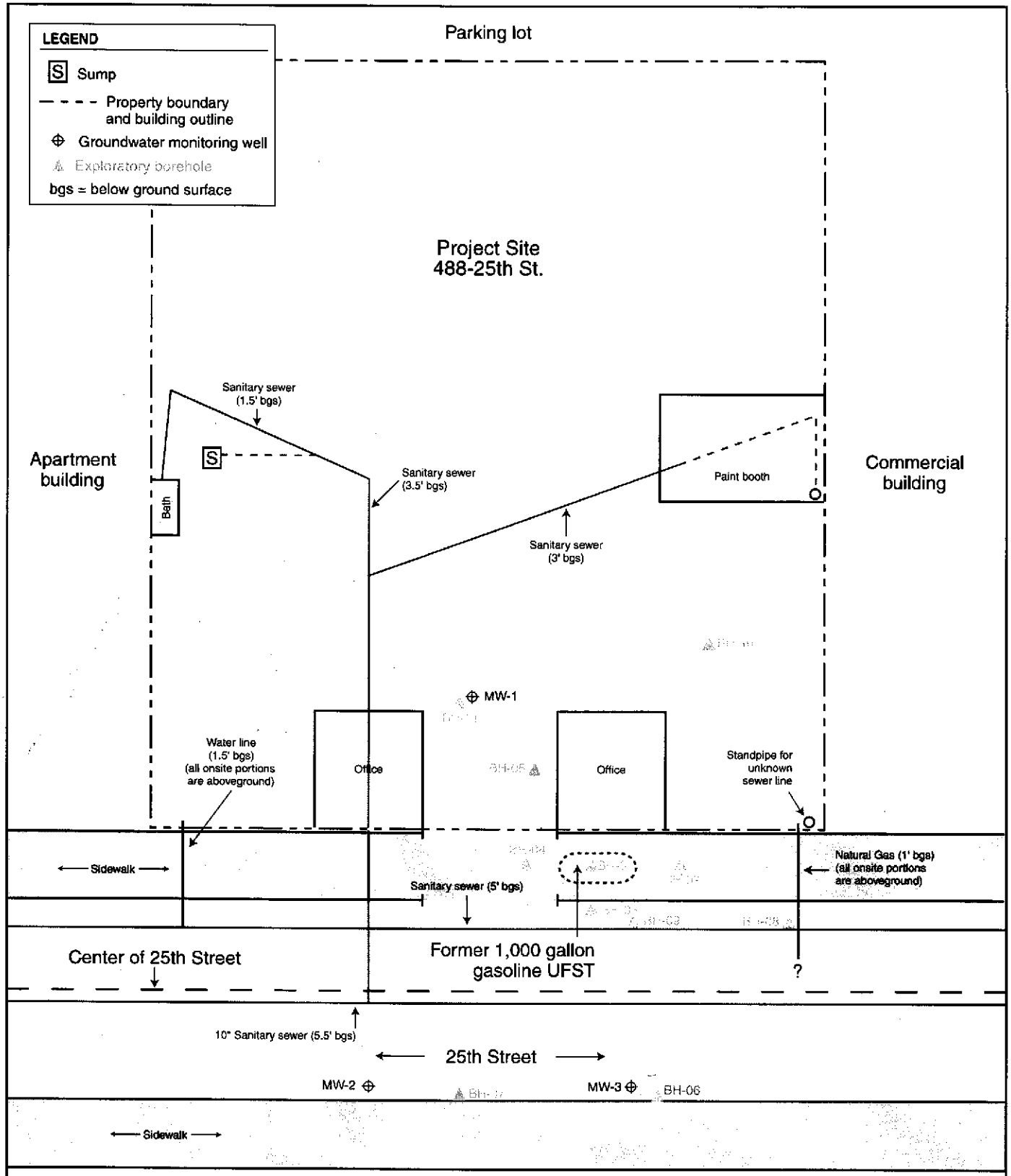


N

SITE LOCATION ON U.S.G.S. TOPOGRAPHIC MAP

488 25th Street Oakland, CA	By: MJC	JANUARY 2003	Stellar Environmental Solutions Geoscience & Engineering Consulting
	Figure 1		

2003-55-01

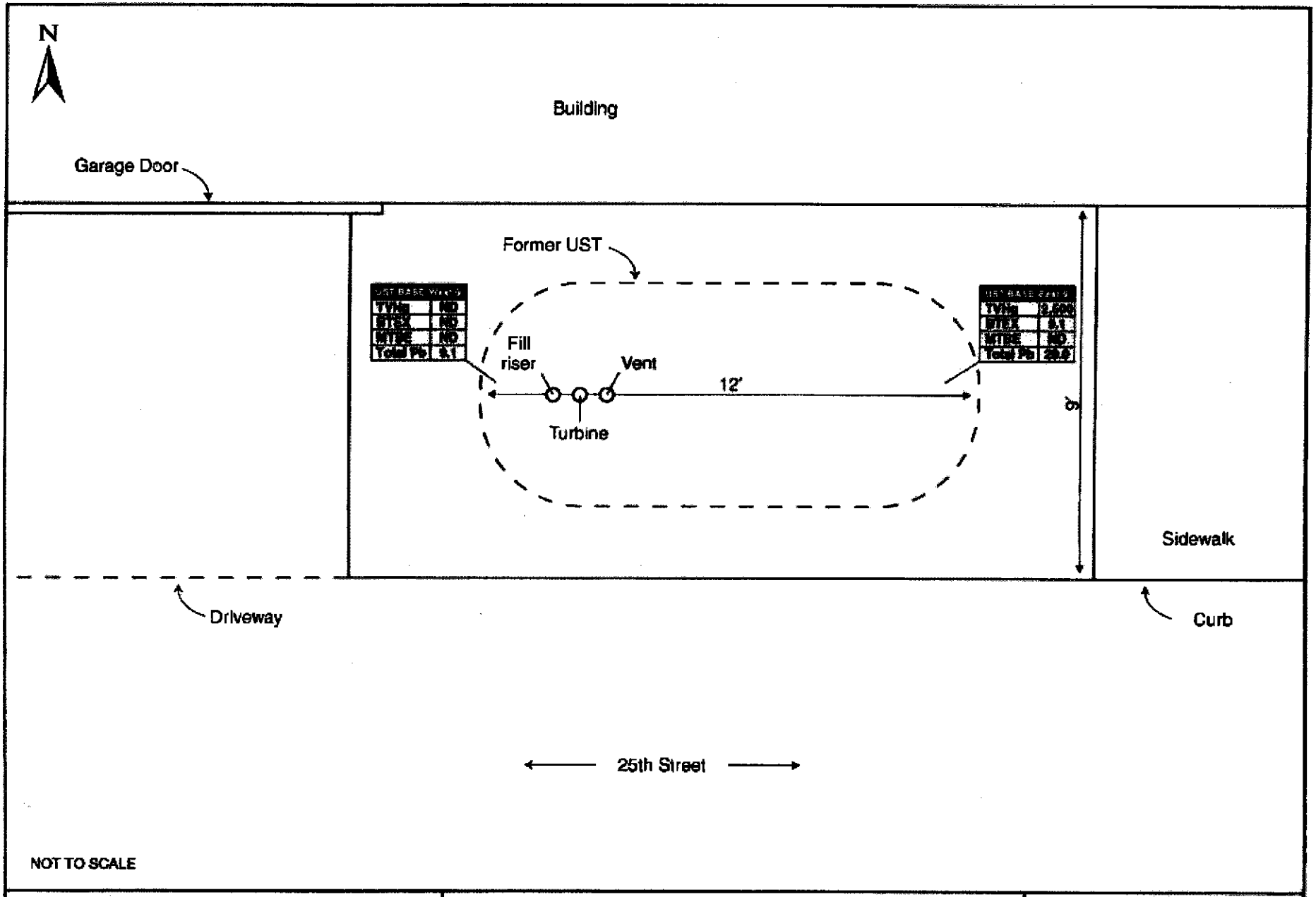


SITE PLAN

Benner Automotive **488-25th St., Oakland, CA**	**By: MJC**	**JUNE 2005**
	Figure 2	

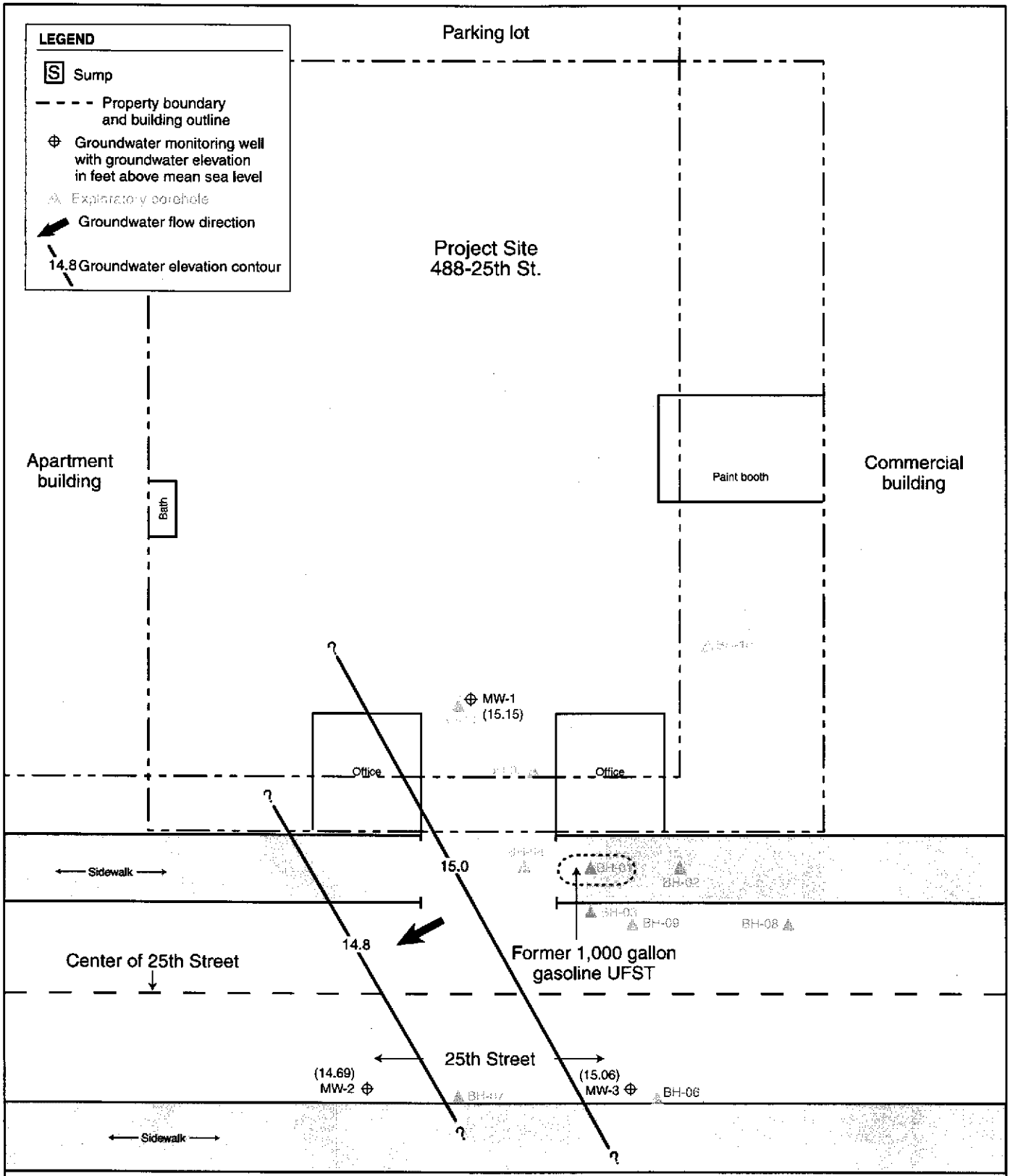
Stellar Environmental Solutions, Inc.
Geoscience & Engineering Consulting

2002-55-59



Stellar Environmental Solutions Geoscience & Engineering Consulting	SITE PLAN AND SAMPLING LOCATIONS—BENNER AUTOMOTIVE 488 25th Street, Oakland, CA	Figure 3 by: MJC | JANUARY 2003

2002-55-02

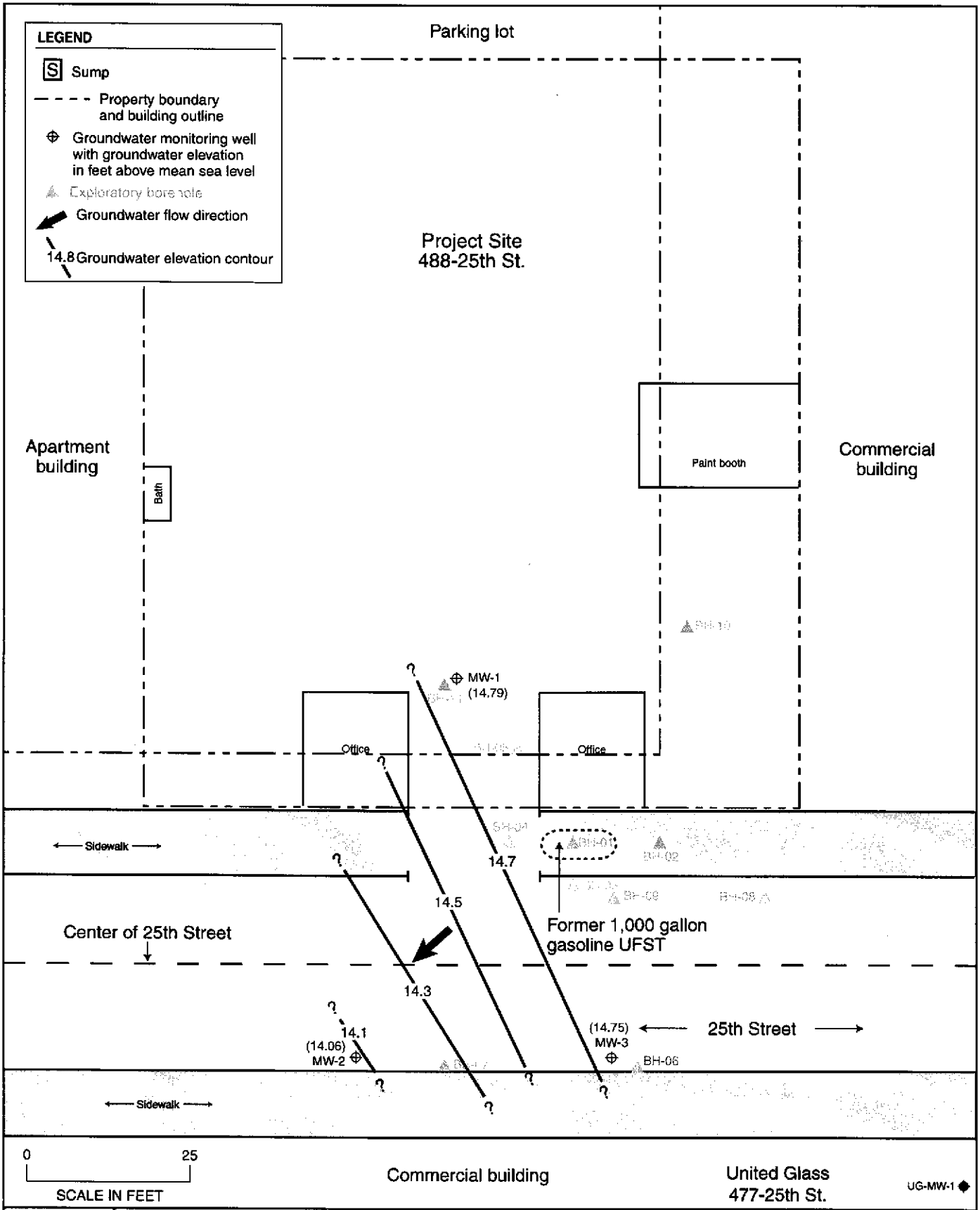


MAY 2005 GROUNDWATER ELEVATIONS

Benner Automotive **488-25th St., Oakland, CA**	By: MJC	JUNE 2005
	Figure 4	

★ Stellar Environmental Solutions, Inc.
Geoscience & Engineering Consulting

2002-55-61

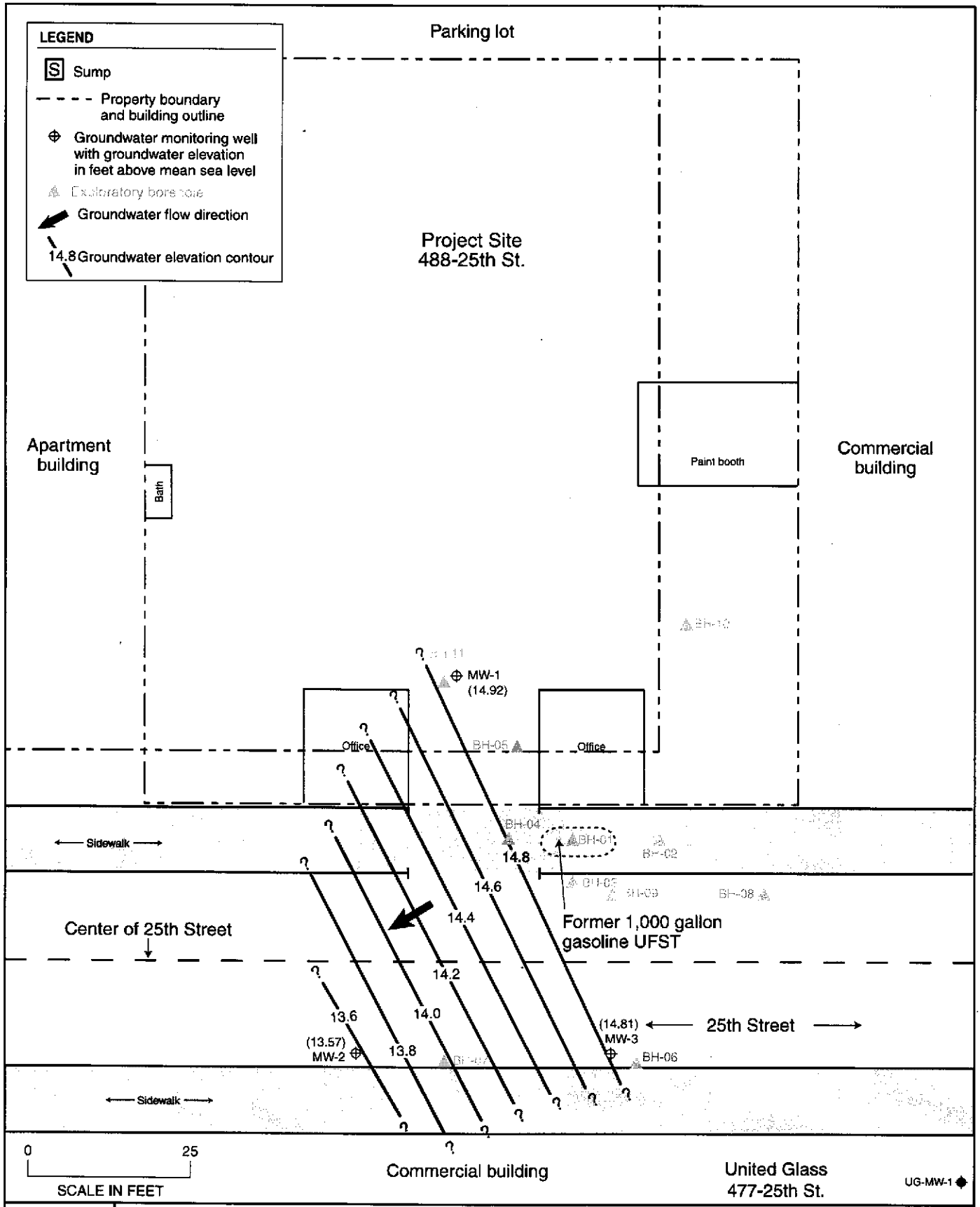


AUGUST 2005 GROUNDWATER ELEVATIONS

Benner Automotive **488-25th St., Oakland, CA**	**By: MJC**	**SEPTEMBER 2005**
	Figure 5	

Stellar Environmental Solutions, Inc.
Geoscience & Engineering Consulting

2002-55-65

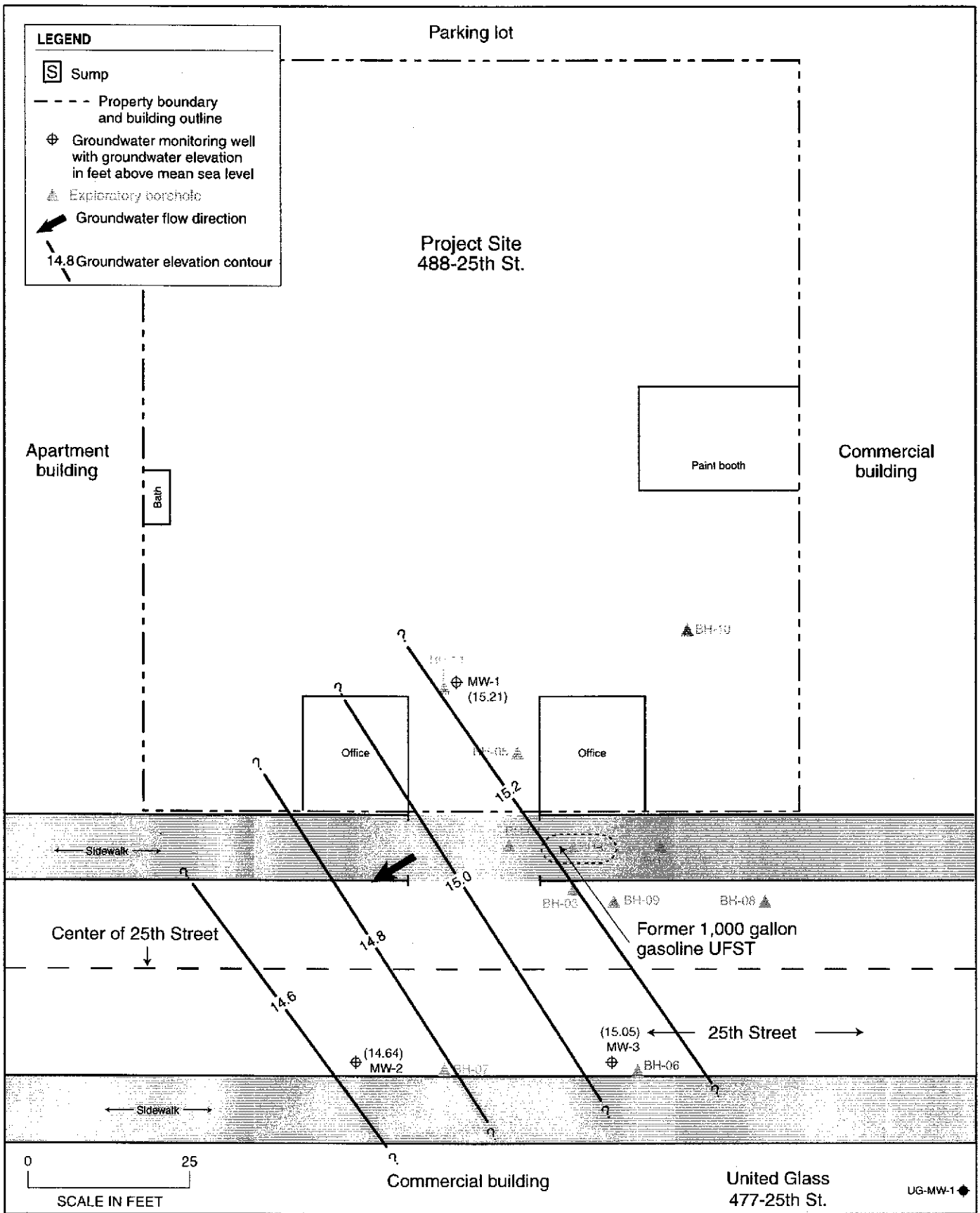


NOVEMBER 2005 GROUNDWATER ELEVATIONS

Benner Automotive **488-25th St., Oakland, CA**	By: MJC	DECEMBER 2005
	Figure 6	

STELLAR ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

2002-55-67



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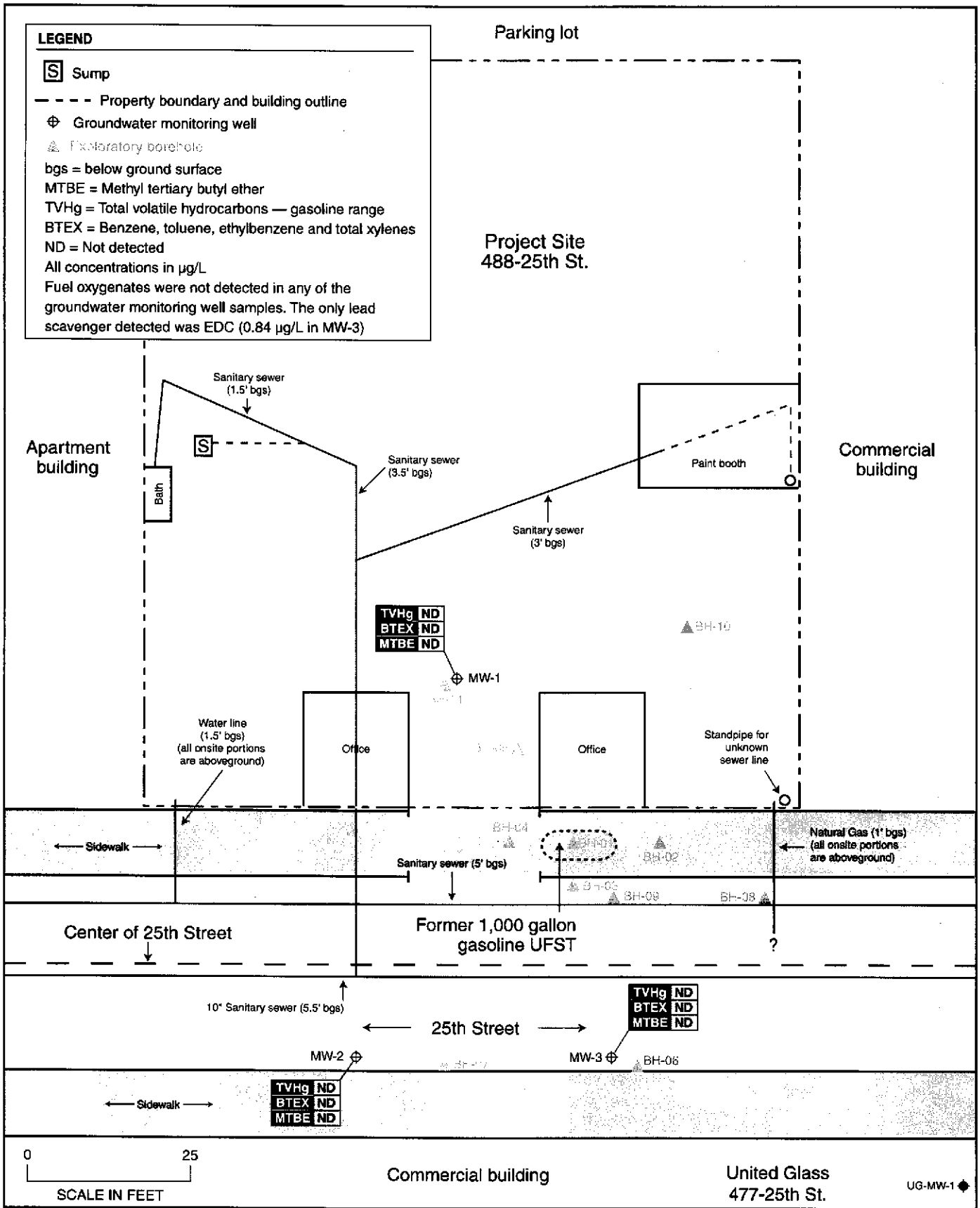
FEBRUARY 24, 2006 GROUNDWATER ELEVATIONS

Benner Automotive **488-25th St., Oakland, CA**	**By: MJC**	**FEBRUARY 2006**
	Figure 7	

STELLAR ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

2002-55-69

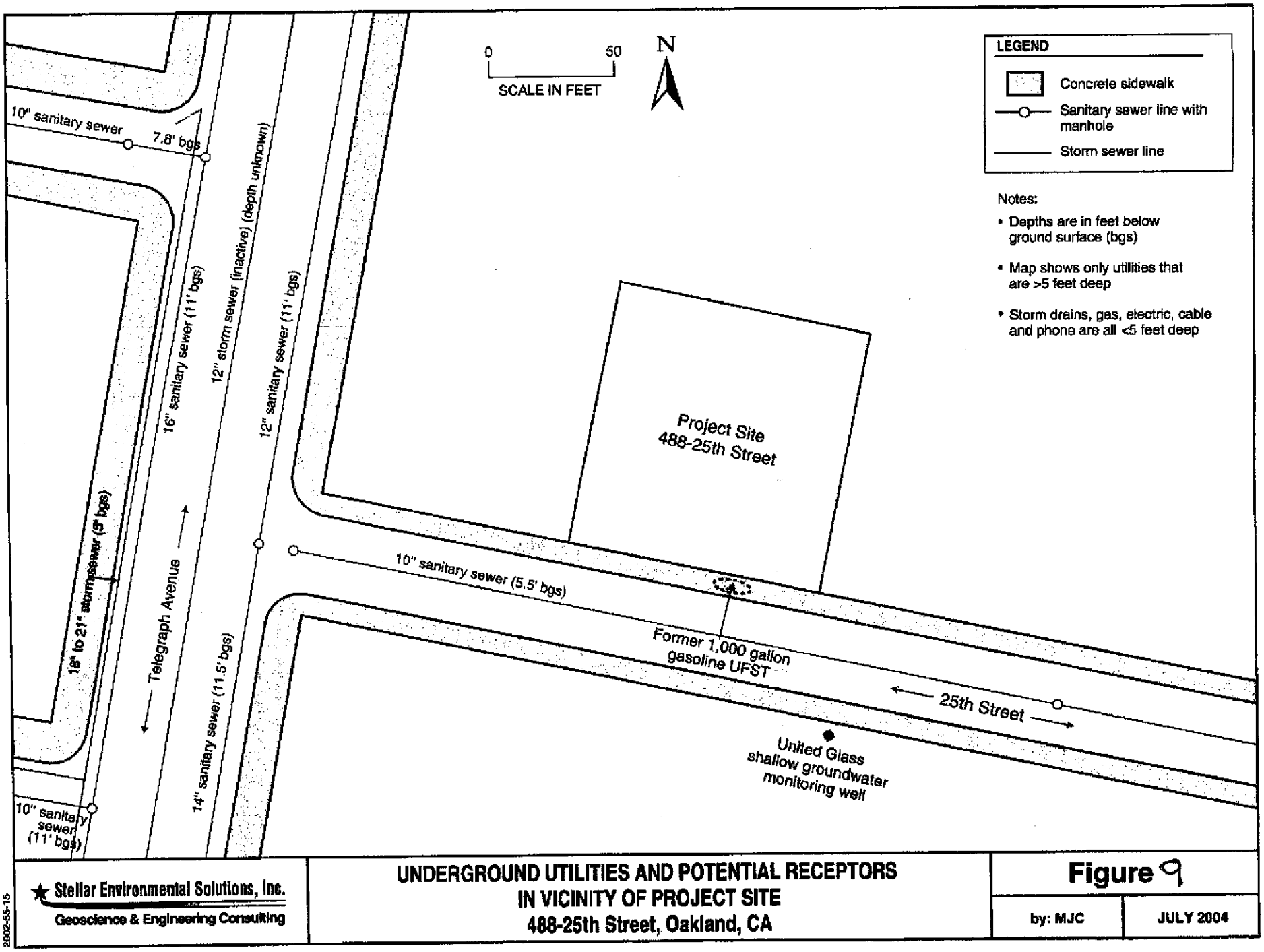


FEBRUARY 2006 GROUNDWATER ANALYTICAL RESULTS

Benner Automotive **488-25th St., Oakland, CA**	By: MJC	MARCH 2006
	Figure 8	

STELLAR ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

2002-55-70



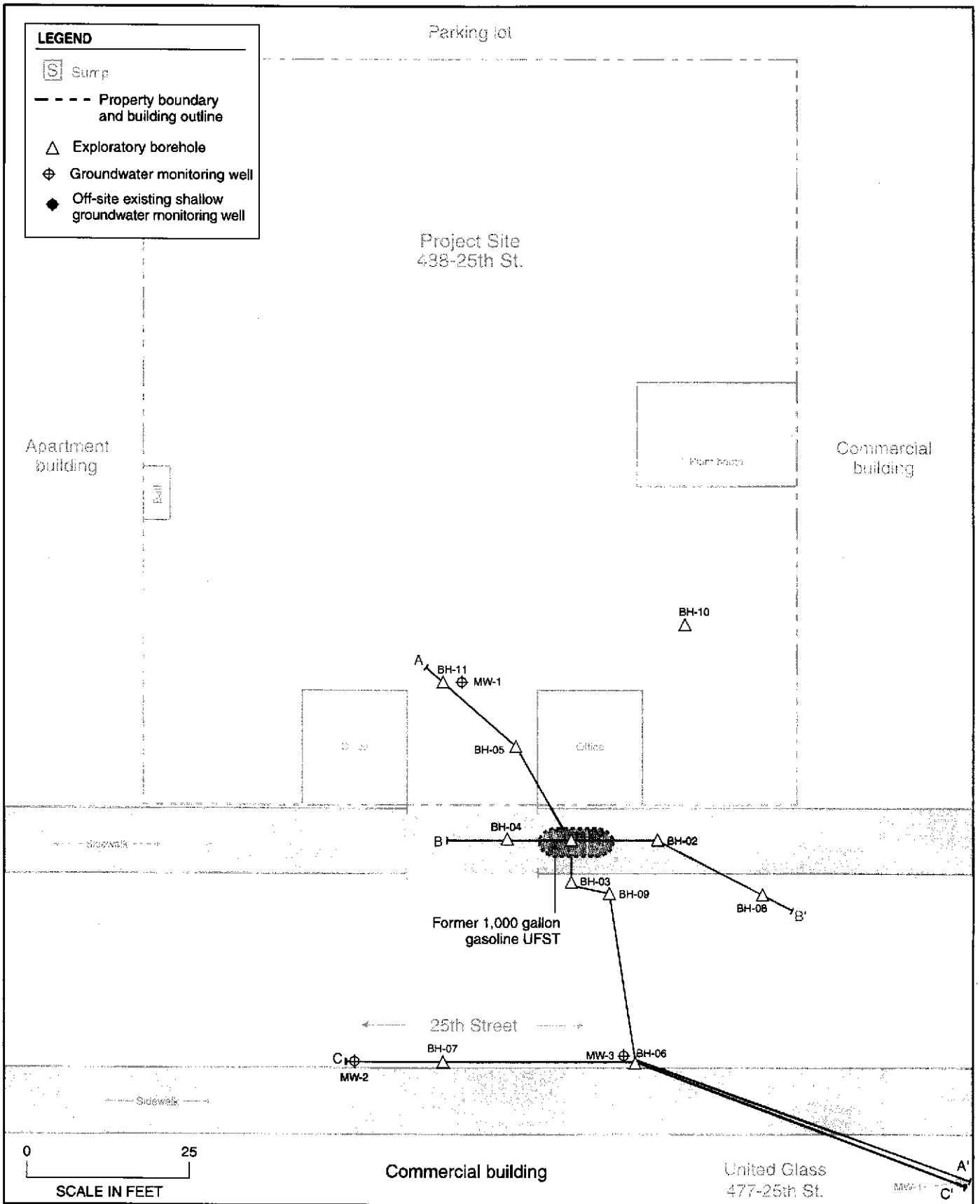
Stellar Environmental Solutions, Inc.
Geoscience & Engineering Consulting

UNDERGROUND UTILITIES AND POTENTIAL RECEPTORS IN VICINITY OF PROJECT SITE
488-25th Street, Oakland, CA

Figure 9

by: MJC | JULY 2004

2002-55-15



SITE PLAN WITH CROSS-SECTION LOCATIONS

Benner Automotive **488-25th St., Oakland, CA**	By: MJC	JUNE 2005
	Figure 10	

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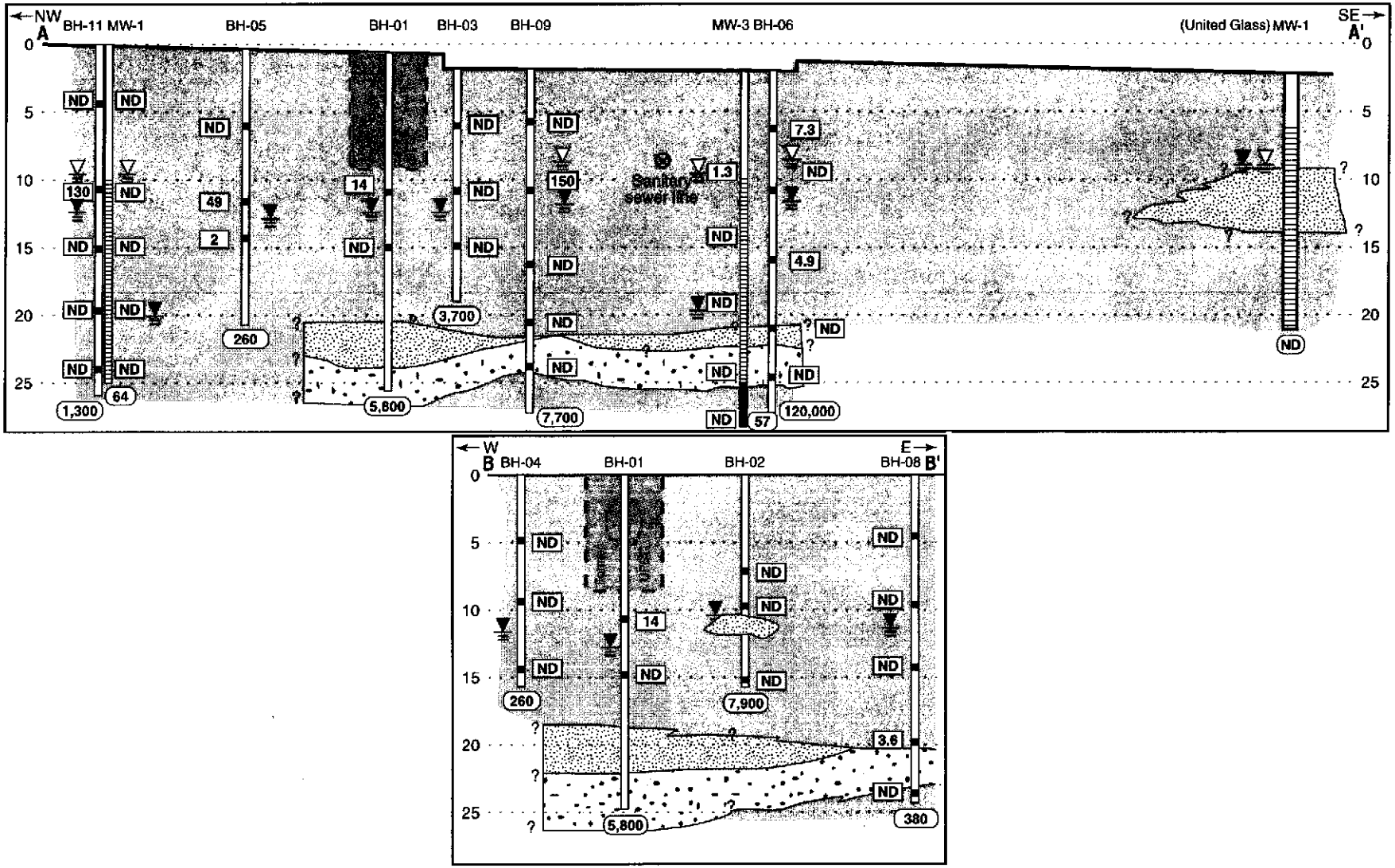
2002-55-62



LEGEND

0 10

HORIZONTAL SCALE (FEET)

BH-1 Exploratory Boring BH-1

14 Location of soil sample collected for laboratory analysis, and soil gasoline concentration (mg/Kg)

MW-1 Monitoring Well

Well screen interval

Silt/clay

Sand/gravel

Water level during drilling

Equilibrated water level

5,800 Groundwater gasoline concentration (µg/L)

2002-55-63

Stellar Environmental Solutions, Inc.
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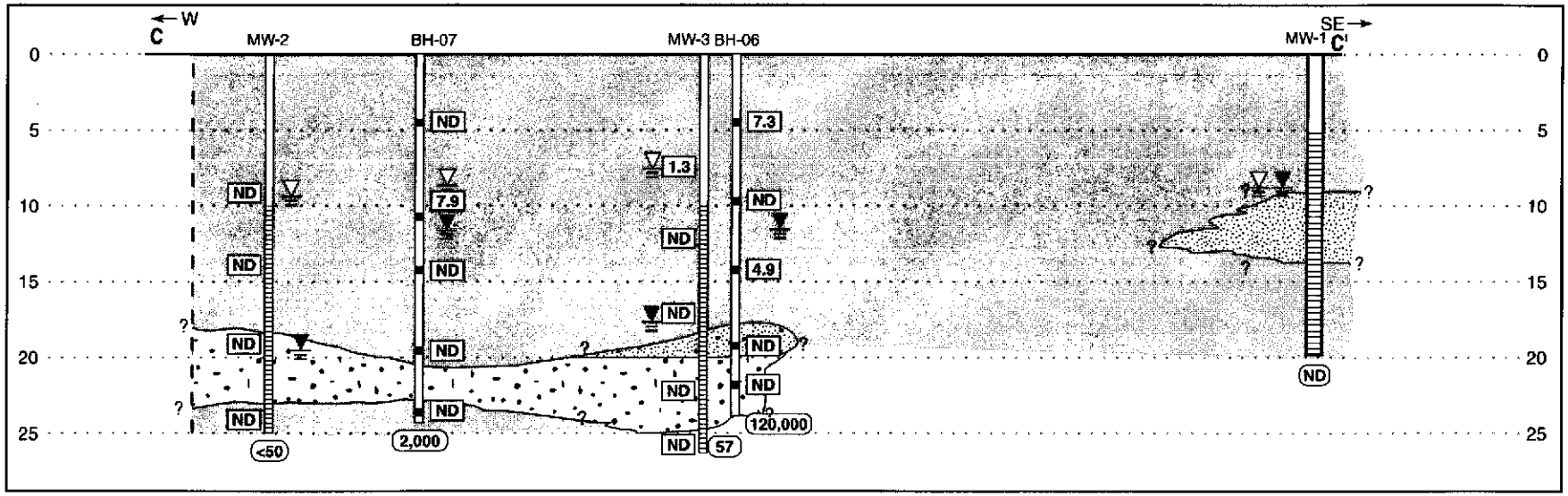
GEOLOGIC CROSS-SECTIONS A-A' & B-B'

488-25th Street, Oakland, CA

Figure 11

by: MJC

JUNE 2005



LEGEND

0 10

HORIZONTAL SCALE (FEET)

BH-1 Exploratory Boring BH-1

14 Location of soil sample collected for laboratory analysis, and soil gasoline concentration (mg/Kg)

MW-1 Monitoring Well

Well screen interval

Silt/clay

Sand/gravel

Water level during drilling

Equilibrated water level

5,800 Groundwater gasoline concentration (µg/L)

Stellar Environmental Solutions, Inc.
Geoscience & Engineering Consulting

GEOLOGIC CROSS-SECTION C-C'

488-25th Street, Oakland, CA

Figure 12

by: MJC

JUNE 2005

2002-55-64

Table C-1
Historical and Current Soil Analytical Results
488 25th Street, Oakland, California [a]

Sample I.D.	Sample Depth (feet)	TVHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Lead Scavengers and Fuel Oxygenates [c]
January 2003 Base of UFST Excavation Soil Samples								
UFST Base-East	9.0	**2,500**	*<1.7* [b]	*<1.7* [b]	*<1.7* [b]	*<1.7* [b]	*<1.7* [b]	*NA*
UFST Base-West	9.0	*<1.1*	*<0.0053*	*<0.0053*	*<0.0053*	*<0.0053*	*<0.0053*	*NA*
July 2003 Exploratory Borehole Soil Samples								
BH-1-10'	10.0	**14**	*<0.0054*	*<0.0054*	*<0.0054*	*<0.0054*	*<0.022*	*NA*
BH-1-14'	14.0	*<1.1*	*<0.0053*	*<0.0053*	*<0.0053*	*<0.0053*	*<0.021*	*NA*
BH-2-6.5'	6.5	*<1.1*	*<0.0054*	*<0.0054*	*<0.0054*	*<0.0054*	*<00022*	*NA*
BH-2-9'	9.0	*<1.0*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.020*	*NA*
BH-2-15'	15.0	*<1.1*	*<0.0053*	*<0.0053*	*<0.0053*	*<0.0053*	*<0.021*	*NA*
BH-3-5'	5.0	*<1.0*	*<0.0052*	*<0.0052*	*<0.0052*	*<0.0052*	*<0.021*	*NA*
BH-3-9'	9.0	*<1.1*	*<0.0054*	*<0.0054*	*<0.0054*	*<0.0054*	*<0.022*	*NA*
BH-3-13'	13.0	*<1.0*	*<0.0052*	*<0.0052*	*<0.0052*	*<0.0052*	*<0.021*	*NA*
BH-4-5'	5.0	*<1.0*	*<0.0051*	*<0.0051*	*<0.0051*	*<0.0051*	*<0.020*	*NA*
BH-4-9'	9.0	*<1.0*	*<0.0052*	*<0.0052*	*<0.0052*	*<0.0052*	*<0.021*	*NA*
BH-4-13'	13.0	*<1.1*	*<0.0055*	*<0.0055*	*<0.0055*	*<0.0055*	*<0.022*	*NA*
BH-5-6.5'	6.5	*<1.1*	*<0.0054*	*<0.0054*	*<0.0054*	*<0.0054*	*<0.022*	*NA*
BH-5-11.5'	11.5	**49**	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.040*	*NA*
BH-5-13'	13.0	**1.7**	*<0.0053*	*<0.0053*	*<0.0053*	*<0.0053*	*<0.021*	*NA*
July 2004 Exploratory Borehole Soil Samples								
BH-06-4.5'	4.5	**7.3**	*<0.0056*	*<0.0056*	*<0.0056*	*<0.0056*	*<0.0048*	*ND*
BH-06-9.5'	9.5	*<1.1*	*<0.0053*	*<0.0053*	*<0.0053*	*<0.0053*	*<0.0049*	*ND*
BH-06-14.5'	14.5	**4.9**	*<0.0054*	**0.0082**	*<0.0054*	*<0.0054*	*<0.0047*	*ND*
BH-06-19.5'	19.5	*<1.1*	*<0.0054*	*<0.0054*	*<0.0054*	*<0.0054*	*<0.0049*	*ND*
BH-06-22.5'	22.5	*<1.0*	*<0.0051*	*<0.0051*	*<0.0051*	*<0.0051*	*<0.0045*	*ND*
BH-07-4.5'	4.5	*<1.1*	*<0.0053*	*<0.0053*	*<0.0053*	*<0.0053*	*<0.0050*	*ND*
BH-07-10.5'	10.5	**7.9**	*<0.0054*	**0.009**	*<0.0054*	*<0.0054*	*<0.0047*	*ND*
BH-07-14.5'	14.5	*<0.98*	*<0.0049*	*<0.0049*	*<0.0049*	*<0.0049*	*<0.0045*	*ND*
BH-07-19.5'	19.5	*<0.96*	*<0.0048*	*<0.0048*	*<0.0048*	*<0.0048*	*<0.0049*	*ND*
BH-07-23.5'	23.5	*<1.0*	*<0.0052*	*<0.0052*	*<0.0052*	*<0.0052*	*<0.0046*	*ND*
BH-08-4.5'	4.5	*<1.0*	*<0.0052*	*<0.0052*	*<0.0052*	*<0.0052*	*<0.0049*	*ND*
BH-08-9.5'	9.5	*<1.1*	*<0.0053*	*<0.0053*	*<0.0053*	*<0.0053*	*<0.0047*	*ND*
BH-08-14.5'	14.5	*<0.97*	*<0.0049*	*<0.0049*	*<0.0049*	*<0.0049*	*<0.0045*	*ND*
BH-08-20'	20	**3.6**	*<0.0054*	*<0.0054*	*<0.0054*	*<0.0054*	*<0.0049*	*ND*

(Table continued and footnotes on next page)

Table C-1 continued

Sample I.D.	Sample Depth (feet)	TVHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Lead Scavengers and Fuel Oxygenates [c]
July 2004 Exploratory Borehole Soil Samples (continued)								
BH-08-23.5'	23.5	*<1.1*	*<0.0055*	*<0.0055*	*<0.0055*	*<0.0055*	*<0.0046*	*ND*
BH-09-4.5'	4.5	*<1.0*	*<0.0051*	*<0.0051*	*<0.0051*	*<0.0051*	*<0.0045*	*ND*
BH-09-11'	11	**150**	*<0.0500*	*<0.0500*	*<0.0500*	**0.120**	*<0.0049*	*ND*
BH-09-15.5'	15.5	*<0.99*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0045*	*ND*
BH-09-19.5'	19.5	*<0.98*	*<0.0049*	*<0.0049*	*<0.0049*	*<0.0049*	*<0.0047*	*ND*
BH-09-23.5'	23.5	*<1.0*	*<0.0051*	*<0.0051*	*<0.0051*	*<0.0051*	*<0.0049*	*ND*
BH-10-4.5'	4.5	*<1.0*	*<0.0052*	*<0.0052*	*<0.0052*	*<0.0052*	*<0.0049*	*ND*
BH-10-9.5'	9.5	*<1.1*	*<0.0055*	*<0.0055*	*<0.0055*	*<0.0055*	*<0.0047*	*ND*
BH-10-14.5'	14.5	*<1.0*	*<0.0052*	*<0.0052*	*<0.0052*	*<0.0052*	*<0.0048*	*ND*
BH-10-19.5'	19.5	*<0.99*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0045*	*ND*
BH-10-23.5'	23.5	*<1.0*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0047*	*ND*
BH-11-4.5'	4.5	*<0.97*	*<0.0049*	*<0.0049*	*<0.0049*	*<0.0049*	*<0.0049*	*ND*
BH-11-11'	11	130	*<0.0250*	**0.240**	*<0.0250*	*<0.0250*	*<0.0047*	*ND*
BH-11-15'	15	*<1.0*	*<0.0051*	*<0.0051*	*<0.0051*	*<0.0051*	*<0.0050*	*ND*
BH-11-19.5	19.5	*<1.0*	*<0.0052*	*<0.0052*	*<0.0052*	*<0.0052*	*<0.0048*	*ND*
BH-11-23.5'	23.5	*<1.0*	*<0.0052*	*<0.0052*	*<0.0052*	*<0.0052*	*<0.0046*	*ND*
	Soil ESLs [d]	**100 / NLP**	**0.045 / 0.5**	**2.6 / 420,000**	**2.5 / 13,000**	**1.0 / 100,000**	**0.028 / 5,600**	**Various**

Notes:

[a] All concentrations in mg/kg.

[b] High concentrations of gasoline required sample dilution, resulting in the listed increased method reporting limit.

[c] See Appendix D for full list of analytes.

[d] ESL = RWQCB Environmental Screening Levels for commercial/industrial sites with coarse-grained soil where groundwater is a potential drinking water source. First value is for shallow soils. Second value is for evaluation of potential indoor air impacts.

TVHg = Total volatile hydrocarbons – gasoline range.
NLP = No level published.
NA = Not analyzed for these constituents.
ND = Not detected (see Appendix D for reporting limits).

Table C-2
Historical Borehole and Grab-Groundwater Analytical Results
488 25th Street, Oakland, California [a]

Sample I.D.	Sample Depth (feet)	TVHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Lead Scavengers and Fuel Oxygenates [b]
July 2003 Borehole Groundwater Samples								
BH-01-GW	~ 10-11	**5,800**	*<0.50*	*<0.50*	**7.4**	**4.5**	*<2.0*	*NA*
BH-02-GW	~ 10-11	**7,900**	*<13*	**15**	**24**	**61**	*<50*	*NA*
BH-03-GW	~ 10-11	**3,700**	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<4.0*	*NA*
BH-04-GW	~ 10-11	**260**	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<2.0*	*NA*
BH-05-GW	~ 10-11	**260**	*<0.50*	*<0.50*	*<0.50*	*<0.50*	**3.1**	*NA*
July 2004 Borehole Groundwater Samples								
BH-06-GW	~ 12-16	**120,000**	*<13*	*<13*	**70**	**540**	*<1.7*	*ND*
BH-07-GW	~ 12-16	**2,000**	*<0.50*	**3.4**	**8.1**	**14**	*<0.50*	*ND*
BH-08-GW	~ 12-16	**380**	*<0.50*	**0.77**	*<0.50*	**1.6**	*<0.50*	*ND*
BH-09-GW	~ 12-16	**7,700**	*<1.0*	*<1.0*	**21**	**39.7**	*<0.50*	*ND*
BH-10-GW	~ 12-16	*<50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*ND*
BH-11-GW	~ 12-16	**1,300**	*<0.50*	*<0.50*	0.88	**6.0**	**8.2**	*ND*
July 2004 United Glass Groundwater Monitoring Well Sample (grab sample)								
MW-1	NA	*<50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*	**1.2**	*ND*
Groundwater ESLs [c]		**100 / NLP**	**1.0 / 1,800**	**40 / 530,000**	**30 / 47,000**	**13 / 160,000**	**5.0 / 80,000**	**Various**
Drinking Water Standards [d]		**NLP**	**1.0**	**40**	**30**	**20**	**5.0 [e] / 13**	**Various**

Notes:

[a] All concentrations in µg/L.
[b] See Appendix D for full list of analytes.
[c] ESL = RWQCB Environmental Screening Levels for commercial/industrial sites with coarse-grained soil where groundwater is a potential drinking water source. First value is groundwater ESL. Second value is for evaluation of potential indoor air impacts (high permeability soil).
[d] Primary Maximum Contaminant Level (MCL), unless specified otherwise.
[e] Secondary (nuisance) MCL.

TVHg = Total volatile hydrocarbons – gasoline range.
NLP = No level published.
NA = Not analyzed for these constituents.
ND = Not detected (see Appendix D for reporting limits).

Table 3
Historical Groundwater Monitoring Well Groundwater Analytical Results – 488 25th Street, Oakland

Sample I.D.	TVHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Fuel Oxygenates [a]
May 2005 Event							
MW-1	**64**	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.00*	*< 0.5*	*ND*
MW-2	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.00*	*< 0.5*	*ND*
MW-3	**57**	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.00*	*< 0.5*	*ND*
August 2005 Event							
MW-1	**66**	*< 0.5*	**0.57**	*< 0.5*	*< 1.00*	*< 5.0*	*ND*
MW-2	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.00*	*< 5.0*	*ND*
MW-3	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.00*	*< 5.0*	**EDC = 0.62**
November 2005 Event							
MW-1	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.00*	*< 1.0*	*ND*
MW-2	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.00*	*< 1.0*	*ND*
MW-3	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.00*	*< 1.0*	**EDC = 0.62**
February 2006 Event							
MW-1	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.00*	*< 1.0*	*ND*
MW-2	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.00*	*< 1.0*	*ND*
MW-3	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.00*	*< 1.0*	**EDC = 0.84**
Groundwater ESLs [b]	**100 / 500**	**1.0 / 46**	**40 / 130**	**30 / 290**	**13 / 13**	**5.0 / 1,800**	**EDC = 0.50 / 200**
Drinking Water Standards [c]	**NLP**	**5.0**	**1,000**	**700**	**10,000**	**13 [c]**	**Various**

Notes:

[a] Table reports only detected fuel oxygenates and lead scavengers.

[b] ESLs = Regional Water Quality Control Board, San Francisco Bay Region Environmental Screening Levels for commercial/industrial sites. First value is for sites where groundwater is a potential drinking water resource; second value is for sites where groundwater is not a potential drinking water resource.

[c] Primary Maximum Contaminant Level, unless specified otherwise.

[d] State of California Public Health Goal.

EDC = 1,2-dichloroethane
MTBE = methyl *tertiary*-butyl ether
TVHg = total volatile hydrocarbons, gasoline range

ND = not detected (see Appendix B for reporting limits)
NLP = no level published

All concentrations are in micrograms per liter (µg/L).

TABLE 4

Historical Groundwater Elevations and Depths in Monitoring Wells
488 - 25th Street, Oakland, California

Measurement Date		MW-1	MW-2	MW-3
May-05	Elevation [(a)]	15.15	14.69	15.06
	Depth [(b)]	10.09	9.02	8.8
Aug-05	Elevation [(a)]	14.79	14.06	14.75
	Depth [(b)]	10.45	9.65	9.11
Nov-05	Elevation [(a)]	14.92	13.57	14.81
	Depth [(b)]	10.32	10.14	9.05
Feb-06	Elevation [(a)]	15.21	14.64	15.05
	Depth [(b)]	15.21	14.64	15.05

(a) Elevations are in feet above mean sea level
(b) Depths are in feet below top of well casing (approximately ground surface)

Table 5
Preferential Pathway Survey Findings
Vicinity of 488 25th Street, Oakland, California

Underground Utility	Agency / Firm Contacted	Utility Description and Location	Estimated Maximum Depth (feet below grade)	Potential Preferential Pathway for Groundwater
Sanitary Sewer	City of Oakland – Records and Maps	Offsite: 10" diameter line beneath 25th Street 12" and 16" diameter lines beneath Telegraph Avenue	5.5' 11'	No Possible but unlikely
	City of Oakland Public Works – Sewer Maintenance	Onsite: Service from 25th Street to subject property building.	3'	No
Storm Sewer	City of Oakland – Records and Maps	Offsite: 18" to 21" diameter line beneath Telegraph Avenue 12" diameter line, inactive, beneath Telegraph Avenue	5' Unknown	No Possible but unlikely
		Onsite: No underground components.	Not applicable	No
Drinking Water	East Bay Municipal Utility District	Offsite: Service from surrounding streets / sidewalks onto adjacent and vicinity parcels, including sidewalk in front of site.	1.5'	No
		Onsite: No underground components. Service from 25th Street into the subject property building.	3' to 4'	No
Electric	Pacific Gas & Electric – Service Planning Department	Offsite and Onsite: No underground components.	Not Applicable	No
Natural Gas	Pacific Gas & Electric – Service Planning Department	Offsite: Service from surrounding streets / sidewalks onto adjacent and vicinity parcels.	1' to 2'	No
		Onsite: Service from 25th Street into the subject property building.		

Environmental Impacts in Soil

Benner Automotive

488 25th Street, Oakland, California

Table 1. Comparison of Maximum Residual Soil Concentrations at the Site to Relevant Cleanup Standards (mg/kg)

	TPH-g (mg/kg)	TPH-d (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl Benzene (mg/kg)	Xylenes (mg/kg)	MtBE (mg/kg)	EDC [1-2-dichloroethane] (mg/kg)	EDB [1-2-dibromoethane] (mg/kg)	Lead (mg/kg)
Maximum Residual Soil Concentrations at Site in milligrams per kilogram	**2,500**[4]	--	**<1.7**[4]	<1.7[4]	<1.7[4]	<1.7[4]	**<1.7**[4]	**<0.005**	**<0.005**	29
RWQCB, Region 2 ESLs[1]	83[3]	83[3]	0.044[3]	2.9[3]	2.3[2]	2.3[3]	0.023[3]	0.00033[3]	0.0045[3]	200[5]

[1] Environmental Screening Levels (ESLs); Shallow Soil Screening Level for residential land use where potentially impacted groundwater is current or potential drinking water resource. Shallow soils defined as soils situated <3 meters below the ground surface. Depth to water ranges between 8.8 ft and 15.21 ft bgs.

[2] Lowest ESL value based on direct exposure scenario. Depth to water ranges between Depth to water ranges between 8.8 ft and 15.21 ft bgs.

[3] Lowest ESL value based on groundwater protection (soil leaching). Depth to water ranges between 8.8 ft and 15.21 ft bgs.

[4] Soil sample collected at 9 feet bgs in January 2003. BH-01 installed in July 2003 located within the former UST pit detected 14 mg/kg TPH-g and <0.0054 mg/kg benzene at 10 feet bgs. Soil samples from BH-2, BH-3, & BH-4 located approximately 5 to 7 ft around the excavation perimeter did not detected TPH-g or BTEX above the laboratory detection limit. Depth to water ranges between 8.8 ft and 15.21 ft bgs.

[5] Lowest ESL value based on urban area ecotoxicity criteria.

Environmental Impacts in Groundwater

Benner Automotive

488 25th Street, Oakland, California

Table 2. Comparison of Maximum Residual Groundwater Concentrations at the Site to Relevant Cleanup Standards (µg/L)

	TPH-g (µg/L)	TPH-d (µg/L)	TPH-ss (µg/L)	Kerosene (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	EDC [1-2-dichloroethane] (µg/L)	EDB [1-2-dibromoethane] (µg/L)
Maximum Residual Groundwater Concentrations at Site	<50[7]	--	--	--	<0.5[7]	<0.5[7]	<0.5[7]	<1.0[7]	<5.0[7]	**0.84**[7]	<0.5[7]
RWQCB Region 2 ESLs[2]	100[1] 100[2] 210[3] 210[6]	100[1] 100[2] 210[3] 210[6]	100[1] 100[2] 210[3] 210[6]	100[1] 100[2] 210[3] 210[6]	1.0[1] 170[2] 1.0[3] 540[4] 46[6]	40[1] 40[2] 150[3] 380,000[4] 130[6]	30[1] 30[2] 300[3] 170,000[4] 43[6]	20[1] 20[2] 1,800[3] 160,000[4] 100[6]	5[1] 5[2] 13[3] 24,000[4] 8,000[6]	0.05[1] 50,000[2] 0.05[3] 150[4] 1,400[6]	0.5[1] 7,000[2] 0.5[3] 200[4] 2,000[6]
ASTM Tier 1 Standard Human Health RBSL (Benzene)	NA	NA	NA	NA	11,000[4] 23.8[5]	32,800	77,500	NA	NA	NA	NA

[1] Environmental Screening Levels (ESLs) for impacted subsurface groundwater less than 10 feet, where groundwater IS a current or potential drinking water resource

[2] Final Groundwater Screening Level, based on ceiling value (taste and odor threshold)

[3] Groundwater Screening Level, based on drinking water toxicity

[4] Groundwater Volatilization to indoor air (residential) Level,

[5] Groundwater Vapor Intrusion from groundwater to buildings (residential, chronic hazard quotient = 1)

[6] Final Groundwater Screening Level, based on Aquatic Habitat

[7] Sample collect on 02/27/2006 from monitoring well MW-3 located within approximately 5 ft of "grab" groundwater sample BH-06 that detected the maximum concentration of 120,000 µg/L TPH-g and <13 µg/L benzene.

STELLAR
ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

Soil Boring and Well Construction Log

BORING NUMBER MW-1 Page 1 of 3

PROJECT Benner Auto Repair
OWNER Benner Family Trust
LOCATION 488-25th Street
PROJECT NUMBER 2002-55
TOTAL DEPTH 25'
BOREHOLE DIA. 3.25-inch
SURFACE ELEV. Unknown
WATER FIRST ENCOUNTERED 20'
DRILLING COMPANY Vironex, Inc.
DRILLING METHOD Geo Probe (direct push)
DRILLER Kurt
GEOLOGIST Joe Dinan
DATE DRILLED 5/25/05

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	DESCRIPTION/SOIL CLASSIFICATION	REMARKS	WELL CONSTRUCTION MW-1
0			Concrete pad	Continuous core sampling 100% recovery of core	
1			Black silty to sandy clay (CL), stiff, sl. friable, dry		
2					
3					
4					
5					
6					
7					
8					
9					
10	MW-1-9.5'				

2002-55-09

Well Construction Legend: 2" PVC screen (0.010-in. slots); Hydrated bentonite pellets; #20/40 Sand; Portland cement & water grout; Groundwater encountered

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Soil Boring and Well Construction Log

BORING NUMBER MW-1 Page 2 of 3

PROJECT Benner Auto Repair
OWNER Benner Family Trust
LOCATION 488-25th Street
PROJECT NUMBER 2002-55
TOTAL DEPTH 25'
BOREHOLE DIA. 3.25-inch
SURFACE ELEV. Unknown
WATER FIRST ENCOUNTERED 20'
DRILLING COMPANY Vironex, Inc.
DRILLING METHOD Geo Probe (direct push)
DRILLER Kurt
GEOLOGIST Joe Dinan
DATE DRILLED 5/25/05

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	DESCRIPTION/SOIL CLASSIFICATION	REMARKS	WELL CONSTRUCTION MW-1
10			10' Color change to blue-grey, mod. stiff, cohesive, petroleum odor begins		
11					
12					
13					
14			14' Petroleum odor ends		
15		MW-1-14.5'			
16			16' Becomes sandy, silty clay, soft, cohesive, sl. moist		
17			17' Gradation to silty clay, mod. stiff, cohesive		
18			18' Color change to brown, becomes sandy, stiff, cohesive, sl. moist		
19					
20		MW-1-19.5'			

2002-55-S1

Well Construction Legend: 2" PVC screen (0.010-in. slots); Hydrated bentonite pellets; #20/40 Sand; Portland cement & water grout; Groundwater encountered

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Soil Boring and Well Construction Log

BORING NUMBER MW-1 Page 3 of 3

PROJECT Benner Auto Repair
OWNER Benner Family Trust
LOCATION 488-25th Street
PROJECT NUMBER 2002-55
TOTAL DEPTH 25'
BOREHOLE DIA. 3.25-inch
SURFACE ELEV. Unknown
WATER FIRST ENCOUNTERED 20'
DRILLING COMPANY Vironex, Inc.
DRILLING METHOD Geo Probe (direct push)
DRILLER Kurt
GEOLOGIST Joe Dinan
DATE DRILLED 5/25/05

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	DESCRIPTION/SOIL CLASSIFICATION	REMARKS	WELL CONSTRUCTION MW-1
20			20' Saturated brown, sandy clay, cohesive	No water in borehole until 20'. Water level rose to ~11' bgs within 2 hours.	
21					
22					
23			23' Color change to blue-grey, stiff, cohesive, sl. moist		
24					
25	MW-1-24.5'		Bottom of borehole = 25'		Bottom of Borehole
26					
27					
28					
29					
30					

2002-55.GPJ

Well Construction Legend: 2" PVC screen (0.010-in. slots); Hydrated bentonite pellets; #20/40 Sand; Portland cement & water grout; Groundwater encountered

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Soil Boring and Well Construction Log

BORING NUMBER MW-2 Page 1 of 3

PROJECT Benner Auto Repair
OWNER Benner Family Trust
LOCATION 488-25th Street
PROJECT NUMBER 2002-55
TOTAL DEPTH 25'
BOREHOLE DIA. 3.25-inch
SURFACE ELEV. Unknown
WATER FIRST ENCOUNTERED 20'
DRILLING COMPANY Vironex, Inc.
DRILLING METHOD Geo Probe (direct push)
DRILLER Kurt
GEOLOGIST Joe Dinan
DATE DRILLED 5/25/05

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	DESCRIPTION/SOIL CLASSIFICATION	REMARKS	WELL CONSTRUCTION MW-2
0			Asphalt then concrete	Continuous core sampling	
1			Black silty clay (CL), mod. stiff, sl. moist, cohesive		
2					
3					
4			4' Color change to brown, stiff		
5					
6					
7			7' Color change to blue-grey, sandy silty clay, stiff, friable, minor petroleum odor		
8					
9			8.5' Soft, moist, sl. friable		
	MW-2-9.5'				
10			10' Brown with grey mottling, sl. moist, cohesive		

2002-55-53

Well Construction Legend: 2" PVC screen (0.010-in. slots); Hydrated bentonite pellets; #20/40 Sand; Portland cement & water grout; Groundwater encountered

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Soil Boring and Well Construction Log

BORING NUMBER MW-2 Page 2 of 3

PROJECT Benner Auto Repair
OWNER Benner Family Trust
LOCATION 488-25th Street
PROJECT NUMBER 2002-55
TOTAL DEPTH 25'
BOREHOLE DIA. 3.25-inch
SURFACE ELEV. Unknown
WATER FIRST ENCOUNTERED 20'
DRILLING COMPANY Vironex, Inc.
DRILLING METHOD Geo Probe (direct push)
DRILLER Kurt
GEOLOGIST Joe Dinan
DATE DRILLED 5/25/05

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	DESCRIPTION/SOIL CLASSIFICATION	REMARKS	WELL CONSTRUCTION MW-2
10					
11					
12					
13					
14					
15	MW-2-14.5'				
16					
17					
18					
19			Brown clayey sand (SC), minor gravel, sand is well-sorted (fine-grained), moist, friable		
20	MW-2-19.5'				

Well Construction Legend: 2" PVC screen (0.010-in. slots); Hydrated bentonite pellets; #20/40 Sand; Portland cement & water grout; Groundwater encountered

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Soil Boring and Well Construction Log

BORING NUMBER MW-2 Page 3 of 3

PROJECT Benner Auto Repair
OWNER Benner Family Trust
LOCATION 488-25th Street
PROJECT NUMBER 2002-55
TOTAL DEPTH 25'
BOREHOLE DIA. 3.25-inch
SURFACE ELEV. Unknown
WATER FIRST ENCOUNTERED 20'
DRILLING COMPANY Vironex, Inc.
DRILLING METHOD Geo Probe (direct push)
DRILLER Kurt
GEOLOGIST Joe Dinan
DATE DRILLED 5/25/05

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	DESCRIPTION/SOIL CLASSIFICATION	REMARKS	WELL CONSTRUCTION MW-2
20			20' Saturated, soft	No water in borehole until 20'. Water level rose to ~9' bgs within 3 hours.	
21					
22			22' Color change to blue-grey, mod. stiff		
23					
24			Grey silty clay (CL), stiff, cohesive, sl. moist		
	MW-2-24.5'				
25			Bottom of borehole = 25'		Bottom of Borehole
26					
27					
28					
29					
30					

2002-55-55

Well Construction Legend: 2" PVC screen (0.010-in. slots); Hydrated bentonite pellets; #20/40 Sand; Portland cement & water grout; Groundwater encountered

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Soil Boring and Well Construction Log

BORING NUMBER MW-3 Page 1 of 3

PROJECT Benner Auto Repair
OWNER Benner Family Trust
LOCATION 488-25th Street
PROJECT NUMBER 2002-55
TOTAL DEPTH 30'
BOREHOLE DIA. 3.25-inch
SURFACE ELEV. Unknown
WATER FIRST ENCOUNTERED 20'
DRILLING COMPANY Vironex, Inc.
DRILLING METHOD Geo Probe (direct push)
DRILLER Kurt
GEOLOGIST Joe Dinan
DATE DRILLED 5/25/05

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
0			Asphalt then concrete	Continuous core sampling
1			No recovery from 0.5'–4'	
2				
3				
4			4' Black silty clay (CL), stiff, cohesive, mod. friable, sl. moist, occ. gravel	
5			5' Blue-grey mottling	
6				
7				
8				
9			9' Petroleum odor	
10	MW-3-9.5'			

WELL CONSTRUCTION
MW-3

Well Construction Legend: 2" PVC screen (0.010-in. slots); Hydrated bentonite pellets; #20/40 Sand; Portland cement & water grout; Groundwater encountered

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Soil Boring and Well Construction Log

BORING NUMBER MW-3 Page 2 of 3

PROJECT Benner Auto Repair
OWNER Benner Family Trust
LOCATION 488-25th Street
PROJECT NUMBER 2002-55
TOTAL DEPTH 30'
BOREHOLE DIA. 3.25-inch
SURFACE ELEV. Unknown
WATER FIRST ENCOUNTERED 20'
DRILLING COMPANY Vironex, Inc.
DRILLING METHOD Geo Probe (direct push)
DRILLER Kurt
GEOLOGIST Joe Dinan
DATE DRILLED 5/25/05

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	DESCRIPTION/SOIL CLASSIFICATION	REMARKS	WELL CONSTRUCTION MW-3
10			10' Becomes blue-grey sandy clay, soft, cohesive, sl. moist		
11					
12					
13			13' Color change to brown, silty clay, blue-grey, mottling, mod. stiff, sl. moist		
14			14' Petroleum odor absent		
	MW-3-14.5'				
15					
16					
17			17' Small gravel (<10%) angular		
18			Brown sandy clay (CL), well sorted, friable, v. moist but not saturated		
19					
	MW-3-19.5'				
20					

2002-55-S7

Well Construction Legend: 2" PVC screen (0.010-in. slots); Hydrated bentonite pellets; #20/40 Sand; Portland cement & water grout; Groundwater encountered

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Soil Boring and Well Construction Log

BORING NUMBER MW-3 Page 3 of 3

PROJECT Benner Auto Repair
OWNER Benner Family Trust
LOCATION 488-25th Street
PROJECT NUMBER 2002-55
TOTAL DEPTH 30'
BOREHOLE DIA. 3.25-inch
SURFACE ELEV. Unknown
WATER FIRST ENCOUNTERED 20'
DRILLING COMPANY Vironex, Inc.
DRILLING METHOD Geo Probe (direct push)
DRILLER Kurt
GEOLOGIST Joe Dinan
DATE DRILLED 5/25/05

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	DESCRIPTION/SOIL CLASSIFICATION	REMARKS	WELL CONSTRUCTION MW-3
20			Brown gravelly clayey sand (SC), soft, cohesive, saturated.	No water in borehole until 20'. Water level rose to ~6.7' bgs within 2 hours.	
21			20.5' Becomes moist		
22					
23					
24					
25		MW-3-24.5'	Dark brown sandy clay (CL), moist, cohesive, mod. stiff, minor gravel		
26					
27					
28			28' Becomes v. stiff, sl. moist		
29					
30		MW-3-29.5'	Bottom of borehole = 30'		Bottom of Borehole

2002-55-SB

Well Construction Legend: 2" PVC screen (0.010-in. slots); Hydrated bentonite pellets; #20/40 Sand; Portland cement & water grout; Groundwater encountered

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Soil Boring Log

BORING NUMBER BH-1 Page 1 of 2

PROJECT Benner Automotive
OWNER Benner Automotive
LOCATION 488 25th St., Oakland
PROJECT NUMBER 2002-55
TOTAL DEPTH 25 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. Unknown
WATER FIRST ENCOUNTERED ~11 feet
DRILLING COMPANY EnProb
DRILLING METHOD GeoProbe
DRILLER Jeff Edmond
GEOLOGIST Bruce Rucker
DATE DRILLED 7/7/03

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	BLOW COUNTS	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
0					Concrete sidewalk	Continuous core soil sampling
2				<1	Tank excavation backfill: gravelly, clayey silt, dry, friable, not cohesive	
4				<1		"Instrument" is a photoionization detector (PID); readings are in ppmv
6				<1		Sample recovery is 100% unless indicated otherwise
8				<1		
10		BH1-10'		<1	Dark grey clay (CL), sl. stiff, v. cohesive, not friable, sl. moist	Water level = 10.2' deep after advancing to 12'
12				<1		
14		BH1-14'		<1		
16				<1	15.5': Becomes silty	Collect BH-1-GW (840 am) after advancing to 12'
18				<1	18.5': Color change to brown	
20				<1	Brown clayey sand (SC), sl. friable, mod. cohesive, soft, wet	

B002-SE-04

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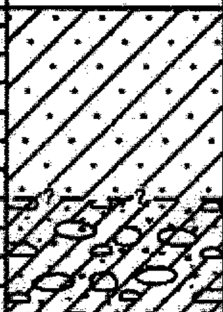
Soil Boring Log

BORING NUMBER BH-1 Page 2 of 2

PROJECT Benner Automotive
OWNER Benner Automotive
LOCATION 488 25th St., Oakland
PROJECT NUMBER 2002-55
TOTAL DEPTH 25 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. Unknown
WATER FIRST ENCOUNTERED ~11 feet
DRILLING COMPANY EnProb
DRILLING METHOD GeoProbe
DRILLER Jeff Edmond
GEOLOGIST Bruce Rucker
DATE DRILLED 7/7/03



DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	BLOW COUNTS	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
20						2" sample recovery from 20.5'-22.5'
22				<1		
					— ? — — ? — — ? — — ? —	
24				<1	Grey and brown clayey gravel (GC), fully friable, wet. Gravel is small and subangular	8" sample recovery from 23'-25'
26					Bottom of borehole = 25'	
28						
30						
32						
34						
36						
38						
40						

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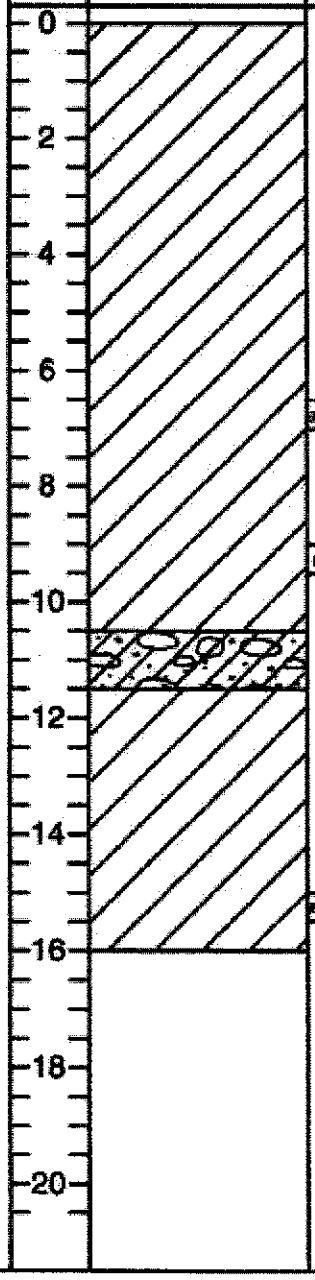
Soil Boring Log

BORING NUMBER BH-2 Page 1 of 1

PROJECT Benner Automotive
OWNER Benner Automotive
LOCATION 488 25th St., Oakland
PROJECT NUMBER 2002-55
TOTAL DEPTH 16 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. Unknown
WATER FIRST ENCOUNTERED ~11 feet
DRILLING COMPANY EnProb
DRILLING METHOD GeoProbe
DRILLER Jeff Edmond
GEOLOGIST Bruce Rucker
DATE DRILLED 7/7/03



INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
	Concrete sidewalk	Continuous core soil sampling
<1	Black silty clay (CL), mod. stiff, cohesive, sl. friable, sl. moist	"Instrument" is a photoionization detector (PID); readings are in ppmv
<1		
<1	~6': Gradational color change to grey, silt absent, becomes stiff	Sample recovery is 100% unless indicated otherwise
<1	8.5': Becomes silty, sl. stiff	
8.5	9.5': Becomes v. moist and sandy (fine-grained), soft, cohesive	
105		Water level = 10.2' deep after driving to 11'
140	Grey gravelly clay (GC), soft, wet, cohesive, gravel is small, ~20% and subrounded	
100		Collect BH-2-GW (950 am)
70	Blue-grey clay (CL), mod. stiff, cohesive, not friable, sl. moist	
25		
<1		
<1	Bottom of borehole: 16'	

2002-55-06

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Soil Boring Log

BORING NUMBER BH-3 Page 1 of 1

PROJECT Benner Automotive
OWNER Benner Automotive
LOCATION 488 25th St., Oakland
PROJECT NUMBER 2002-55
TOTAL DEPTH 16 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. Unknown
WATER FIRST ENCOUNTERED ~11 feet
DRILLING COMPANY EnProb
DRILLING METHOD GeoProbe
DRILLER Jeff Edmond
GEOLOGIST Bruce Rucker
DATE DRILLED 7/7/03

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	BLOW COUNTS	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
0					Asphalt, base rock & underlying concrete	Continuous core soil sampling
2				<1	Black silty clay (CL), mod. stiff, cohesive, sl. friable, sl. moist	"Instrument" is a photoionization detector (PID); readings are in ppmv
4				<1	4.5′: Color change to dark brown	
6		BH-3-5′		<1		Sample recovery is 100% unless indicated otherwise
8				<1	8′: Color change to grey	
		BH-3-9′		4	9′–9.5′: Gravelly lens (gravel is small-medium)	
10				18	9.5′: Becomes soft and moist	Water level = 10.3′ deep after advancing to 11′
				60	10.5′: Sl. stiff, cohesive, not friable, sl. moist	
12				8	11′: Becomes stiff	Collect sample BH-3-GW (1200)
		BH-3-13′		<1		
14				<1	14.5′:Becomes sl.-mod. stiff	
				<1		
16					Bottom of borehole: 16′	
18						
20						

2002-55-07

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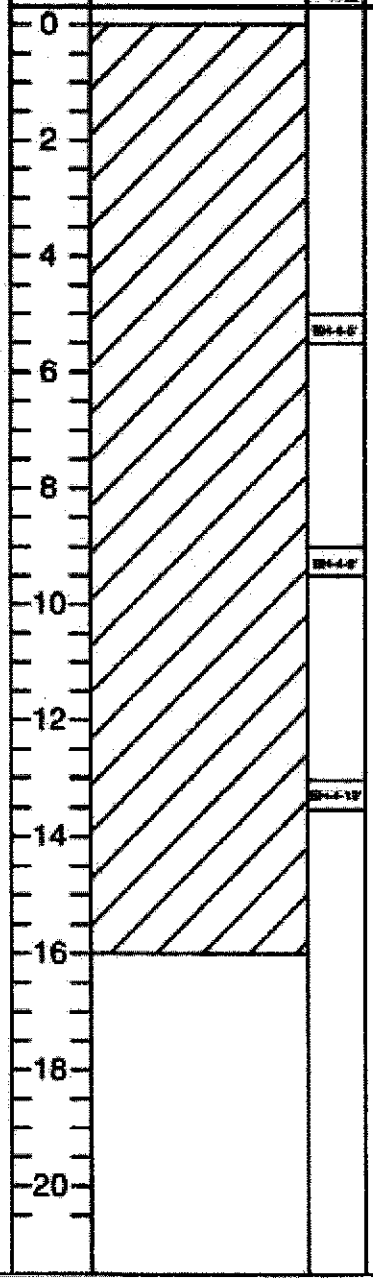
Soil Boring Log

BORING NUMBER BH-4 Page 1 of 1

PROJECT Benner Automotive
OWNER Benner Automotive
LOCATION 488 25th St., Oakland
PROJECT NUMBER 2002-55
TOTAL DEPTH 16 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. Unknown
WATER FIRST ENCOUNTERED ~11 feet
DRILLING COMPANY EnProb
DRILLING METHOD GeoProbe
DRILLER Jeff Edmond
GEOLOGIST Bruce Rucker
DATE DRILLED 7/7/03



DESCRIPTION/SOIL CLASSIFICATION	INSTRUMENT READING	REMARKS
Concrete		Continuous core soil sampling
Black silty clay (CL), mod. stiff, cohesive, sl. friable, sl. moist	<1	"Instrument" is a photoionization detector (PID); readings are in ppmv
4.5': Color change to dark brown, stiff, cohesive, not friable, sl. moist	<1	
	<1	Sample recovery is 100% unless indicated otherwise
8.5': Blue grey silty, gravelly clay, Gravel is ~10% and small, stiff, cohesive, sl. friable, sl. moist	<1	
9': Gravel absent	4	
9.5': Becomes moist to wet, soft to sl. stiff, cohesive	7	Water level = 10' deep after advancing to 15'
10.5':Mod. stiff, v. cohesive, not friable, sl. moist	80	
	110	Collect sample BH-4-GW (1100)
	7	
	3	
	<1	
Bottom of borehole: 16'		

2002-55.04

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Soil Boring Log

BORING NUMBER BH-5 Page 1 of 1

PROJECT Benner Automotive
OWNER Benner Automotive
LOCATION 488 25th St., Oakland
PROJECT NUMBER 2002-55
TOTAL DEPTH 19 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. Unknown
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY EnProb
DRILLING METHOD GeoProbe
DRILLER Jeff Edmond
GEOLOGIST Bruce Rucker
DATE DRILLED 7/7/03

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	WELL COMPLETION	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
0					Concrete	Continuous core soil sampling
					Black silty clay (CL), mod. stiff, cohesive, sl. friable, sl. moist	
2				<1		"Instrument" is a photoionization detector (PID); readings are in ppmv
4				<1	4.5′: Color change to dark brown, stiff, cohesive, not friable, sl. moist	
6		BH-5-6.5′		<1		Sample recovery is 100% unless indicated otherwise
8				<1		
				10	9′: Color change to grey, sl. stiff, cohesive, not friable, sl. moist	Borehole dry after advancing to 11′
10				3		
				1,230	12′: Becomes soft to sl. stiff, minor free water in sample	Water level = 10.6′ deep after advancing to 15′
12		BH-5-11.5′		780		Collect sample BH-5-GW (1240)
		BH-5-13′		9		
14				26		
				25	15′: Becomes mod. stiff	
16				<1		
				<1	18′: Color change to red brown	
18				<1	18.5′: Becomes sandy clay, sand is fine-grained, sl. moist, sl. cohesive, friable	
20					Bottom of borehole: 19′	

2002-55.log

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Soil Boring Log

BORING NUMBER BH-06 Page 1 of 3

PROJECT Benner Auto Repair
OWNER Joseph & Loretta Benner Trust
LOCATION 488-25th Street
PROJECT NUMBER 2003-55
TOTAL DEPTH 24 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. 24.06 feet amsl
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY Gregg Drilling
DRILLING METHOD GeoProbe (direct push)
DRILLER Don
GEOLOGIST B. Rucker
DATE DRILLED 7/8/04

DEPTH (feet)	GRAPHIC LOG	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
0			asphalt then concrete (roadbed)	"Instrument" is a photoionization detector calibrated for gasoline. "Readings" are in parts per million per volume air (ppmv)
1			1' Black silty clay (CL), mod stiff, cohesive, sl. friable, sl. moist, organics	Continuous core soil sampling. 100% sample recovery unless specified otherwise
2				
3				1' hand-augered to 2.5' to clear utilities
4		84		
5	BH-06-4.5'	17		
6		7	5.5' color change to dark brown, v. stiff, dry	
7		14		
8		15	7.5' color change to blue-grey, mod. stiff, sl. moist	7.5' petroleum odor begins
9		9		
10	BH-06-9.5'	14	9.5' becomes sandy (fine-grained), silty clay (CL), cohesive, sl. friable, v. moist	

2003-55-26

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Soil Boring Log

BORING NUMBER BH-06 Page 2 of 3

PROJECT Benner Auto Repair
OWNER Joseph & Loretta Benner Trust
LOCATION 488-25th Street
PROJECT NUMBER 2003-55
TOTAL DEPTH 24 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. 24.06 feet amsl
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY Gregg Drilling
DRILLING METHOD GeoProbe (direct push)
DRILLER Don
GEOLOGIST B. Rucker
DATE DRILLED 7/8/04

DEPTH (feet)	GRAPHIC LOG	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
10				
11		310		
12		487	11.5' brown with grey mottling, cohesive, not friable 12' Mod. stiff, sl. moist	12' Water enters borehole after the 8' to 12' sampling run, but borehole swells shut at 11'. 5' long, 1" diameter PVC slotted casing installed to 12'. Water level is 9.7' within several minutes. Grab-groundwater sample "BH-06-GW" collected at 845 a.m. Remove casing, continue direct-push drilling and sampling. 12.5' petroleum odor absent
13		84		
14	BH-06-14.5'	41		
15		27		
16		12	15.5' Olive grey clay (CL), soft, sticky, moist, no discernible silt	
17		42		
18		38	17.5' Color change to red brown, sl. moist 18' Mod. stiff	
19	BH-06-19.5'	10	Red-brown clayey sand (SC), sl. cohesive, friable, sl. moist, sand is fine-grained	
20		6	19.5' Becomes gravelly, clayey sand (SC), moist to wet, gravel is small, ~20%, angular to sub-angular	

2003-55-29

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Soil Boring Log

BORING NUMBER BH-06 Page 3 of 3

PROJECT Benner Auto Repair
OWNER Joseph & Loretta Benner Trust
LOCATION 488-25th Street
PROJECT NUMBER 2003-55
TOTAL DEPTH 24 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. 24.06 feet amsl
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY Gregg Drilling
DRILLING METHOD GeoProbe (direct push)
DRILLER Don
GEOLOGIST B. Rucker
DATE DRILLED 7/8/04

DEPTH (feet)	GRAPHIC LOG	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
20				
21		4		
22	BH-06-22.5'	38	50% sample recovery from 20' to 24' Saturated. Deepest competent sample (within sampling sleeve) was at 23'. Generlly same lithology as at 19.5'	
23				
24			TD = 24'	24' Following all sampling, install 10' long, 1" diameter PVC casing to 20' (borehole swelled shut at 20'), cap the piezometer and enshroud near-surface annulus with plastic and clay clumps Water level on 7/9/04 = 9.14' (relative to top of piezometer casing)
25				
26				
27				
28				
29				
30				

2002-05-30

Stellar Environmental Solutions, Inc.
2198 Sixth Street, Berkeley, CA 94710
Geoscience & Engineering Consulting

Soil Boring Log

BORING NUMBER BH-07 Page 1 of 3

PROJECT Benner Auto Repair
OWNER Joseph & Loretta Benner Trust
LOCATION 488-25th Street
PROJECT NUMBER 2003-55
TOTAL DEPTH 24 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. 24.30 feet amsl
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY Gregg Drilling
DRILLING METHOD GeoProbe (direct push)
DRILLER Don
GEOLOGIST B. Rucker
DATE DRILLED 7/8/04

DEPTH (feet)	GRAPHIC LOG	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
0			asphalt then concrete (roadbed)	"Instrument" is a photoionization detector calibrated for gasoline. "Readings" are in parts per million per volume air (ppmv)
1			1' Black silty clay (CL), mod stiff, cohesive, sl. friable, sl. moist, organics	Continuous core soil sampling. 100% sample recovery unless specified otherwise
2				
3		4		1' hand-augered to 2.5' to clear utilities
4		5		
5	BH-07-4.5'	6		~2" water in borehole after the 8' to 12' sampling run, but insufficient to sample. Water enters borehole after 12' to 16' sampling run. 10' long, 1" diameter PVC slotted casing installed to 16'. Water level is 9.5' within several minutes. Grab-groundwater sample "BH-07-GW" collected at 1015 a.m. Remove casing, continue direct-push drilling and sampling.
6		6		
7		5	7' color change to grey	
8		5		
9		6	8.5' to 9.5' becomes gravelly clay (CL), mod. cohesive, dry	
10		8	9.5' blue-grey silty clay, silt is trace, sl. stiff, cohesive, sl. moist	

2002-55-31

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Geoscience & Engineering Consulting

Soil Boring Log

BORING NUMBER BH-07 Page 2 of 3

PROJECT Benner Auto Repair
OWNER Joseph & Loretta Benner Trust
LOCATION 488-25th Street
PROJECT NUMBER 2003-55
TOTAL DEPTH 24 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. 24.30 feet amsl
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY Gregg Drilling
DRILLING METHOD GeoProbe (direct push)
DRILLER Don
GEOLOGIST B. Rucker
DATE DRILLED 7/8/04

DEPTH (feet)	GRAPHIC LOG	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
10	BH-07-10.5'			
11		120	11' color change to brown, with red-brown mottling, mod. stiff, cohesive	
12		23	12' v. stiff, v. moist	
			12.5' mod-sl. stiff, sl. moist	
13		17	13' mod. stiff, silt is trace	
14	BH-07-14.5'	21	14' becomes red-brown	
15		5	15.5' sl-mod. stiff	
16		3		
17		4	17' sl. stiff-soft, cohesive, sl. moist, silt is trace	
			17.5' to 18' wet	
18		2		
19		2	18.5' becomes sandy clay (CL), cohesive, sl. moist, sand is v. fine-grained	
	BH-07-19.5'			
20		2	19.5' becomes gravelly, sandy clay (CL), sl. cohesive, friable, sl. moist, gravel is small-med., ~30%, angular-subangular	

2002-55-32

Stellar Environmental Solutions, Inc.
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Geoscience & Engineering Consulting

Soil Boring Log

BORING NUMBER BH-07 Page 3 of 3

PROJECT Benner Auto Repair
OWNER Joseph & Loretta Benner Trust
LOCATION 488-25th Street
PROJECT NUMBER 2003-55
TOTAL DEPTH 24 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. 24.30 feet amsl
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY Gregg Drilling
DRILLING METHOD GeoProbe (direct push)
DRILLER Don
GEOLOGIST B. Rucker
DATE DRILLED 7/8/04

DEPTH (feet)	GRAPHIC LOG	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
20				
21		2	Red-brown clayey, sandy gravel (GC), cohesive, sl. friable, wet, gravel is small, subrounded	
22		2		
23	BH-07-23.5'	3	Red-brown sandy clay (CL), sl. cohesive, sl. stiff, friable, wet	
24		1	TD = 24'	24' Following all sampling, install 10' long, 1" diameter PVC casing to 23' (borehole swelled shut at 23'), cap the piezometer and enshroud near-surface annulus with plastic and clay clumps Water level on 7/9/04 = 9.45' (relative to top of piezometer casing)
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2003-55-33

Stellar Environmental Solutions, Inc.
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Soil Boring Log

BORING NUMBER BH-08 Page 1 of 3

PROJECT Benner Auto Repair
OWNER Joseph & Loretta Benner Trust
LOCATION 488-25th Street
PROJECT NUMBER 2003-55
TOTAL DEPTH 24 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. 24.54 feet amsl
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY Gregg Drilling
DRILLING METHOD GeoProbe (direct push)
DRILLER Don
GEOLOGIST B. Rucker
DATE DRILLED 7/8/04

DEPTH (feet)	GRAPHIC LOG	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
0			asphalt then concrete (roadbed)	"Instrument" is a photoionization detector calibrated for gasoline. "Readings" are in parts per million per volume air (ppmv)
1			1' Black silty clay (CL), v. stiff, cohesive, dry	
2		<3		Continuous core soil sampling. 100% sample recovery unless specified otherwise
3		<3		
4		<3		1' hand-augered to 2.5' to clear utilities
5	BH-08-4.5'	<3		No water in borehole after the 8' to 12' sampling run. Water enters borehole after 12' to 16' sampling run. 10' long, 1" diameter PVC slotted casing installed to 16'. Water level is 10' within several minutes. Grab-groundwater sample "BH-08-GW" collected at 1130 a.m. Remove casing, continue direct-push drilling and sampling.
6		<3		
7		<3	7' to 8' gradational color change to grey	
8		<3		
9		<3		
10	BH-08-9.5'	6	9.5' becomes gravelly, sandy clay (CL), dry, v. stiff, gravel is small, ~20%	

2003-55-24

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Soil Boring Log

BORING NUMBER BH-08 Page 2 of 3

PROJECT Benner Auto Repair
OWNER Joseph & Loretta Benner Trust
LOCATION 488-25th Street
PROJECT NUMBER 2003-55
TOTAL DEPTH 24 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. 24.54 feet amsl
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY Gregg Drilling
DRILLING METHOD GeoProbe (direct push)
DRILLER Don
GEOLOGIST B. Rucker
DATE DRILLED 7/8/04

DEPTH (feet)	GRAPHIC LOG	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
10				
11		8	10.5' silty, sandy clay (CL), sl. stiff, cohesive, sl. moist, sand is very fine-grained	
12		8		
13		6	13' dark grey silty (trace) clay (CL), sl. - mod. stiff, v. cohesive, sl. moist	
14		<3		
	BH-08-14.5'		14.5' becomes red-brown	
15		<3		
16		<3		
17		18	16.5' becomes olive-grey, soft, v. cohesive, wet,	
			17.5' becomes red-brown	
18		<3		
			18.5' sl.-mod. stiff, sl. moist	
19		<3		
			19.5' gravelly sandy clay (CL), sl. moist, gravel is small, ~30%, angular-subrounded, sand is fine-med. grained	
20	BH-08-20'	<3		

2002-55-35

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Soil Boring Log

BORING NUMBER BH-08 Page 3 of 3

PROJECT Benner Auto Repair
OWNER Joseph & Loretta Benner Trust
LOCATION 488-25th Street
PROJECT NUMBER 2003-55
TOTAL DEPTH 24 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. 24.54 feet amsl
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY Gregg Drilling
DRILLING METHOD GeoProbe (direct push)
DRILLER Don
GEOLOGIST B. Rucker
DATE DRILLED 7/8/04

DEPTH (feet)	GRAPHIC LOG	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
20				
21		<3	Red-brown sand (SP), saturated, sand is fine-grained and well-sorted	
22		<3	Red-brown sandy, clayey gravel (GC), wet, gravel is v. small	
23	BH-08-23.5'	<3	Black silty clay (CL), v. stiff, sl. moist	
24		<3	23' becomes sl. stiff	
25			TD = 24'	24' Following all sampling, install 10' long, 1" diameter PVC casing to 24', cap the piezometer and enshroud near-surface annulus with plastic and clay clumps Water level on 7/9/04 = 9.62' (relative to top of piezometer casing)
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2003-55.GPJ

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Soil Boring Log

BORING NUMBER BH-09 Page 1 of 3

PROJECT Benner Auto Repair
OWNER Joseph & Loretta Benner Trust
LOCATION 488-25th Street
PROJECT NUMBER 2003-55
TOTAL DEPTH 24 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. 24.68 feet amsl
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY Gregg Drilling
DRILLING METHOD GeoProbe (direct push)
DRILLER Don
GEOLOGIST B. Rucker
DATE DRILLED 7/8/04

DEPTH (feet)	GRAPHIC LOG	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
0			asphalt then concrete (roadbed)	"Instrument" is a photoionization detector calibrated for gasoline. "Readings" are in parts per million per volume air (ppmv)
1			1' Black silty clay (CL), v. stiff, cohesive, dry	
2		<3		Continuous core soil sampling. 100% sample recovery unless specified otherwise
3		<3		
4		<3		1' hand-augered to 2.5' to clear utilities
5	BH-09-4.5'	<3		No water in borehole after the 8' to 12' sampling run. Water enters borehole after 12' to 16' sampling run. 10' long, 1" diameter PVC slotted casing installed to 16'. Water level is 6.5' within several minutes. Grab-groundwater sample "BH-09-GW" collected at 1330 a.m. Remove casing, continue direct-push drilling and sampling.
6		<3		
7		<3	6.5' color change to dark grey	
8		<3	7.5' becomes dark brown with grey mottling	
9		<3	9' becomes olive-grey	
10		6	9.5' becomes sl. stiff, moist	

2003-55-37

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Soil Boring Log

BORING NUMBER BH-09 Page 2 of 3

PROJECT Benner Auto Repair
OWNER Joseph & Loretta Benner Trust
LOCATION 488-25th Street
PROJECT NUMBER 2003-55
TOTAL DEPTH 24 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. 24.68 feet amsl
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY Gregg Drilling
DRILLING METHOD GeoProbe (direct push)
DRILLER Don
GEOLOGIST B. Rucker
DATE DRILLED 7/8/04

DEPTH (feet)	GRAPHIC LOG	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
10			10' sl. moist	
11	BH-09-11'	146	11' v. stiff, dry	
12		6		
13		<3	12.5' dark grey with red-brown mottling, mod. stiff, cohesive, sl. moist	
14		<3		
	BH-09-15.5'			
15		<3		
16		<3		
			16.5' wet	
17		13		
			17.5' v. stiff, sl. moist	
18		<3	18' becomes red-brown, no silt	
			18.5' sl. stiff – soft, wet	
19		<3		
20	BH-09-19.5'	<3	19.5' red-brown, sandy clayey gravel (GC), sl. cohesive, friable, v. moist, sand is fine-grained, gravel is small	

2003-55-3B

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Soil Boring Log

BORING NUMBER BH-09 Page 3 of 3

PROJECT Benner Auto Repair
OWNER Joseph & Loretta Benner Trust
LOCATION 488-25th Street
PROJECT NUMBER 2003-55
TOTAL DEPTH 24 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. 24.68 feet amsl
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY Gregg Drilling
DRILLING METHOD GeoProbe (direct push)
DRILLER Don
GEOLOGIST B. Rucker
DATE DRILLED 7/8/04

DEPTH (feet)	GRAPHIC LOG	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
20				
21		<3		
22		<3	Red-brown sandy clay (CL), soft, cohesive, wet	
23	BH-09-23.5'	<3	Black silty clay (CL), cohesive, mod. - stiff, sl. moist-dry	
24		<3	TD = 24'	24' Following all sampling, install 10' long, 1" diameter PVC casing to 24', cap the piezometer and enshroud near-surface annulus with plastic and clay clumps Water level on 7/9/04 = 9.37' (relative to top of piezometer casing)
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2002-05-39

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Soil Boring Log

BORING NUMBER BH-10 Page 1 of 3

PROJECT Benner Auto Repair
OWNER Joseph & Loretta Benner Trust
LOCATION 488-25th Street
PROJECT NUMBER 2003-55
TOTAL DEPTH 24 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. 25.65 feet amsl
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY Gregg Drilling
DRILLING METHOD GeoProbe (direct push)
DRILLER Don
GEOLOGIST B. Rucker
DATE DRILLED 7/8/04

DEPTH (feet)	GRAPHIC LOG	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
0			Concrete (floor)	"Instrument" is a photoionization detector calibrated for gasoline. "Readings" are in parts per million per volume air (ppmv)
1			1' Black silty clay (CL), v. stiff, cohesive, dry	Continuous core soil sampling. 100% sample recovery unless specified otherwise
2				
3		<3		1' hand-augered to 2.5' to clear utilities
4		<3		
5	BH-10-4.5'	<3	4.5' color change to olive-grey	~1" water in borehole after the 8' to 12' sampling run, insufficient to sample. Water enters borehole after 12' to 16' sampling run. 10' long, 1" diameter PVC slotted casing installed to 16'. Water level is 11' within several minutes. Grab-groundwater sample "BH-10-GW" collected at 1445 a.m. Remove casing, continue direct-push drilling and sampling.
6		<3		
7		<3	6.5' becomes dark brown	
8		<3		
9		<3	8.5' to 9' minor small gravel	
10	BH-10-9.5'	<3		

2003-55-40

Stellar Environmental Solutions, Inc.
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Soil Boring Log

BORING NUMBER BH-10 Page 2 of 3

PROJECT Benner Auto Repair
OWNER Joseph & Loretta Benner Trust
LOCATION 488-25th Street
PROJECT NUMBER 2003-55
TOTAL DEPTH 24 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. 25.65 feet amsl
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY Gregg Drilling
DRILLING METHOD GeoProbe (direct push)
DRILLER Don
GEOLOGIST B. Rucker
DATE DRILLED 7/8/04

DEPTH (feet)	GRAPHIC LOG	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
10				
			10.5' sl.-mod. stiff, sl. moist, organics,	
11		<3		
			11.5' color change to blue-grey, silt is trace	
12		8		
13		<3		
14		<3		
	BH-10-14.5'		14.5' sl. stiff	
15		<3	15' mod. stiff	
16		<3	16' v. soft	
			16.5' wet	
17		<3		
			17.5' mod. stiff, sl. moist	
18		<3	18' v. stiff, sl. moist	
19		<3		
	BH-10-19.5'			
20		<3		

2003-55-41

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Soil Boring Log

BORING NUMBER BH-10 Page 3 of 3

PROJECT Benner Auto Repair
OWNER Joseph & Loretta Benner Trust
LOCATION 488-25th Street
PROJECT NUMBER 2003-55
TOTAL DEPTH 24 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. 25.65 feet amsl
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY Gregg Drilling
DRILLING METHOD GeoProbe (direct push)
DRILLER Don
GEOLOGIST B. Rucker
DATE DRILLED 7/8/04

DEPTH (feet)	GRAPHIC LOG	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
20			Red-brown, sandy clayey gravel (GC), sl. cohesive, friable, v. moist, sand is fine-grained, gravel is small	
21		<3	Clayey sand (SC), wet	
22			Clayey gravel (GC), wet	
		<3	Clayey sand (SC), wet	
23		<3		
	BH-10-23.5'		Dark grey sandy clay (CL), sl. cohesive, friable, moist, sand is fine-grained	
24		<3		
25			TD = 24'	24' Following all sampling, install 10' long, 1" diameter PVC casing to 24', cap the piezometer and enshroud near-surface annulus with plastic and clay clumps Water level on 7/9/04 = 10.71' (relative to top of piezometer casing)
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2002 BB-42

Stellar Environmental Solutions, Inc.
2198 Sixth Street, Berkeley, CA 94710
Geoscience & Engineering Consulting

Soil Boring Log

BORING NUMBER BH-11 Page 1 of 3

PROJECT Benner Auto Repair
OWNER Joseph & Loretta Benner Trust
LOCATION 488-25th Street
PROJECT NUMBER 2003-55
TOTAL DEPTH 24 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. 25.57 feet amsl
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY Gregg Drilling
DRILLING METHOD GeoProbe (direct push)
DRILLER Don
GEOLOGIST B. Rucker
DATE DRILLED 7/8/04

DEPTH (feet)	GRAPHIC LOG	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
0			Concrete (floor)	"Instrument" is a photoionization detector calibrated for gasoline. "Readings" are in parts per million per volume air (ppmv)
1			1' Black silty clay (CL), v. stiff, cohesive, dry	Continuous core soil sampling. 100% sample recovery unless specified otherwise
2				1' hand-augered to 2.5' to clear utilities
3				
4	BH-11-4.5'	<3		No water in borehole after the 8' to 12' sampling run. Water enters borehole after 12' to 16' sampling run. 10' long, 1" diameter PVC slotted casing installed to 16'. Water level is 10.8' within several minutes. Grab-groundwater sample "BH-11-GW" collected at 1540 a.m. Remove casing, continue direct-push drilling and sampling.
5		<3		
6		<3		
7		<3		
8		<3		
9		11	8.5' color change to olive-grey	
10		15		

2002-55-43

Stellar Environmental Solutions, Inc.
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Geoscience & Engineering Consulting

Soil Boring Log

BORING NUMBER BH-11 Page 2 of 3

PROJECT Benner Auto Repair
OWNER Joseph & Loretta Benner Trust
LOCATION 488-25th Street
PROJECT NUMBER 2003-55
TOTAL DEPTH 24 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. 25.57 feet amsl
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY Gregg Drilling
DRILLING METHOD GeoProbe (direct push)
DRILLER Don
GEOLOGIST B. Rucker
DATE DRILLED 7/8/04

DEPTH (feet)	GRAPHIC LOG	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
10				
11	BH-11-11'	152	10.5' mod. stiff, sl. moist 11' petroleum odor begins	
12		54		
13		71	12.5' sl. stiff, v. cohesive 13' petroleum odor ends	
14		3	13.5' mod. stiff	
15	BH-11-15'	4	14.5' gradational color change to red-brown with blue-grey mottling 15' soft and wet	
16		4		
17		3	17' sl. - mod. stiff, v. moist	
18		3		
19		4	19' mod. stiff, sl. moist	
	BH-11-19.5'			
20		8		

2002.55-44

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Geoscience & Engineering Consulting

Soil Boring Log

BORING NUMBER BH-11 Page 3 of 3

PROJECT Benner Auto Repair
OWNER Joseph & Loretta Benner Trust
LOCATION 488-25th Street
PROJECT NUMBER 2003-55
TOTAL DEPTH 24 feet
BOREHOLE DIA. 2-inch
SURFACE ELEV. 25.57 feet amsl
WATER FIRST ENCOUNTERED ~12 feet
DRILLING COMPANY Gregg Drilling
DRILLING METHOD GeoProbe (direct push)
DRILLER Don
GEOLOGIST B. Rucker
DATE DRILLED 7/8/04

DEPTH (feet)	GRAPHIC LOG	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
20			Dark brown, silty clay (CL), saturated, sl. stiff	
21		<3		
22		<3		
23	BH-11-23.5'	<3		
24		<3	TD = 24'	24' Following all sampling, install 10' long, 1" diameter PVC casing to 24', cap the piezometer and enshroud near-surface annulus with plastic and clay clumps Water level on 7/9/04 = 10.53' (relative to top of piezometer casing)
25				
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2003-55-45