WORK PLAN FOR ADDITIONAL INVESTIGATION

German Autocraft
301 E. 14th Street
San Leandro, California

Global ID No. T0600100639
AC LOP Case # 2783

Prepared For

Mr. Seung Lee
German Autocraft
San Leandro, CA 95070

Prepared By

Groundwater Cleaners Inc.
Cleaning California from the Groundwater up
347 Frederick Street, San Francisco, California 94117
(415) 665-6181

Date: January 15, 2010

January 15, 2010

German Autocraft
301 E. 14th Street
San Leandro, CA 94577

Attn: Mr. Seung Lee

Subject: Work Plan for Additional Investigation
German Autocraft, AC LOP Case # 2783
Global ID No. T0600100639

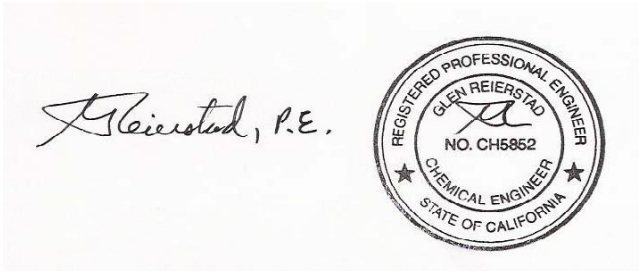
Dear Mr. Lee:

GWC is pleased to attach the *Work Plan for Additional Investigation* requested in the Alameda County Environmental Health (ACEH) letter dated October 27, 2009. Some of the items that ACEH is requesting pre-date our project involvement and we do not have in our files. Those items will have to be supplied by others, if available.

GWC plans to continue semi-annual groundwater sampling in accordance with ACEH requirements and to respond to any comments/requirements relating to this Work Plan.

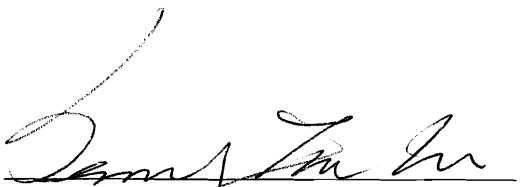
If you have any questions or require further information, please do not hesitate to call us at (415) 665-6181.

Sincerely,



Perjury Statement

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached proposal or report is true and correct, to the best of my knowledge.



Seung Lee, owner, German Autocraft

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1.0 INTRODUCTION

This Work Plan was prepared for the subject San Leandro fuel leak case in response to the Alameda County Environmental Health (ACEH) letter dated October 27, 2009. Some of the items that ACEH is requesting pre-date our project involvement and Groundwater Cleaners, Inc. (GCI) does not have in our files. Those items are noted herein (primarily in Section 2.3) and will have to be supplied by others, if available.

The subject site is located in a relatively high-density, mixed-use neighborhood of residential and small commercial buildings. Fuel-related operations ceased in 1990, along with the removal of associated USTs, piping and dispensers. The subsequent and current site use is an automobile repair facility.

Subsurface fuel leak impacts have been evaluated through a series of investigation phases and 15 years of groundwater monitoring. A fuel plume in the first groundwater (about 25-30 feet below grade) has a WNW-orientation consistent with the prevailing gradient direction. Impacts in the core residual area around Garcia Avenue have not dissipated significantly, with benzene concentrations persisting above 1000 ug/L. Accordingly, in December 2007, a Corrective Action Plan was submitted by GCI detailing how site cleanup might be accomplished, focusing on the core area of impacts.

In February 2008, Work Plans were submitted for a Soil Vapor Investigation and a Dual-phase, High-Vacuum Soil Vapor Extraction pilot test. Soil vapor tests concluded that the existing soil cover provides an effective barrier against intrusion of fuel vapors into nearby dwellings, provided that the soil remains undisturbed. No continuous, permeable formations were identified that would likely serve as conduits for soil vapor transmission. Deeper soils were also found to be generally of low permeability, based on observation of soil cores from the eight soil borings performed in this investigation (see GCI's "Soil Vapor Investigation Report" dated April 30, 2009).

Dual-phase Extraction Tests performed in February, 2009, concluded that horizontal extraction wells placed just above groundwater elevation would provide the best opportunity to extract hydrocarbons for the soil and groundwater at this site. Existing 2-inch monitoring wells were ineffective as sources for soil vapors, as clayey soils and groundwater are abundant and a flow of soil vapor could not be reliably induced from these wells (see GCI's "DPE Extraction Test Report", submitted March 31, 2009 for additional details).

2.0 SPECIFIC COMMENT RESPONSES

2.1 Soil Vapor Assessment

In last year's investigation, the highest concentrations of gasoline range petroleum hydrocarbon (TPHg) vapors were found at SV-7 and SV-8 at a depth of 12.5 and 13.5 feet, respectively (see Figure A). However, the shallower samples at those locations (~5

feet bgs) showed a significant attenuation at SV-7 and a ~50% attenuation at SV-8, plus a protective clayey overburden. Further, the average TPHg vapor concentration along this property line was 9,000 ug/m^3, below the residential ESL of 10,000 ug/m^3.

Unfortunately, the adjoining apartment complex layout is not amenable to access for a step-out point from SV-8. But, if DEH so desires, a point could be advanced in the front of the property, in the area where the SV-9 triangle has been drawn on Figure A. If SV-9 is advanced, GCI would propose to collect soil vapors from two depths using the same protocols and testing as the 2009 work.

Alternatively, or additionally, we propose to repeat the soil vapor monitoring at SV-7, SV-1 and SV-8 in the future to ascertain the effect of pending remedial actions.

2.2 Feasibility Study

Soil Vapor Extraction (SVE) requires a transmissive soil that is not saturated with groundwater. The collective investigative findings for this fuel leak have identified only very limited such strata above a depth of about 25 feet. The main zone of impact is below this depth but saturated, hence the need to employ dual-phase extraction (DPE; soil vapor and groundwater). Our Spring 2009 pilot testing was largely unsuccessful due to excessive amounts of groundwater being drawn into the well casings. GCI's proposed solution was to create an inter-connected network of horizontal wells (within permeable trenches) to allow lower vacuum operations and less groundwater mounding interferences. The first step to this approach (which was presented in our DPE Report) was constructing and testing a single horizontal well.

However, per their October 2009 letter, the ACEH wants us to give the more conventional vertical extraction well approach another try, but with a larger diameter extraction well. Accordingly, GCI proposes to install a 4-inch diameter PVC well at the EW-1 location shown on Figure A. The well is planned to be screened from 10-30 feet below grade, which will encompass both the zone of the discontinuous granular material encountered about 11-14 feet below grade and the main target zone than starts about 25 feet below grade. During drilling of EW-1 soil conditions will be logged and 3-4 soil samples will be retained for moisture content and grain-size distribution testing. Zones that visually appear to have the highest granular soil content will be targeted for this sampling.

The EW-1 location is about 10 feet from MW-4 and about 20 feet from MW-3, so both those existing wells will be employed to provide vacuum measurements to be used in assessing radius of effective influence. EW-1 is purposefully not sited within the backfilled former underground storage tank location, as SVE/DPE from that area will not be reflective of what native soils will yield. In any full-scale implementation that area will obviously be targeted, but obtaining adequate vapor flow there is not expected to be problematic.

An above-ground storage tank will be brought to the site to contain pumped groundwater. However, due to large volumes of pumped groundwater we are anticipating, the duration of DPE testing is proposed to be two days. Various combinations of groundwater pumping rates and SVE vacuums will be tried to assess which achieves the highest fuel mass removal rate. Fuel vapor measurements will be made by field PID. Unless more are required for BAAQMD permit requirements, one Tedlar bag grab vapor sample will be lab tested to correlate the field TPHg level and quantify the BTEX components.

Pumped groundwater will be tested in aggregate after completion of the DPE testing for purposes of proper disposal; hopefully to the local sanitary sewer if permitted. Existing groundwater monitoring data (i.e., average of MW-3 and MW-4 concentrations) will be used for the estimate of liquid-phase mass removal.

2.3 Incomplete Data Submittals

The MW-4 log and the various 'ETM' logs and maps cited by the DEH all pre-date GCI involvement with the project and will have to be provided by other(s), if available. There is no well MW-7.

2.4 Groundwater Well Construction Details (existing)

GCI thoroughly cleaned and re-measured the existing on-site wells plus MW-8 and MW-14 during the last monitoring cycle. Table 1 provides an updated summary of the well construction details to the best of our knowledge. As discussed in our last monitoring report, a significant effort was made to remove the obstruction from the MW-5 casing. We will have the driller that is used to install EW-1 try when on-site. If the obstruction still cannot be removed, then MW-5 should be replaced as discussed in the next section.

2.5 Monitoring Well Construction (future)

GCI does not plan on adding any monitoring wells or reconstructing any unless MW-5 cannot be cleared. If the obstruction in MW-5's casing cannot be removed, then MW-5 would be drilled out and replaced with a new well screened from 24-29' below grade. When this new well is installed, we will have it, plus the other wells associated with the project, surveyed to GeoTracker horizontal and vertical standards.

2.6 Pump Island

The pump island area already was explored in the early stages of the project. The appended 2-page log for B-1 shows clay soil to 36 feet and only notes of gasoline odor within the water-bearing zone below 34 feet. The laboratory data sheet we have also appended confirms the field indications. Further, the contaminant concentrations found in the B-1 soil were lower than those at B-3 (and MW-1) closer to the USTs. The data indicates a spread of contaminants from that tank area rather than an additional source from the pump island area.

2.7 Preferential Pathway Study

A preferential pathway study was done as part of the CAP report, and no such pathways of note were identified. A majority of the contaminants at all on-site locations was found between 25 and 35 feet below the surface, well beneath any identified (or reasonably expected) permeable trench conduits.

The subject impacts are in an area that has numerous shallow (<100-foot deep) private wells used for seasonal irrigation (a recognized beneficial use). A prior assessment of neighborhood supply wells led to the inclusion of '141 Farrelly' (a **former** residential irrigation supply well) in the monitoring program. The presence of such wells, whether on-file or not, supports the need for remedial actions. EBMUD has provided back-flow prevention devices to owners where such wells have plumbed connections to the main house supply, but there is no certainty that all such situations have been addressed. Also, there may be inadvertent drinking from this type of well water regardless.

3.0 SUMMARY AND TENTATIVE WORK SCHEDULE

Since there is limited accessibility at the apartment development next door, GCI recommends rechecking vapor conditions along that (southwestern) site boundary after completing some remedial actions on-site. However, it ACEH insists, we can proceed with checking vapor conditions at the SV-9 area shown on Figure A. This work and an associated letter report can probably be completed within two months of the directive to proceed.

Although the soil vapor tests show there is little risk of soil vapors intruding into dwelling spaces, the continued high levels of hydrocarbons and BTEX compounds in the soil and groundwater of the core area present a barrier to possible future uses of the groundwater especially. Accordingly, GCI continues to believe this case warrants remedial actions.

GCI still would prefer to proceed with the construction of a single, horizontal vapor-extraction well (as described in the DPE Test Report) as the means to repeat of the DPE tests. However, if ACEH insists that a larger vertical well be used for that testing, we would install it in the general location where EW-1 is shown on Figure A. Tests on the new well (horizontal or vertical) will assess the effectiveness of the design and provide design data for any future remedial action at this site. This work and an associated letter report can probably be completed within three months of the directive to proceed.

GCI recommends one final attempt to remove the obstruction from well MW-5 and replacement of that well only if the removal is unsuccessful. The timing of this clearing attempt would coincide with the new DPE well installation. If a replacement was needed to be installed, that could probably be accomplished with permit(s) in a two month work schedule.

4.0 PROFESSIONAL CERTIFICATION

We declare, under penalty of perjury, that to the best of our knowledge, everything presented in this report is true and correct.

Should you have any questions or require supplemental information, please do not hesitate to contact us at (415) 665-6181.

Prepared by,

Glenn Reierstad, P.E.
Project Manager, Groundwater Cleaners, Inc.

Eric R. Lautenbach, P.E.
V.P. Engineering

Tables

Groundwater Cleaners, Inc.
Cleaning California from the Groundwater up
347 Frederick Street, San Francisco, California 94117
(415) 665-6181

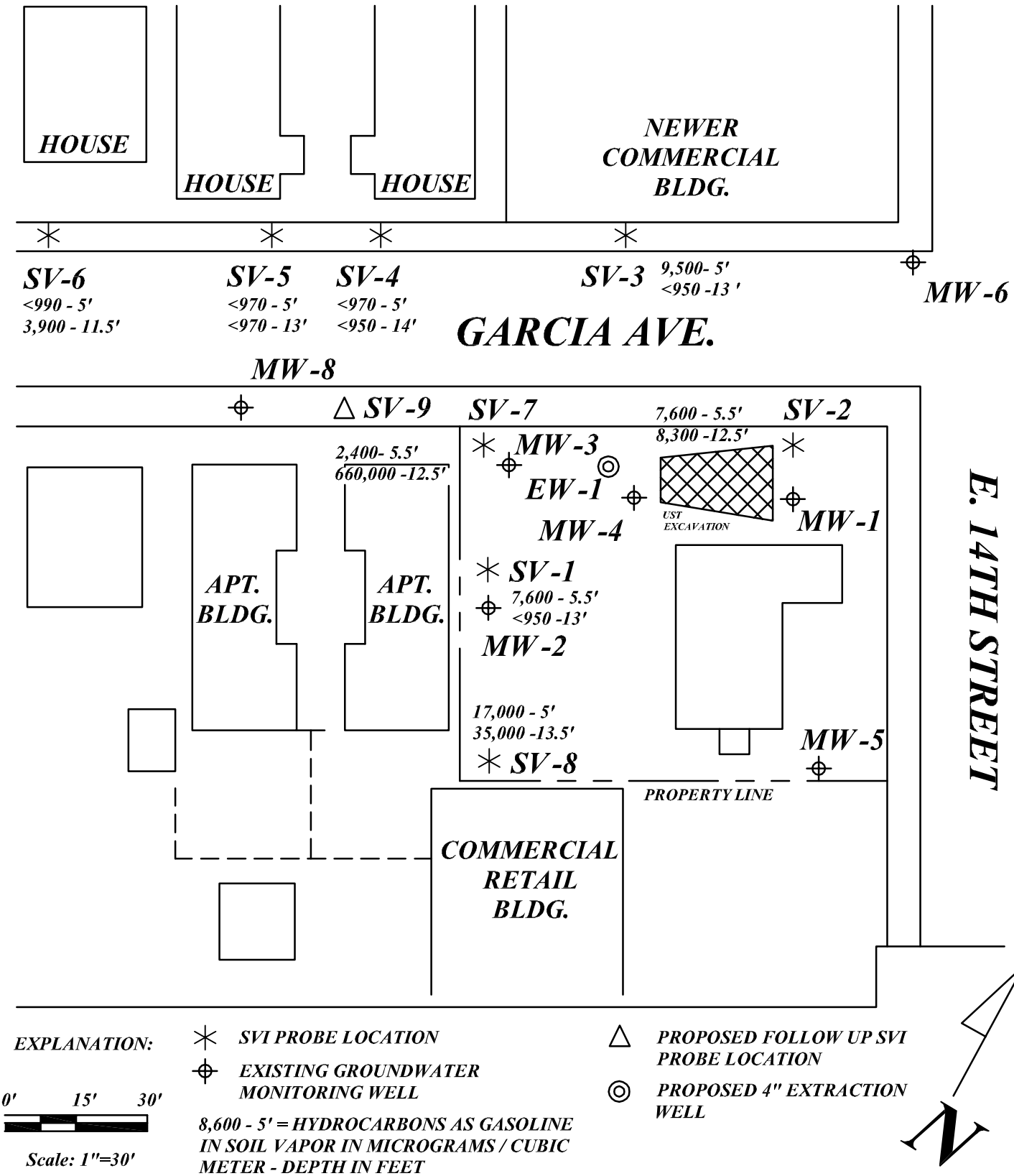
Table 1
Summary of Well Construction Details
German Autocraft, 301 E. 14th Street, San Leandro, California

Well Number	Date Installed	Casing Diameter (inches)	As-Built Depth (feet)	Screened Interval (feet)	Relative Location	TOC Elevation
MW-1	12/17/91	2	45	25-45 ft	Onsite	49.40
MW-2	1/6/95	2	35	10-35	Onsite	50.02
MW-3	1/6/95	2	35	10-35	Onsite	49.32
MW-4	8/28/98	2	35	10-35	Onsite	49.61
MW-5	8/28/98	2	30*	20-30*	Onsite	49.57
MW-6	8/27/98	2	35	20-35	Off-site	48.06
MW-8	8/27/98	2	30	20-30	Off-site	49.35
MW-9	8/31/98	2	35	20-35	Off-site	48.77
MW-10	8/28/98	2	40	20-40	Off-site	49.93
MW-11	8/28/98	2	35	20-35	Off-site	47.93
MW-12	1/30/01	2	38	23-38	Off-site	48.46
MW-13	3/20/01	2	38	23-38	Off-site	49.51
MW-14	3/20/01	2	30	20-30	Off-site	49.54
MW-1A	5/30/97	2	30	20-30	Off-site	48.24
141 Farrelly	4/6/96	10	65	25-65	Off-site	48.76

Notes: * - Well obstructed at about 26 feet below top of casing.

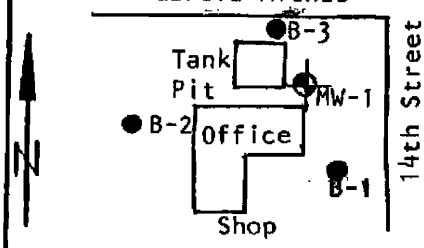
Figures

Groundwater Cleaners, Inc.
Cleaning California from the Groundwater up
347 Frederick Street, San Francisco, California 94117
(415) 665-6181



Groundwater Cleaners Inc. Cleaning California from the Groundwater Up 347 Frederick Street, San Francisco, California, 94117 (415) 665-6181	German Autocraft 301 East 14th Street San Leandro, California	REV. A
	WORK PLAN EXHIBIT	01.15.10

LOCATION MAP

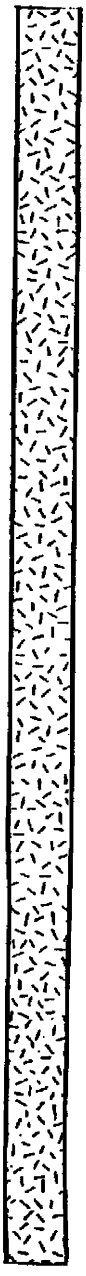


THE ENVIRONMENTAL CONST.CO BORING LOG | PAGE 1 OF 2

WELL NUMBER B-1	LOCATION 301 E. 14th Street San Leandro, Ca
DATE 12/11/90	WEATHER Overcast 50's
LOGGED BY Tom Smith	DRILLED BY Advance Drilling
DRILLING METHOD 8 1/2 inch Hollow-stem Auger	SAMPLING METHOD 18 inch split-spoon
GRAVEL PACK NONE	SEAL Portland Type I/II cement/grout
CASING TYPE NONE — DIAMETER — LENGTH	HOLE DIA. 8 1/2"
SCREEN TYPE NONE — DIAMETER — LENGTH	TOTAL DEPTH 35'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	USCS	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
						0			
						1			
						2			
						3			
dmp		stf	spl	1	CL	4	1.5		0.00'-1.50' Clay, dark brown to 5.5'
						5			
						6			
						7			
						8			
dmp		sft	vpl	2	CL	9	1.5		0.00'-1.50' Clay, light brown
						10			
						11			
						12			
dmp		vry sft		3	OL	13	1.5		0.00'-1.50' Clay, light brown, tan
						14			
						15			
						16			
						17			
						18			
dmp		sft	pl	4	OL	19	1.5		0.00'-1.50' Clay, mottled, light gray to tan
						20			

WELL COMPLETION



EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

LOCATION MAP

THE ENVIRONMENTAL CONST.CO BORING LOG

WELL NUMBER B-1	LOCATION
DATE	WEATHER
LOGGED BY	DRILLED BY
DRILLING METHOD	SAMPLING METHOD
GRAVEL PACK	SEAL

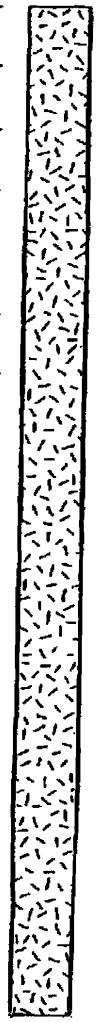
CASING	TYPE		DIAMETER	LENGTH
SCREEN	TYPE	SLOT	DIAMETER	LENGTH

HOLE DIA.

TOTAL DEPTH

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	USCS	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
						20			
						1			
						2			
						3			
mst		vry sft	pl	5	CL	4	1.5		0.00'-1.50' Clay, greenish gray
						5			
						6			
						7			
						8			
						9			
mst		vry sft	pl	6	CL	30	1.5		0.00'-1.50' Clay, greenish tan
						1			
						2			
						3			
						4			Saturated zone 34 feet
sat		lse	pl	7	CL	5	1.5		0.00'-1.50' Clay, tan, very soft, trace of pebbles, moderate gasoline odor
						6			
						7			Groundwater at 30.8 feet, after 30 minutes
						8			
						9			
						40			

WELL COMPLETION



EXPLANATION: GROUT, BENTONITE, SAND, CASING, SCREEN, WATER LEVEL

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

December 20, 1990 ChromaLab File No.: 1290052

THE ENVIRONMENTAL CONSTRUCTION COMPANY

Attn: Lisa Lang

RE: One water and six soil samples for Gasoline/BTEX analyses

Project Name: GERMAN AUTOCRAFT
Project Number: 261
Date Sampled: Dec.10-11, 1990 Date Submitted: Dec.12, 1990
Date Extracted: Dec. 14-18,1990 Date Analyzed: Dec.14-18,1990

RESULTS:

Sample No.	Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl Benzene (µg/L)	Total Xylenes (µg/L)
B-2-WTP	28000	5600	1300	680	980
DETECTION LIMIT	50	0.5	0.5	0.5	0.5
METHOD OF ANALYSIS	5030/ 8015	602	602	602	602

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)
B1-(34.5-35')	510	4800	1700	9600	9600
B1-(12'-13')	1.7	N.D.	N.D.	9.8	29
B2-(34-35')	10	860	900	310	380
B2-(12')	4.7	10	60	83	120
B3-(27.5-29')	2100	63000	130000	50000	70000
B3-(34-35.5')	1700	1400	1900	11000	8200
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	87.2%	88.5%	95.4%	87.1%	96.0%
DUP SPIKE REC	93.9%	84.8%	95.8%	101.8%	93.2%
DETECTION LIMIT	1.0	5	5	5	5
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam (by DD)
Eric Tam
Laboratory Director

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Federal ID #68-0140157