

Environmental Restoration Services

Site Investigations * Fuel Tank Closures and Installations * Site Remediation * Regulatory Reporting

Mr. Don Torkington
Precision Cast Products Inc.
217 Westcott Dr.
Friday Harbor, WA 98250

May 10, 2002

Re: **SUBSURFACE INVESTIGATIVE REPORT**
1549 32nd St., Oakland, CA 94608

007-0589-001-00

1.0 INTRODUCTION

This Investigative Report has been prepared by Environmental Restoration Services (ERS) for the facility located at 1549 32nd St., in a residential/industrial district of Oakland, California (Figure 1).

2.0 SITE HISTORY AND ENVIRONMENTAL BRIEF

A Phase I Environmental Site Assessment (ESA) was performed in April of 2000 on the subject Property by Phase One Inc. of Aliso Viejo, CA.. The ESA recommended that a Phase II subsurface investigation be performed at the subject site.

A Phase II investigation was performed in March of 2002 by Eras Environmental of Castro Valley, CA.. The investigation identified a 4" diameter fill pipe inside the building that extended down approximately seven feet below the interior concrete slab and was filled with an oily sand, from seven to three feet below the interior concrete slab. The preliminary assumption was that the fill pipe was connected to a small diameter (550-1000 gallon) waste oil tank that had been historically closed in-place by filling with sand.

On April 15, 2002, ERS, under permit with the City of Oakland Office of Emergency Services (Oak-OES) to remove a tank, excavated in the vicinity of the 4" diameter fill pipe and discovered that the pipe was not connected to a tank, but was a fill pipe to a historic liquid waste percolation well. The 4" diameter pipe was approximately 7 feet in length, with the bottom 18 inches perforated with 3/4" holes. The exterior bottom 2' of the pipe was encased in drain rock. This drain rock continued down to a depth of approximately 10' below ground surface (bgs.)

Inspector Leroy Griffith with Oak-OOE inspected the excavation and requested that further soil be removed in the vicinity of the percolation well and that soil, at the groundwater interface, be sampled at the limits of excavation. Inspector Griffin further requested that the groundwater around the percolation well be sampled to determine the extent of possible contaminate migration. In addition, used-casting sand, used to backfill three concrete pits, was excavated and sampled. Two additional borings, one located near a backfilled concrete pit and one near a capped, underground (UG) vault, were also requested.

3.0 INVESTIGATION SCOPE OF WORK

On April 26, 2002, seven soil borings were advanced at the subject site by ERS. Groundwater samples were recovered from five of the borings. Boring SB-1 was installed approximately 15' to the north of the percolation well, boring SB-2 was installed approximately 20' to the east of the percolation well, boring SB-3 was installed approximately 15' to the south of the percolation well, boring SB-4 was installed approximately 10' to the west of the percolation well and boring SB-5 was installed approximately 30' to the west of the percolation well. Boring SB-6 was installed at the eastern end of the building, near a capped UG vault. Boring P/A was installed on the western edge of a backfilled concrete pit.

All soil boring locations are shown in Figure 2.

3.1 Soil Boring Procedure

All borings were advanced using a two inch diameter Geo-Probe sampler, to a depth of sixteen feet beneath the surface flooring, with the exception of boring "P/A", which was advanced to a depth of eight feet.

3.2 Soil Sampling Procedure

One soil sample, SS-P/A was recovered from boring P/A at a depth of eight feet bgs.. The sample was cut from a continuous core container at the desired sample depth. The container ends were then sealed with Teflon sheet and plastic caps.

3.3 Groundwater Grab Sampling Procedures

After completion of borings SB-1 through SB-6, a 1" diameter well screen and casing was placed into each boring. The borings were then allowed to recharge with groundwater. Then, a new, disposable bailer was inserted into each boring for recovery of a groundwater grab sample.

At borings SB-1 through SB-5, groundwater was emptied into sample containers obtained directly from the analytical laboratory. An effort was made to minimize exposure of the sample to air.

At boring SB-6, a sample of product oil was recovered from the boring and was emptied into a sample container.

Subsequent to collection, all of the samples were immediately stored on ice in an appropriate ice chest. Samples were transported under Chain-of-Custody procedures to North State Environmental Labs (NSEL) of South San Francisco, CA.

3.4 Excavation of Pits and Over-Excavation of Waste Percolation Well

On April 26, 2002, ERS excavated three concrete lined pits (Pit A, Pit B, Pit C) (Figure 2) that had been backfilled with used casting sand. A samples of the sand were recovered from Pit A and Pit C (Figure 2).

In addition, an area around the western side of the waste percolation well was over-excavated, after demolishing the concrete lined Pit B. The dimensions of the excavation were approximately fifteen feet by eight feet by twelve feet deep. Most of the soil saturated with oil was removed from the excavation. Residual soil contamination was left in place due to excavation constraints (4" pipeline of unknown content, UG concrete vault). A excavation sidewall sample, SS-N (Figure 2), of the residual soil was recovered at the soil/groundwater interface, at approximately ten feet bgs.. Groundwater at the bottom of the excavation did appear to contain an oil sheen.

3.4 Laboratory Analyses

The following analyses were performed by ¹NSEL on the groundwater samples obtained from the borings:

SB-1 - SB-4 Total Petroleum Hydrocarbons as (TPH/) Motor Oil EPA Method CATFA

SB-4 & SB-5 Volatile Organic Compounds (VOCs) EPA Method 8260

SB-4 CAM 17 Metals EPA Methods 6010B, 7420, 7471A

The following analyses were performed by NSEL on the product oil sample obtained from the boring SB-6:

Volatile Organic Compounds (VOCs)

EPA Method 8260

other analyses?

The following analyses were performed by NSEL on the soil sample obtained from boring P/A, the excavation sidewall and Pit backfill.

SS-N	Volatile Organic Compounds (VOCs) TPH/Motor Oil CAM 17 Metals	EPA Method 8260 EPA Method CATFA EPA Methods 6010B, 7420, 7471A
SS-P/A	Volatile Organic Compounds (VOCs)	EPA Method 8260
Pit A	Volatile Organic Compounds (VOCs)	EPA Method 8260
Pit C	CAM 17 Metals	EPA Methods 6010B, 7420, 7471A

3.5 Analytical Results

The analytical results indicated non-detectable levels of TPH/motor oil and VOCs in groundwater samples SB-1 through SB-4. CAM-17 analysis for groundwater sample SB-4 indicated concentrations of barium, silver and zinc above the detection limit.

Excavation sidewall soil sample "SS-N" contained 3300 parts per million (ppm) of TPH/motor oil, 13 parts per billion (ppb) of 1,2 Dichlorobenzene and 25 ppb of naphthalene. Sample "SS-P/A", recovered from below Pit A, contained 13 ppb of 1,2 Dichlorobenzene

The sample of the used casting sand backfill ("Pit A"), recovered from Pit A, contained 0.55 ppm of 1,2,4 Trimethylbenzene, 0.1 ppm of sec-Butylbenzene, 5.15 ppm of n-Butylbenzene and 0.68 ppm of Napthalene.

CAM-17 analysis for backfill sample "Pit C", recovered from Pit C, and sample SS-N indicated concentrations of metals that were below Bay Area Regional Water Quality Control Board's (BA-RWQCB) Risk-Based Screening Levels (RBSL) for Table D (subsurface soil deeper than 9 feet and groundwater is not a potential drinking water source), with the exception of chromium in sample "SS-N" at 35 ppm (RBSL Table D level is 12 ppm).

The analytical results for the product oil recovered from boring SB-6 indicated 5.81 ppm of benzene, 3.62 ppm of toluene, 10.74 ppm of Xylenes, 2.58 ppm of n-Propylbenzene, 3.62 ppm of 1,3,5 Trimethylbenzene, 9.57 ppm of 1,3,4 Trimethylbenzene, 7.27 ppm of 1,2 Dichlorobenzene, 8.39 ppm of n-Butylbenzene and 20.13 ppm of Napthalene.

4.0 CONCLUSION and RECOMMENDATION

It appears that the oil contaminates, discharged to the groundwater through the liquid waste percolation well, have remained immobile in the clay aquifer. Up to 3300 ppm of oil and up to 35 ppm of total chromium remains in the soil after excavation.

Groundwater, recovered from within five feet of the excavation sidewall, in an assumed down gradient direction, contained non-detectable levels of TPH/motor oil and trace levels of three VOCs and three metals.

Samples "Pit A" and "Pit C", representing the casting sand used to backfill the three concrete lined pits, as well as the soil sample, SS-P/A, recovered from below Pit A, did not contain levels of metals or VOCs above the Bay Area Regional Water Quality Control Board's Risk-Based Screening Levels (RBSL) for Table D (subsurface soil deeper than 9 feet and groundwater is not a potential drinking water source).

The product oil recovered from boring SB-6 contained elevated levels of BTEX and VOCs. The source of this oil is unknown, as is the extent of dispersion, and should be further investigated.

ERS recommends that the City of Oakland Office of Emergency Services review the findings of this Report and compare the results with City's TIER 2 Risk-Based Corrective Action Levels for this portion of Oakland, prior to recommending additional investigation or corrective action.

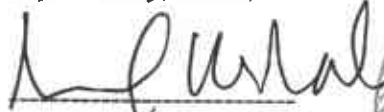
5.0 LIMITATIONS

The observations and conclusions presented in this report are professional opinions based on the scope of work outlined herein. This report was prepared in accordance with generally accepted standards of environmental geological practice in California at the time this investigation was performed. The opinions presented apply to site conditions existing at the time of our study and cannot apply to site conditions or changes of which we are not aware or have not had the opportunity to evaluate. This investigation was conducted solely to evaluate environmental conditions of the soil and with respect to volatile organic compounds, hydrocarbons and limited metals. Evaluation of the geologic conditions at the site for the purpose of this investigation is made from a limited number of observation points. Subsurface conditions may vary away from the data points available. Additional work, including subsurface investigation, can reduce the inherent uncertainties associated with this type of investigation. It must be recognized that any conclusions drawn from these data rely on the integrity of the information available at the time of investigation and that a full and complete determination of environmental contamination and risks cannot be made.

Respectfully submitted this 10th day of May, 2002,



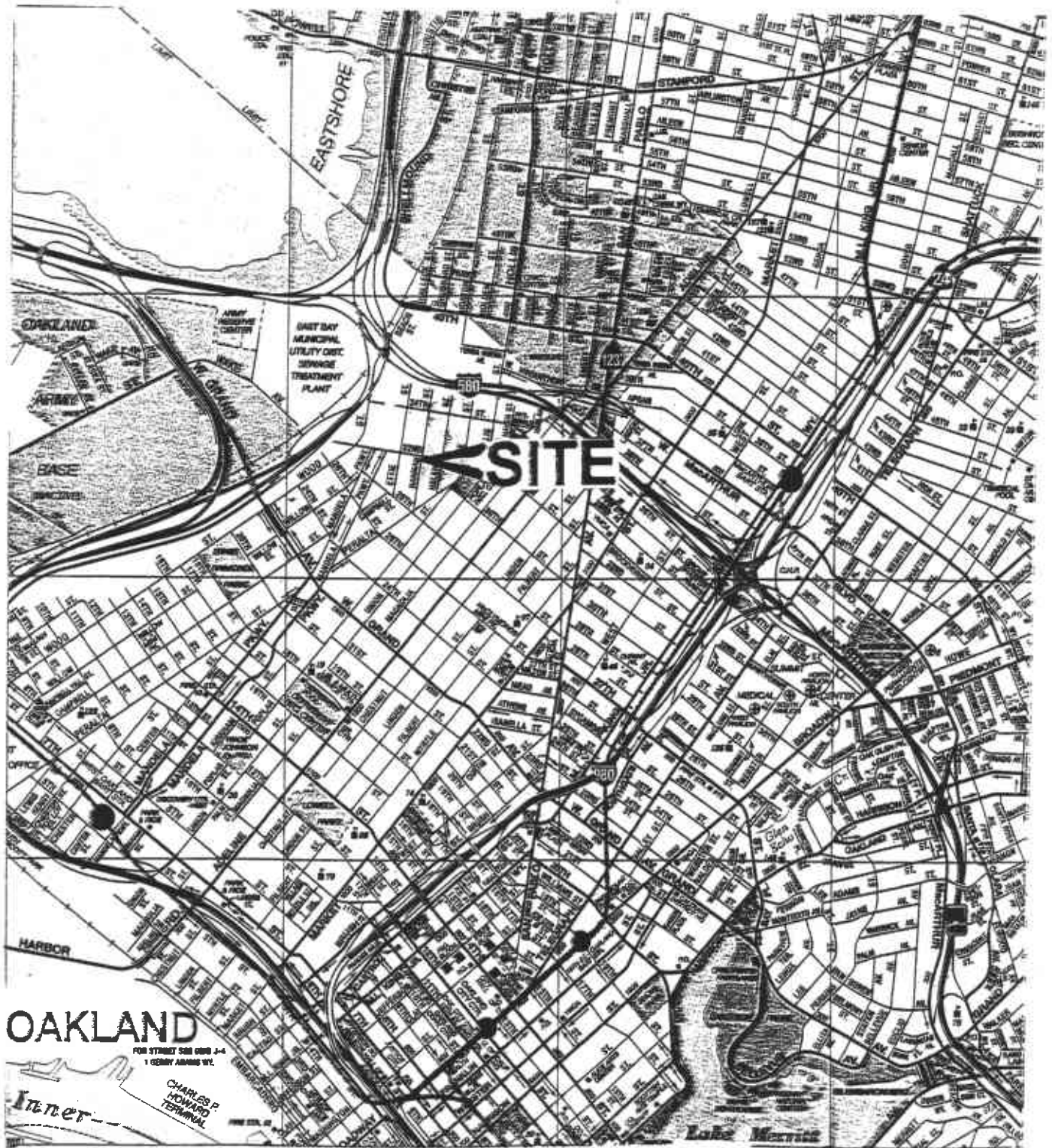
Bennett T Halsted
Project Manager



Samuel H Halsted P.E.
CE 14095



FIGURES



VICINITY MAP

1549 32nd St., Oakland, CA

DATE 4/30/02	SCALE	BY:
<i>Environmental Restoration Services</i>		FIGURE 1
500 Santa Cruz Ave., Menlo Park, CA 94025		

32ND STREET

SIDEWALK (SW)

HANNAH ST.

SW

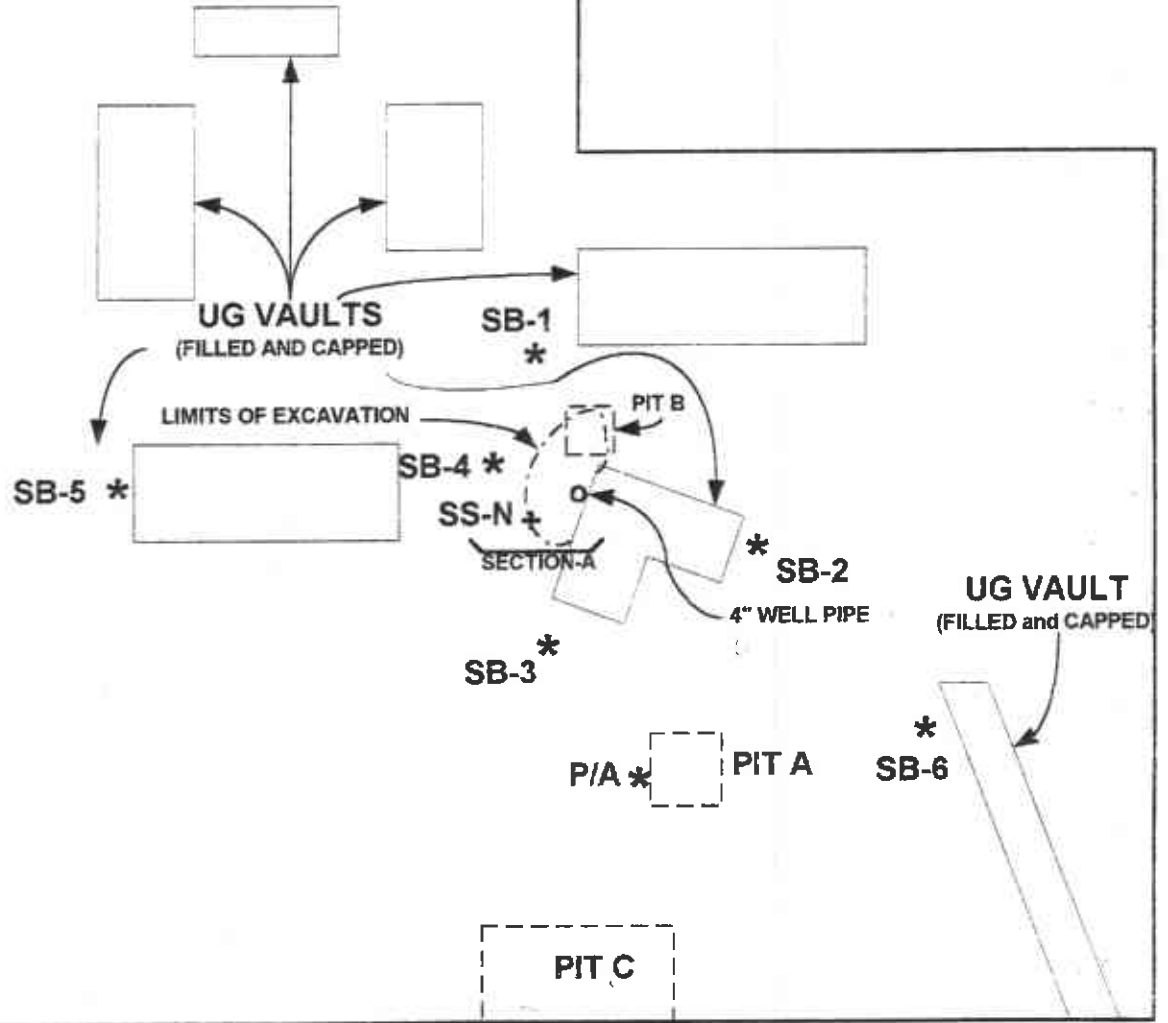
OFFICES

FENCED YARD

BATH ROOM

STORAGE ROOM

OFFICE



SITE PLAN

1549 32nd St., Oakland, CA

DATE 4/30/02

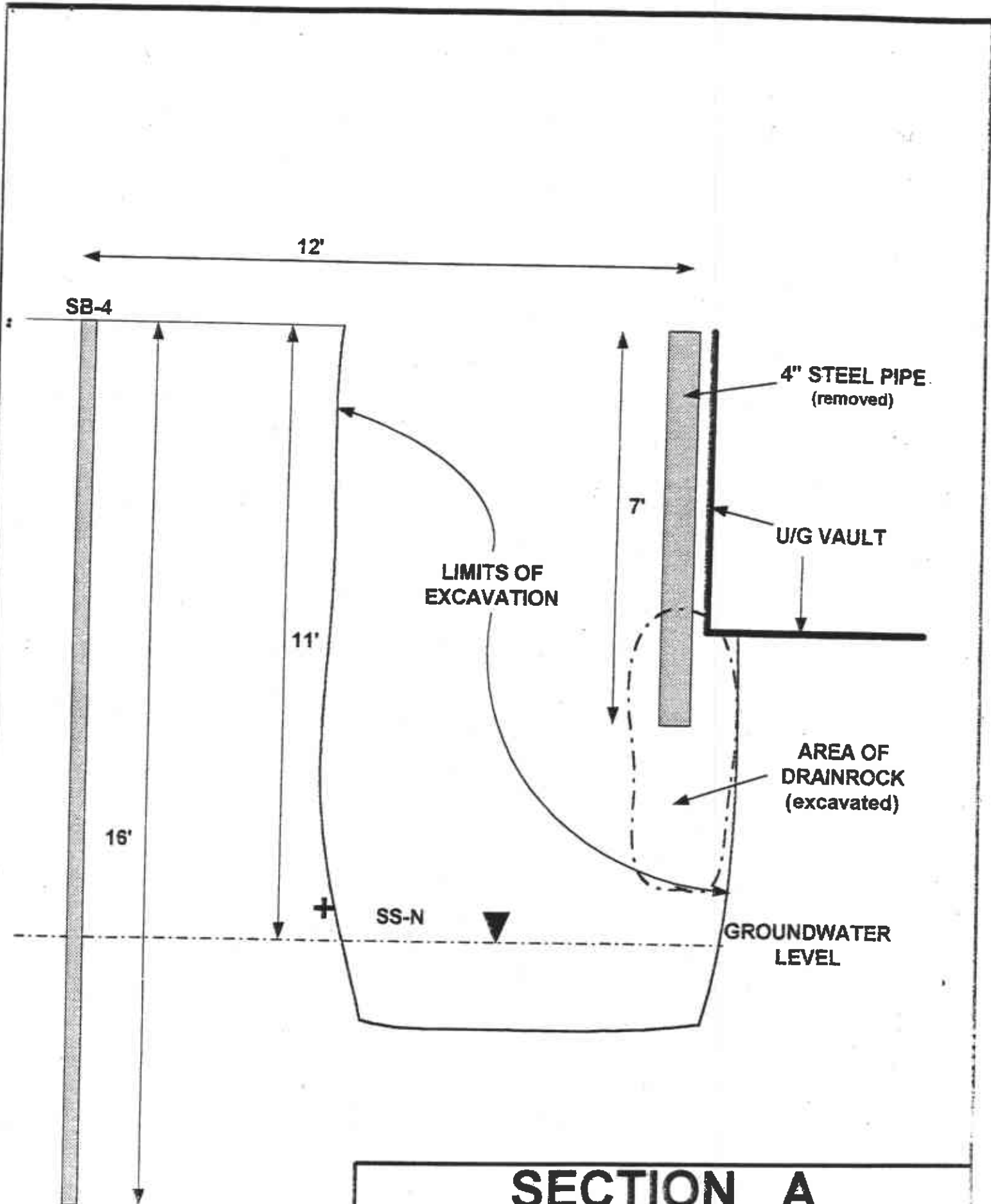
SCALE NTS

BY:

Environmental Restoration Services

FIGURE 2

500 Santa Cruz Ave., Menlo Park, CA 94025



SECTION A		
1549 32nd St., Oakland, CA		
DATE 4/30/02	SCALE NTS	BY:
<i>Environmental Restoration Services</i>		FIGURE 3
500 Santa Cruz Ave., Menlo Park, CA 94025		

**CHAIN-OF-CUSTODY
ANALYTICAL RESULTS**



North State Labs

90 South Spruce Avenue, Suite W, South San Francisco, CA 94080

Phone: (650) 266-4563 Fax: (650) 266-4560

E0434

02-0566

Chain of Custody / Request for Analysis

Lab Job No.: _____ Page ___ of ___

Client: Environmental Restoration		Report to: ERS		Phone: 650-325-3266		Turnaround Time	
Mailing Address: 500 Santa Cruz Munro Park, Ca 94025		Billing to: ERS		Fax: 650-327-2984		Normal	
				email:		Date: 4-26-02	
				PO#		Sampler: B. Halsted	
Project / Site Address / Global ID:				Analysis Requested		EDF <input type="checkbox"/>	
				8260 TPU 8260 motor oil		Cam 17 metals	
Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time			Field Point ID
1 SB-1	water	(3) 4oz Vol 1 liter A	HCI	4/26/02 30		X	
2 SB-2		1		15		X	
3 SB-3		"		29		X	
4 SB-4		"		250	X	X	X
5 SB-5	↓	(2) 4oz Vol		314	X		
6 SS-N	soil	(1) 24 liter		325	X	X	X
							(*) NOTE USE SB-4 IL FOR OIL 17 + TPU-MO
Relinquished by: <i>[Signature]</i>		Date: 4/26/02 Time: 16 ³⁰		Received by: <i>[Signature]</i>		Lab Comments/ Hazards	
Relinquished by:		Date: Time:		Received by:			
Relinquished by:		Date: Time:		Received by:			



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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 02-0566
 Client: Env. Restoration Services
 Project:

Date Reported: 05/06/2002

Volatile Organic Hydrocarbons by Method 8260 GC/MS
 Motor Oil Range Organics by Method CATFH

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 02-0566-01 Client ID: SB-1				04/26/2002	W
Motor Oils	CATFH	ND<0.5	MG/L		04/30/2002
Sample: 02-0566-02 Client ID: SB-2				04/26/2002	W
Motor Oils	CATFH	ND<0.5	MG/L		04/30/2002
Sample: 02-0566-03 Client ID: SB-3				04/26/2002	W
Motor Oils	CATFH	ND<0.5	MG/L		04/30/2002
Sample: 02-0566-04 Client ID: SB-4				04/26/2002	W
Motor Oils	CATFH	ND<0.5	MG/L		
Sample: 02-0566-06 Client ID: SS-N				04/26/2002	SO
Motor Oils	CATFH	3300	MG/KG		05/01/2002



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Quality Control/Quality Assurance

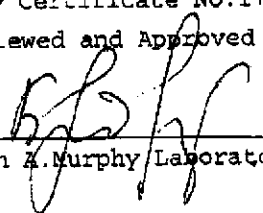
Lab Number: 02-0566
 Client: Env. Restoration Services
 Project:

Date Reported: 05/06/2002
 Volatile Organic Hydrocarbons by Method 8260 GC/MS
 Motor Oil Range Organics by Method CATFH

Analyte	Method	Reporting Limit	Unit	Blank	Avg MS/MSD Recovery	RPD
Motor Oils	CATFH	0.5	MG/L	ND	100/112	11
Motor Oils	CATFH	10	MG/KG	ND	66/80	19

ELAP Certificate NO:1753

Reviewed and Approved


 John A. Murphy Laboratory Director



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C E R T I F I C A T E O F A N A L Y S I S

Job Number: 02-0566
 Client : Env. Restoration Services
 Project :

Date Sampled : 04/26/2002
 Date Analyzed: 05/02/2002
 Date Reported: 05/06/2002

Volatile Organics by GC/MS Method 8260

Laboratory Number	02-0566-04	02-0566-05
Client ID	SB-4	SB-5
Matrix	W	W
Analyte	UG/L	UG/L
Bromochloromethane	ND<5	ND<5
Dichlorodifluoromethane	ND<5	ND<5
Chloromethane	ND<10	ND<10
Vinyl chloride	ND<5	ND<5
Bromomethane	ND<5	ND<5
Chloroethane	ND<5	ND<5
Trichlorofluoromethane	ND<5	ND<5
1,1-Dichloroethene	ND<1	ND<1
Acetone	ND<50	ND<50
Methylene chloride	ND<100	ND<100
trans-1,2-Dichloroethene	ND<1	ND<1
Methyl-tert-butyl ether	ND<1	ND<1
1,1-Dichloroethane	ND<1	ND<1
2,2-Dichloropropane	ND<1	ND<1
cis-1,2 Dichloroethene	ND<1	ND<1
2-Butanone	ND<10	ND<10
Chloroform	ND<1	15
Carbon tetrachloride	ND<1	ND<1
1,1-Dichloropropene	ND<1	ND<1
Benzene	ND<1	ND<1
1,2-Dichloroethane	ND<1	ND<1
Trichloroethene	ND<2	ND<2
1,3-Dichloropropane	ND<1	ND<1
Dibromomethane	ND<1	ND<1
Bromodichloromethane	ND<1	ND<1
trans-1,3-Dichloropropene	ND<1	ND<1
4-Methyl-2-pentanone	ND<10	ND<10
Toluene	ND<1	21
cis-1,3-Dichloropropene	ND<1	ND<1
1,1,2-Trichloroethane	ND<1	ND<1
Tetrachloroethene	ND<1	ND<1
1,3-Dichloropropane	ND<1	ND<1
2-Hexanone	ND<10	ND<10
Dibromochloromethane	ND<1	ND<1
1,2-Dibromoethane	ND<1	ND<1



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C E R T I F I C A T E O F A N A L Y S I S

Job Number: 02-0566
 Client : Env. Restoration Services
 Project :

Date Sampled : 04/26/2002
 Date Analyzed: 05/02/2002
 Date Reported: 05/06/2002

Volatile Organics by GC/MS Method 8260

Laboratory Number	02-0566-04	02-0566-05
Client ID	SB-4	SB-5
Matrix	W	W
Analyte	UG/L	UG/L
Chlorobenzene	ND<2	ND<2
1,1,1,2-Tetrachloroethane	ND<1	ND<1
Ethylbenzene	ND<1	ND<1
Xylene, Isomers m & p	ND<2	2
o-Xylene	ND<1	ND<1
Styrene	ND<1	ND<1
Bromoform	ND<1	ND<1
Isopropylbenzene	ND<1	ND<1
Bromobenzene	ND<1	ND<1
1,1,2,2-Tetrachloroethane	ND<1	ND<1
n-Propylbenzene	ND<1	ND<1
2-Chlorotoluene	ND<1	ND<1
4-Chlorotoluene	ND<1	ND<1
1,3,5-Trimethylbenzene	ND<1	ND<1
tert-Butylbenzene	ND<1	ND<1
1,2,4-Trimethylbenzene	ND<1	ND<1
1,3-Dichlorobenzene	ND<1	ND<1
1,4-Dichlorobenzene	ND<1	ND<1
sec-Butylbenzene	ND<1	ND<1
1,2-Dichlorobenzene	ND<1	ND<1
n-Butylbenzene	ND<1	ND<1
Naphthalene	ND<2	ND<2
1,2,4-Trichlorobenzene	ND<1	ND<1
Hexachlorobutadiene	ND<1	ND<1
1,2,3-Trichlorobenzene	ND<1	ND<1
1,2,3-Trichloropropane	ND<1	ND<1
Acetonitrile	ND<50	ND<50
Acrylonitrile	ND<50	ND<50
Isobutanol	ND<50	ND<50
1,1,1-Trichloroethane	ND<0.5	ND<0.5
SUR-Dibromofluoromethane	96	101
SUR-Toluene-d8	107	108
SUR-4-Bromofluorobenzene	111	112



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C E R T I F I C A T E O F A N A L Y S I S

Job Number: 02-0566
 Client : Env. Restoration Services
 Project :

Date Sampled : 04/26/2002
 Date Analyzed: 05/02/2002
 Date Reported: 05/06/2002

Volatile Organics by GC/MS Method 8250 Quality Control/Quality Assurance Summary

Laboratory Number	C2-0566	MS/MSD	RPD	Recovery	RPD
Client ID	Blank	Recovery		Limit	Limit
Matrix	W	W			
Analyte	Results UG/L	%Recoveries			
Bromochloromethane	ND<5				
Dichlorodifluoromethane	ND<5				
Chloromethane	ND<10				
Vinyl chloride	ND<1				
Bromomethane	ND<5				
Chloroethane	ND<5				
Trichlorofluoromethane	ND<5				
1,1-Dichloroethene	ND<1	72/70	3	61-121	25
Acetone	ND<50				
Methylene chloride	ND<50				
trans-1,2-Dichloroethene	ND<1				
Methyl-tert-butyl ether	ND<1				
1,1-Dichloroethane	ND<1				
2,2-Dichloropropane	ND<1				
cis-1,2-Dichloroethane	ND<1				
2-Butanone	ND<10				
Chloroform	ND<1				
Carbon tetrachloride	ND<1				
1,1-Dichloropropane	ND<1	124/118	5	74-135	21
Benzene	ND<1				
1,2-Dichloroethane	ND<1				
Trichloroethene	ND<2	98/92	6	69-129	20
1,2-Dichloropropane	ND<1				
Dibromomethane	ND<1				
Bromodichloromethane	ND<1				
trans-1,3-Dichloropropene	ND<1				
4-Methyl-2-pentanone	ND<10				
Toluene	ND<1	126/118	7	61-141	19
cis-1,3-Dichloropropene	ND<1				
1,1,2-Trichloroethane	ND<1				
Tetrachloroethane	ND<1				
1,3-Dichloropropane	ND<1				
2-Hexanone	ND<10				
Dibromochloromethane	ND<1				
1,2-Dibromoethane	ND<1				
Chlorobenzene	ND<2	114/110	4	70-139	19
1,1,1,2-Tetrachloroethane	ND<1				
Ethylbenzene	ND<1				
Xylene, Isomers m & p	ND<2				
o-Xylene	ND<1				
Styrene	ND<1				



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C E R T I F I C A T E O F A N A L Y S I S

Job Number: 02-0566
 Client : Env. Restoration Services
 Project :

Date Sampled : 04/26/2002
 Date Analyzed: 05/02/2002
 Date Reported: 05/06/2002

**Volatile Organics by GC/MS Method 8260
 Quality Control/Quality Assurance Summary**

Laboratory Number	02-0566	MS/MSD	RPD	Recovery	RPD
Client ID	Blank	Recovery		Limit	Limit
Matrix	N	W			
Analyte	Results UG/L	%Recoveries			
Bromoform	ND<1				
Isopropylbenzene	ND<1				
Bromobenzene	ND<1				
1,1,2,2-Tetrachloroethane	ND<1				
n-Propylbenzene	ND<1				
2-Chlorotoluene	ND<1				
4-Chlorotoluene	ND<1				
1,3,5-Trimethylbenzene	ND<1				
tert-Butylbenzene	ND<1				
1,2,4-Trimethylbenzene	ND<1				
1,3-Dichlorobenzene	ND<1				
1,4-Dichlorobenzene	ND<1				
sec-Butylbenzene	ND<1				
1,2-Dichlorobenzene	ND<1				
n-Butylbenzene	ND<1				
Naphthalene	ND<2				
1,2,4-Trichlorobenzene	ND<1				
Hexachlorobutadiene	ND<1				
1,2,3-Trichlorobenzene	ND<1				
1,2,3-Trichloropropane	ND<1				
Acetonitrile	ND<50				
Acrylonitrile	ND<50				
Isobutanol	ND<50				
1,1,1-Trichloroethane	ND<0.5				
SUR-Dibromofluoromethane	97	99/98	1	67-129	21
SUR-Toluene-d8	104	109/109	0	72-119	16
SUR-4-Bromofluorobenzene	108	111/112	1	78-121	15

Reviewed and Approved

[Signature]
 John A. Murray
 Laboratory Director



North State Environmental Laboratory

CA ELAP# 1753

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C E R T I F I C A T E O F A N A L Y S I S

Job Number: 02-0566
 Client : Env. Restoration Services
 Project :

Date Sampled : 04/26/2002
 Date Analyzed: 05/03/2002
 Date Reported: 05/06/2002

Volatile Organics by GC/MS Method 8260

Laboratory Number	02-0566-06
Client ID	SS-N
Matrix	SO
Analyte	UG/KG
Bromochloromethane	ND<25
Dichlorodifluoromethane	ND<25
Chloromethane	ND<50
Vinyl chloride	ND<25
Bromomethane	ND<25
Chloroethane	ND<35
Trichlorofluoromethane	ND<25
1,1-Dichloroethene	ND<5
Acetone	ND<250
Methylene chloride	ND<500
trans-1,2-Dichloroethene	ND<5
Methyl-tert-butyl ether	ND<5
1,1-Dichloroethane	ND<5
2,2-Dichloropropane	ND<5
cis-1,2 Dichloroethene	ND<5
2-Butanone	ND<50
Chloroform	ND<5
Carbon tetrachloride	ND<5
1,1-Dichloropropene	ND<5
Benzene	ND<5
1,2-Dichloroethane	ND<5
Trichloroethene	ND<5
1,2-Dichloropropane	ND<5
Dibromomethane	ND<5
Bromodichloromethane	ND<5
trans-1,3-Dichloropropene	ND<5
4-Methyl-2-pentanone	ND<50
Toluene	ND<5
cis-1,3-Dichloropropene	ND<5
1,1,2-Trichloroethane	ND<5
Tetrachloroethene	ND<5
1,3-Dichloropropane	ND<5
2-Hexanone	ND<50
Dibromochloromethane	ND<5
1,2-Dibromoethane	ND<5



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C E R T I F I C A T E O F A N A L Y S I S

Job Number: 02-0566
 Client : Env. Restoration Services
 Project :

Date Sampled : 04/26/2002
 Date Analyzed: 05/03/2002
 Date Reported: 05/06/2002

Volatile Organics by GC/MS Method 8260

Laboratory Number	02-0566-06
Client ID	SE-N
Matrix	SO
Analyte	UG/KG
Chlorobenzene	ND<10
1,1,1,2-Tetrachloroethane	ND<5
Ethylbenzene	ND<5
Xylene, Isomers m & p	ND<10
o-Xylene	ND<5
Styrene	ND<5
Bromoform	ND<5
Isopropylbenzene	ND<5
Bromobenzene	ND<5
1,1,2,2-Tetrachloroethane	ND<5
n-Propylbenzene	ND<5
2-Chlorotoluene	ND<5
4-Chlorotoluene	ND<5
1,3,5-Trimethylbenzene	ND<5
tert-Butylbenzene	ND<5
1,2,4-Trimethylbenzene	ND<5
1,3-Dichlorobenzene	ND<5
1,4-Dichlorobenzene	ND<5
sec-Butylbenzene	ND<5
1,2-Dichlorobenzene	13
n-Butylbenzene	ND<5
Naphthalene	25
1,2,4-Trichlorobenzene	ND<5
Hexachlorobutadiene	ND<5
1,2,3-Trichlorobenzene	ND<5
1,2,3-Trichloropropane	ND<5
Acetonitrile	ND<250
Acrylonitrile	ND<250
Isobutanol	ND<250
1,1,1-Trichloroethane	ND<5
SUR-Dibromofluoromethane	119
SUR-Toluene-d3	105
SUR-4-Bromofluorobenzene	92



North State Environmental Laboratory

CA ELAP# 1753

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CERTIFICATE OF ANALYSIS

Job Number: 02-0566
 Client : Env. Restoration Services
 Project :

Date Sampled : 04/26/2002
 Date Analyzed: 05/03/2002
 Date Reported: 05/06/2002

Volatile Organics by GC/MS Method 8260
 Quality Control/Quality Assurance Summary

Laboratory Number	02-0566	MS/MSD	RPD	Recovery	RPD
Client ID	Blank	Recovery		Limit	Limit
Matrix	SO	SO			
Analyte	Results	%Recoveries			
	UG/KG				
Bromochloromethane	ND<25				
Dichlorodifluoromethane	ND<25				
Chloromethane	ND<50				
Vinyl chloride	ND<5				
Bromomethane	ND<25				
Chloroethane	ND<25				
Trichlorofluoromethane	ND<25				
1,1-Dichloroethene	ND<5	117/115	2	54-155	27
Acetone	ND<250				
Methylene chloride	ND<250				
trans-1,2-Dichloroethene	ND<5				
Methyl-tert-butyl ether	ND<5				
1,1-Dichloroethane	ND<5				
2,2-Dichloropropane	ND<5				
cis-1,2-Dichloroethene	ND<5				
2-Butanone	ND<50				
Chloroform	ND<5				
Carbon tetrachloride	ND<5				
1,1-Dichloropropene	ND<5	113/122	8	72-122	22
Benzene	ND<5				
1,2-Dichloroethane	ND<5	87/91	4	68-122	20
Trichloroethene	ND<5				
1,2-Dichloropropane	ND<5				
Dibromomethane	ND<5				
Bromodichloromethane	ND<5				
trans-1,3 Dichloropropene	ND<5				
4-Methyl-2-pentanone	ND<50				
Toluene	ND<5	115/122	6	73-125	21
cis-1,3-Dichloropropene	ND<5				
1,1,2-Trichloroethane	ND<5				
Tetrachloroethene	ND<5				
1,3-Dichloropropane	ND<5				
2-Hexanone	ND<50				
Dibromochloromethane	ND<5				
1,2-Dibromoethane	ND<5				
Chlorobenzene	ND<10	98/105	7	68-122	21
1,1,1,2-Tetrachloroethane	ND<5				
Ethylbenzene	ND<5				
Xylene, Isomers m & p	ND<10				
o-Xylene	ND<5				
Styrene	ND<5				



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CERTIFICATE OF ANALYSIS

Job Number: 02-0566
 Client : Env. Restoration Services
 Project :

Date Sampled : 04/26/2002
 Date Analyzed: 05/03/2002
 Date Reported: 05/06/2002

Volatile Organics by GC/MS Method 8260
 Quality Control/Quality Assurance Summary

Laboratory Number	02-0566	MS/MSD	RPD	Recovery	RPD
Client ID	Blank	Recovery		Limit	Limit
Matrix	SO	SO			
Analyte	Results UG/KG	%Recoveries			
Bromoform	ND<5				
Isopropylbenzene	ND<5				
Bromobenzene	ND<5				
1,1,2,2-Tetrachloroethane	ND<5				
n-Propylbenzene	ND<5				
2-Chlorotoluene	ND<5				
4-Chlorotoluene	ND<5				
1,3,5-Trimethylbenzene	ND<5				
tert-Butylbenzene	ND<5				
1,2,4-Trimethylbenzene	ND<5				
1,3-Dichlorobenzene	ND<5				
1,4-Dichlorobenzene	ND<5				
sec-Butylbenzene	ND<5				
1,2-Dichlorobenzene	ND<5				
n-Butylbenzene	ND<5				
Naphthalene	ND<10				
1,2,4-Trichlorobenzene	ND<5				
Hexachlorobutadiene	ND<5				
1,2,3-Trichlorobenzene	ND<5				
1,2,3-Trichloropropane	ND<5				
Acetonitrile	ND<250				
Acrylonitrile	ND<250				
Isobutanol	ND<250				
1,1,1-Trichloroethane	ND<5	117/119	2	54-145	23
SUR-1-bromofluoromethane	110	109/104	5	81-108	14
SUR-Toluene-d8	107	93/94	1	82-118	18
SUR-4-Bromofluorobenzene	85				

Reviewed and Approved

[Signature]
 John A. Murphy
 Laboratory Director



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CA ELAP#1759

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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 02-0566
 Client: Env. Restoration Services
 Project:

Date Reported: 05/08/2002

Metals by EPA Method 6010B ICAP and 7471 AA Spectroscopy

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 02-0566-06 Client ID: SS-N				04/26/2002	SO
Lead	7420	7	MG/KG		05/07/2002
Antimony	SW6010B	ND<5	MG/KG		05/07/2002
Arsenic	SW6010B	ND<1	MG/KG		05/07/2002
Barium	SW6010B	111	MG/KG		05/07/2002
Beryllium	SW6010B	ND<1	MG/KG		05/07/2002
Cadmium	SW6010B	ND<2	MG/KG		05/07/2002
Chromium	SW6010B	35	MG/KG		05/07/2002
Cobalt	SW6010B	11	MG/KG		05/07/2002
Copper	SW6010B	23	MG/KG		05/07/2002
Molybdenum	SW6010B	ND<1	MG/KG		05/07/2002
Nickel	SW6010B	50	MG/KG		05/07/2002
Selenium	SW6010B	ND<5	MG/KG		05/07/2002
Silver	SW6010B	ND<1	MG/KG		05/07/2002
Thallium	SW6010B	ND<5	MG/KG		05/07/2002
Vanadium	SW6010B	29	MG/KG		05/07/2002
Zinc	SW6010B	60	MG/KG		05/07/2002
Mercury	SW7471A	ND<0.05	MG/KG		05/06/2002



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CERTIFICATE OF ANALYSIS

Quality Control/Quality Assurance

Lab Number: 02-0566
 Client: Env. Restoration Services
 Project:

Date Reported: 05/08/200

Analyte	Method	Reporting Limit	Unit	Blank	MS/MSD Recovery	RPD
Antimony	SW6010B	5	MG/KG	ND<5	98/98	0
Arsenic	SW6010B	1	MG/KG	ND<1	100/96	4
Barium	SW6010B	1	MG/KG	ND<1	100/100	0
Beryllium	SW6010B	1	MG/KG	ND<1	92/92	0
Cadmium	SW6010B	2	MG/KG	ND<2	108/108	0
Chromium	SW6010B	1	MG/KG	ND<1	100/98	2
Cobalt	SW6010B	1	MG/KG	ND<1	96/94	2
Copper	SW6010B	1	MG/KG	ND<1	100/100	0
Lead	7420	1	MG/KG	ND<1	106/97	9
Mercury	SW7471A	0.05	MG/KG	ND<0.05	81/88	8
Molybdenum	SW6010B	1	MG/KG	ND<1	100/100	0
Nickel	SW6010B	1	MG/KG	ND<1	96/96	0
Selenium	SW6010B	5	MG/KG	ND<5	92/90	2
Silver	SW6010B	1	MG/KG	ND<1	102/100	2
Thallium	SW6010B	5	MG/KG	ND<5	76/80	5
Vanadium	SW6010B	1	MG/KG	ND<1	100/98	2
Zinc	SW6010B	1	MG/KG	ND<1	104/102	2

ELAP Certificate NO: 1753

Reviewed and Approved

John A. Murphy, Laboratory Director



North State Environmental Laboratory

CA ELAP#1753

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C E R T I F I C A T E O F A N A L Y S I S

Job Number: 02-0567

Date Sampled : 04/26/2002

Client : Env. Restoration Services

Date Analyzed: 05/03/2002

Project :

Date Reported: 05/06/2002

Volatile Organics by GC/MS Method 8260

Laboratory Number	02-0567-01	02-0567-02
Client ID	SS-P/A	PIT A
Matrix	SO	SL
Analyte	UG/KG	UG/KG
Bromochloromethane	ND<25	ND<100
Dichlorodifluoromethane	ND<25	ND<100
Chloromethane	ND<50	ND<200
Vinyl chloride	ND<25	ND<100
Bromomethane	ND<25	ND<100
Chloroethane	ND<25	ND<100
Trichlorofluoromethane	ND<25	ND<100
1,1-Dichloroethene	ND<5	ND<20
Acetone	ND<250	ND<1000
Methylene chloride	ND<500	ND<2000
trans-1,2-Dichloroethene	ND<5	ND<20
Methyl-tert-butyl ether	ND<5	ND<20
1,1-Dichloroethane	ND<5	ND<20
2,2-Dichloropropane	ND<5	ND<20
cis-1,2-Dichloroethene	ND<5	ND<20
2-Butanone	ND<50	ND<200
Chloroform	ND<5	ND<20
Carbon tetrachloride	ND<5	ND<20
1,1-Dichloropropane	ND<5	ND<20
Benzene	ND<5	ND<20
1,2-Dichloroethane	ND<5	ND<20
Trichloroethene	ND<5	ND<20
1,2-Dichloropropane	ND<5	ND<20
Dibromomethane	ND<5	ND<20
Bromodichloromethane	ND<5	ND<20
trans-1,3-Dichloropropene	ND<5	ND<20
4-Methyl 2 pentanone	ND<50	ND<200
Toluene	ND<5	ND<20
cis-1,3-Dichloropropene	ND<5	ND<20
1,1,2-Trichloroethane	ND<5	ND<20
Tetrachloroethene	ND<5	ND<20
1,3-Dichloropropene	ND<5	ND<20
2-Hexanone	ND<50	ND<200
Dibromochloromethane	ND<5	ND<20
1,2-Dibromoethane	ND<5	ND<20



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CA ELAP# 1733

C E R T I F I C A T E O F A N A L Y S I S

Job Number: 02-0567
 Client : Env. Restoration Services
 Project :

Date Sampled : 04/26/2002
 Date Analyzed: 05/03/2002
 Date Reported: 05/06/2002

Volatile Organics by GC/MS Method 8260

Laboratory Number	02-0567-01	02-0567-02
Client ID	SS-P/A	PIT A
Matrix	SO	SL
Analyte	UG/KG	UG/KG
Chlorobenzene	ND<10	ND<40
1,1,1,2-Tetrachloroethane	ND<5	ND<20
Ethylbenzene	ND<5	ND<20
Xylene, Isomers m & p	ND<10	ND<40
o-Xylene	ND<5	ND<20
Styrene	ND<5	ND<20
Bromoform	ND<5	ND<20
Isopropylbenzene	ND<5	ND<20
Bromobenzene	ND<5	ND<20
1,1,2,2-Tetrachloroethane	ND<5	ND<20
n-Propylbenzene	ND<5	ND<20
2-Chlorotoluene	ND<5	ND<20
4-Chlorotoluene	ND<5	ND<20
1,3,5-Trimethylbenzene	ND<5	ND<20
tert-Butylbenzene	ND<5	ND<20
1,2,4-Trimethylbenzene	ND<5	553
1,3-Dichlorobenzene	ND<5	ND<20
1,4-Dichlorobenzene	ND<5	ND<20
sec-Butylbenzene	ND<5	101
1,2-Dichlorobenzene	14	ND<20
n-Butylbenzene	ND<5	5140
Naphthalene	ND<10	682
1,2,4-Trichlorobenzene	ND<5	ND<20
Hexachlorobutadiene	ND<5	ND<20
1,2,3-Trichlorobenzene	ND<5	ND<20
1,2,3-Trichloropropane	ND<5	ND<20
Acetonitrile	ND<250	ND<1000
Acrylonitrile	ND<250	ND<1000
Isobutanol	ND<250	ND<1000
1,1,1-Trichloroethane	ND<5	ND<20
SUR-Dibromofluoromethane	117	121
SUR-Toluene-d8	107	108
SUR-4-Bromofluorobenzene	91	99



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CA ELAP# 1753

C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 02-0567
 Client: Env. Restoration Services
 Project:

Date Reported: 05/08/2002

Metals by EPA Method 6010B ICAP and 7471 AA Spectroscopy

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 02-0567-03 Client ID:	PIT C			04/26/2002	SO
Lead	7420	7	MG/KG		05/08/2002
Antimony	SW6010B	ND<5	MG/KG		05/07/2002
Arsenic	SW6010B	ND<1	MG/KG		05/07/2002
Barium	SW6010B	73	MG/KG		05/07/2002
Beryllium	SW6010B	ND<1	MG/KG		05/07/2002
Cadmium	SW6010B	ND<2	MG/KG		05/07/2002
Chromium	SW6010B	7	MG/KG		05/07/2002
Cobalt	SW6010B	ND<1	MG/KG		05/07/2002
Copper	SW6010B	51	MG/KG		05/07/2002
Molybdenum	SW6010B	ND<1	MG/KG		05/07/2002
Nickel	SW6010B	26.42	MG/KG		05/07/2002
Selenium	SW6010B	ND<5	MG/KG		05/07/2002
Silver	SW6010B	ND<1	MG/KG		05/07/2002
Thallium	SW6010B	ND<5	MG/KG		05/07/2002
Tanadium	SW6010B	4	MG/KG		05/07/2002
Zinc	SW6010B	54	MG/KG		05/07/2002
Mercury	SW7471A	ND<0.05	MG/KG		05/06/2002



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CA ELAP# 1753

CERTIFICATE OF ANALYSIS

Quality Control/Quality Assurance

Lab Number: 02-0567
 Client: Env. Restoration Services
 Project:

Date Reported: 05/08/200

Analyte	Method	Reporting Limit	Unit	Blank	MS/MSD Recovery	RPD
Antimony	SW6010B	5	MG/KG	ND<5	98/98	0
Arsenic	SW6010B	1	MG/KG	ND<1	100/96	4
Barium	SW6010B	1	MG/KG	ND<1	100/100	0
Beryllium	SW6010B	1	MG/KG	ND<1	92/92	0
Cadmium	SW6010B	2	MG/KG	ND<2	108/108	0
Chromium	SW6010B	1	MG/KG	ND<1	100/98	2
Cobalt	SW6010B	1	MG/KG	ND<1	96/94	2
Copper	SW6010B	1	MG/KG	ND<1	100/100	0
Lead	7420	1	MG/KG	ND<1	98/105	0
Mercury	SW7471A	0.05	MG/KG	ND<0.05	81/88	0
Molybdenum	SW6010B	1	MG/KG	ND<1	100/100	0
Nickel	SW6010B	1	MG/KG	ND<1	96/96	0
Selenium	SW6010B	5	MG/KG	ND<5	92/90	2
Silver	SW6010B	1	MG/KG	ND<1	102/100	2
Thallium	SW6010B	5	MG/KG	ND<5	76/80	5
Tanadium	SW6010B	1	MG/KG	ND<1	100/98	2
Zinc	SW6010B	1	MG/KG	ND<1	104/102	2

ELAP Certificate NO:1753

Reviewed and Approved

John A. Murphy, Laboratory Director



North State Environmental Laboratory

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C E R T I F I C A T E O F A N A L Y S I S

Job Number: 02-0567

Date Sampled : 04/26/2002

Client : Env. Restoration Services

Date Analyzed: 05/03/2002

Project :

Date Reported: 05/06/2002

Volatile Organics by GC/MS Method 8260 Quality Control/Quality Assurance Summary

Laboratory Number	02-0567	MS/MSD	RPD	Recovery	RPD
Client ID	Blank	Recovery		Limit	Limit
Matrix	SC	SO			
Analyte	Results UG/KG	%Recoveries			
Bromochloromethane	ND<25				
Dichlorodifluoromethane	ND<25				
Chloromethane	ND<50				
Vinyl chloride	ND<5				
Bromomethane	ND<25				
Chloroethane	ND<25				
Trichlorofluoromethane	ND<25				
1,1-Dichloroethene	ND<5	117/115	2	54-155	27
Acetone	ND<250				
Methylene chloride	ND<250				
trans-1,2-Dichloroethene	ND<5				
Methyl-tert-butyl ether	ND<5				
1,1-Dichloroethane	ND<5				
2,2-Dichloropropane	ND<5				
cis-1,2-Dichloroethene	ND<5				
2-Butanone	ND<50				
Chloroform	ND<5				
Carbon tetrachloride	ND<5				
1,1-Dichloropropene	ND<5				
Benzene	ND<5	113/122	8	72-122	22
1,2-Dichloroethane	ND<5				
Trichloroethene	ND<5	87/91	4	58-122	20
1,2-Dichloropropane	ND<5				
Dibromomethane	ND<5				
Bromodichloromethane	ND<5				
trans-1,3-Dichloropropene	ND<5				
4-Methyl-2-pentanone	ND<50				
Toluene	ND<5	115/122	6	73-125	21
cis-1,3-Dichloropropene	ND<5				
1,1,2-Trichloroethane	ND<5				
Tetrachloroethene	ND<5				
1,3-Dichloropropane	ND<5				
2-Hexanone	ND<50				
Dibromochloromethane	ND<5				
1,2-Dibromoethane	ND<5				
Chlorobenzene	ND<10	98/105	7	69-122	21
1,1,1,2-Tetrachloroethane	ND<5				
Ethylbenzene	ND<5				
Xylene, Isomers m & p	ND<10				
o-Xylene	ND<5				
Styrene	ND<5				



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C E R T I F I C A T E O F A N A L Y S I S

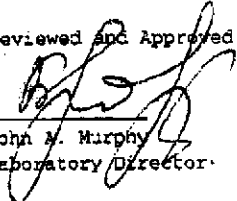
Job Number: 02-0567
 Client : Env. Restoration Services
 Project :

Date Sampled : 04/26/2002
 Date Analyzed: 05/03/2002
 Date Reported: 05/06/2002

Volatile Organics by GC/MS Method 8260
 Quality Control/Quality Assurance Summary

Laboratory Number	02-0567	MS/MSD	RPD	Recovery	RPD
Client ID	Blank	Recovery		Limit	Limit
Matrix	SO	SO			
Analyte	Results UG/KG	%Recoveries			
Bromoform	ND<5				
Isopropylbenzene	ND<5				
Bromobenzene	ND<5				
1,1,2,2-Tetrachloroethane	ND<5				
n-Propylbenzene	ND<5				
2-Chlorotoluene	ND<5				
4-Chlorotoluene	ND<5				
1,3,5-Trimethylbenzene	ND<5				
tert-Butylbenzene	ND<5				
1,2,4-Trimethylbenzene	ND<5				
1,3-Dichlorobenzene	ND<5				
1,4-Dichlorobenzene	ND<5				
sec-Butylbenzene	ND<5				
1,2-Dichlorobenzene	ND<5				
n-Butylbenzene	ND<5				
Naphthalene	ND<10				
1,2,4-Trichlorobenzene	ND<5				
Hexachlorobutadiene	ND<5				
1,2,3-Trichlorobenzene	ND<5				
1,2,3-Trichloropropane	ND<5				
Acetonitrile	ND<250				
Acrylonitrile	ND<250				
Isobutanol	ND<250				
1,1,1-Trichloroethane	ND<5				
SUR-Dibromofluoromethane	110	117/119	2	54-145	23
SUR-Toluene-d8	107	109/104	5	51-108	14
SUR-4-Bromofluorobenzene	85	93/94	1	82-118	18

Reviewed and Approved


 John M. Murphy
 Laboratory Director



North State Environmental Laboratory

CA BLAP# 1753

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C E R T I F I C A T E O F A N A L Y S I S

Job Number: 02-0568
 Client : Env. Restoration Services
 Project :

Date Sampled : 04/25/2002
 Date Analyzed: 05/03/2002
 Date Reported: 05/06/2002

Volatile Organics by GC/MS Method 8260

Laboratory Number	02-0568-01
Client ID	OIL
Matrix	OIL
Analyte	UG/KG
Bromochloromethane	ND<12500
Dichlorodifluoromethane	ND<12500
Chloromethane	ND<25000
Vinyl chloride	ND<12500
Bromomethane	ND<12500
Chloroethane	ND<12500
Trichlorofluoromethane	ND<12500
1,1-Dichloroethene	ND<2500
Acetone	ND<125000
Methylene chloride	ND<250000
trans-1,2-Dichloroethene	ND<2500
Methyl-tert-butyl ether	ND<2500
1,1-Dichloroethane	ND<2500
2,2-Dichloropropane	ND<2500
cis-1,2-Dichloroethene	ND<2500
2-Butanone	ND<25000
Chloroform	ND<2500
Carbon tetrachloride	ND<2500
1,1-Dichloropropene	ND<2500
Benzene	5810
1,2-Dichloroethane	ND<2500
Trichloroethene	ND<2500
1,2-Dichloropropane	ND<2500
Dibromomethane	ND<2500
Bromodichloromethane	ND<2500
trans-1,3-Dichloropropene	ND<2500
4-Methyl-2-pentanone	ND<25000
Toluene	3620
cis-1,3-Dichloropropene	ND<2500
1,1,2-Trichloroethane	ND<2500
Tetrachloroethene	ND<2500
1,3-Dichloropropane	ND<2500
2-Hexanone	ND<25000
Dibromochloromethane	ND<2500
1,2-Dibromoethane	ND<2500



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C E R T I F I C A T E O F A N A L Y S I S

Job Number: 02-0568
 Client : Env. Restoration Services
 Project :

Date Sampled : 04/26/2002
 Date Analyzed: 05/03/2002
 Date Reported: 05/06/2002

Volatile Organics by GC/MS Method 8260

Laboratory Number	02-0568-01
Client ID	OIL
Matrix	OIL
Analyte	UG/KG
Chlorobenzene	ND<5000
1,1,1,2-Tetrachloroethane	ND<2500
Ethylbenzene	ND<2500
Xylene, Isomers m & p	6720
o-Xylene	4020
Styrene	ND<2500
Bromoform	ND<2500
Isopropylbenzene	ND<2500
Bromobenzene	ND<2500
1,1,2,2 Tetrachloroethane	ND<2500
n-Propylbenzene	2580
2-Chlorotoluene	ND<2500
4-Chlorotoluene	ND<2500
1,3,5-Trimethylbenzene	3620
tert-Butylbenzene	ND<2500
1,2,4-Trimethylbenzene	9570
1,3-Dichlorobenzene	ND<2500
1,4-Dichlorobenzene	ND<2500
sec-Butylbenzene	ND<2500
1,2-Dichlorobenzene	7270
n-Butylbenzene	8390
Naphthalene	20300
1,2,4-Trichlorobenzene	ND<2500
Hexachlorobutadiene	ND<2500
1,2,3-Trichlorobenzene	ND<2500
1,2,3-Trichloropropane	ND<2500
Acetonitrile	ND<125000
Acrylonitrile	ND<125000
Isobutanol	ND<125000
1,1,1-Trichloroethane	ND<2500
SUR-Dibromofluoromethane	112
SUR-Toluene-d8	111
SUR-4-Bromofluorobenzene	99



North State Environmental Laboratory

CA ELAP# 1753

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C E R T I F I C A T E O F A N A L Y S I S

Job Number: 02-0568

Date Sampled : 04/26/2002

Client : Env. Restoration Services

Date Analyzed: 05/03/2002

Project :

Date Reported: 05/06/2002

Volatile Organics by GC/MS Method 8260 Quality Control/Quality Assurance Summary

Laboratory Number	02-0568	MS/MSE	RPD	Recovery	RPD
Client ID	Blank	Recovery		Limit	Limit
Matrix	OIL	OIL			
Analyte	Results UG/KG	%Recoveries			
Bromochloromethane	ND<25				
Dichlorodifluoromethane	ND<25				
Chloromethane	ND<50				
Vinyl chloride	ND<5				
Bromomethane	ND<25				
Chloroethane	ND<25				
Trichlorofluoromethane	ND<25				
1,1-Dichloroethene	ND<5	117/115	2	54-155	27
Acetone	ND<250				
Methylene chloride	ND<250				
trans-1,2-Dichloroethene	ND<5				
Methyl-tert-butyl ether	ND<5				
1,1-Dichloroethane	ND<5				
2,2-Dichloropropene	ND<5				
cis-1,2-Dichloroethene	ND<5				
2-Butanone	ND<50				
Chloroform	ND<5				
Carbon tetrachloride	ND<5				
1,1-Dichloropropene	ND<5				
Benzene	ND<5	113/122	8	72-122	22
1,2-Dichloroethane	ND<5				
Trichloroethene	ND<5	87/91	4	68-122	20
1,2-Dichloropropane	ND<5				
Dibromomethane	ND<5				
Bromodichloromethane	ND<5				
trans-1,3-Dichloropropene	ND<5				
4-Methyl-2-pentanone	ND<50				
Toluene	ND<5	115/122	6	73-125	21
cis-1,3-Dichloropropene	ND<5				
1,1,2-Trichloroethane	ND<5				
Tetrachloroethene	ND<5				
1,3-Dichloropropane	ND<5				
2-Hexanone	ND<50				
Dibromochloromethane	ND<5				
1,2-Dibromoethane	ND<5				
Chlorobenzene	ND<10	98/105	7	66-122	21
1,1,1,2-Tetrachloroethane	ND<5				
Ethylbenzene	ND<5				
Xylene, Isomers m & p	ND<10				
o-Xylene	ND<5				
Styrene	ND<5				



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C E R T I F I C A T E O F A N A L Y S I S

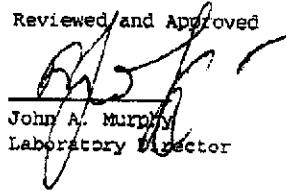
Job Number: 02-0568
 Client : Env. Restoration Services
 Project :

Date Sampled : 04/26/2002
 Date Analyzed: 05/03/2002
 Date Reported: 05/06/2002

Volatile Organics by GC/MS Method 8260 Quality Control/Quality Assurance Summary

Laboratory Number	02-0568	MS/MSD	RPD	Recovery	RPD
Client ID	Blank	Recovery		Limit	Limit
Matrix	OIL	OIL			
Analyte	Results UG/KG	%Recoveries			
Bromoform	ND<5				
Isopropylbenzene	ND<5				
Bromobenzene	ND<5				
1,1,2,2-Tetrachloroethane	ND<5				
n-Propylbenzene	ND<5				
2-Chlorotoluene	ND<5				
4-Chlorotoluene	ND<5				
1,3,5-Trimethylbenzene	ND<5				
tert-Butylbenzene	ND<5				
1,2,4-Trimethylbenzene	ND<5				
1,3-Dichlorobenzene	ND<5				
1,4-Dichlorobenzene	ND<5				
sec-Butylbenzene	ND<5				
1,2-Dichlorobenzene	ND<5				
n-Butylbenzene	ND<5				
Naphthalene	ND<10				
1,2,4-Trichlorobenzene	ND<5				
Hexachlorobutadiene	ND<5				
1,2,3-Trichlorobenzene	ND<5				
1,2,3-Trichloropropane	ND<5				
Acetonitrile	ND<250				
Acrylonitrile	ND<250				
Isobutanol	ND<250				
1,1,1-Trichloroethane	ND<5				
SUR-Dibromofluoromethane	110	117/119	2	54-145	23
SUR-Toluene-d8	107	109/104	5	81-108	14
SUR-4-Bromofluorobenzene	85	93/94	1	82-118	18

Reviewed and Approved


 John A. Murphy
 Laboratory Director