

APPENDIX C ENVIRONMENTAL SITE INVESTIGATION

This appendix presents the results of our limited environmental site investigation assessment at the referenced property. The project work scope was completed in general accordance with our scope of services dated April 8, 2004. Our limited environmental site investigation is intended to identify potential soil, surface, and groundwater contamination in the areas identified for site development.

Our report begins with a Scope of Work, which is followed by our:

- Limited Phase II Subsurface Assessment;
- Field Exploration Procedures;
- Potential for Contamination; and
- Chemical Data Quality Review.

Sample analytical results for soil and groundwater samples are summarized at the end of this appendix in Tables C-1 and C-2 respectively. A Site Plan showing subject property features and sampling locations is presented on Page 2 of the main document. Appendix B presents copies of the field boring logs. An analytical data quality review and the Advanced Analytical laboratory report are presented in this appendix.

SCOPE OF WORK

Our environmental assessment included:

- Advancing two hollow-stem auger soil borings in strategic locations on the subject property;
- Collecting and chemically analyzing soil and groundwater samples from the subject property; and
- Preparing this appendix presenting the findings of our work.

LIMITED ENVIRONMENTAL ASSESSMENT

On October 20, 2004, Hart Crowser advanced two hollow-stem auger borings (MW-1 and MW-2) on the subject property. Exploration Geoservices of San Jose, California conducted drilling of the borings. Both were advanced to a depth of 20 feet below grade. Groundwater was encountered at approximately 6.5 feet

below grade. Groundwater monitoring wells MW-1 and MW-2 were subsequently installed in the borings. Groundwater samples were collected by peristaltic pump from both monitoring wells on October 21, 2004. Soil samples were collected from each boring at 2.5- to 5-foot-depth intervals.

No petroleum-like odors or sheens were noted in soil or groundwater samples from the borings. Soil types encountered during drilling at these two locations are presented on the boring logs in **Appendix A**. The analytical results for the soil and groundwater samples are presented at the end of this appendix in Table C-1 and Table C-2, respectively.

Soil Sampling and Analysis

Two soil samples each (a composite sample and discrete sample from near the water table) from MW-1 and MW-2 were submitted for analysis. Both composite samples were submitted for gasoline-range total petroleum hydrocarbons (TPH), diesel and oil-range TPH, and RCRA metals by EPA method SW-846. Composite samples were also submitted for semi-volatile organic compounds (SVOCs) EPA Method 8270. Discrete samples were submitted for volatile organic compounds (VOCs) by EPA Method 8260. Samples were submitted for analysis to Advanced Analytical Laboratory in Redmond, Washington.

Groundwater Sampling and Analysis

Groundwater samples were collected from MW-1 and MW-2 on October 21, 2004. Groundwater samples were submitted for analysis by gasoline- and diesel-range TPH by EPA Method SW-846, VOCs by Method 8260B, SVOCs by Method 8270, and RCRA metals by EPA Method SW-846. These samples were submitted for analysis to Advanced Analytical Laboratory in Redmond, Washington.

Analytical Results

Analytes in the soil samples analyzed either were not detected or were detected at concentrations less than screening levels. EPA Region 9 preliminary remediation goals (PRGs) for residential soil direct contact exposures were used as screening levels for soil samples.

Analytes in the groundwater samples analyzed either were not detected or were detected at concentrations less than screening levels (EPA Region 9 Maximum Contaminant Levels (MCLs) for drinking water) with the following exception. Arsenic was detected in the groundwater samples collected from MW-1 and MW-2 at a concentration of 0.020 mg/L and 0.090 mg/L, respectively. The EPA Region 9 Maximum Contaminant Level (MCL) for arsenic in drinking water is 0.010 mg/L. However, groundwater beneath this property is not used as drinking water.

FIELD EXPLORATION PROCEDURES

In October 2004, Hart Crowser provided oversight on the completion of two hollow-stem auger borings on the subject property and collected soil samples. Hart Crowser also collected groundwater samples from the two completed monitoring wells MW-1 and MW-2. The field procedures and methods used for this work are described below. Exploration locations for this work are illustrated on [Figure 1](#).

Borings

Two hollow-stem auger borings, designated MW-1 and MW-2, were drilled at the property for installation of monitoring wells (MW-1 and MW-2, respectively) on October 20, 2004. In the hollow-stem auger borings, a 6-inch inner diameter auger was advanced and soil samples were collected at 2-1/2- to 10-foot-depth intervals using a 1.5-foot-long split-spoon sampler. Hollow-stem auger drilling equipment was operated by Exploration Geoservices. A Hart Crowser field representative (Matt Gibson) logged soil descriptions and placed soil in pre-cleaned, 4-ounce glass sample jars. Filled sample jars were stored in a cooler with blue ice. Soils were screened in the field for the presence of volatile organic compounds (VOCs) using a photoionization detector (PID). The Hart Crowser project manager selected samples for chemical analysis at representative locations to assess soil quality and based on observed signs of potential contamination.

Hollow-stem auger borings for monitoring well installation were advanced to approximately 14 feet below the water table (total depths ranging 20 feet). Borings were completed as groundwater monitoring wells.

Soil Classification

A Hart Crowser field representative visually classified the soil samples in general accordance with ASTM Method D 2488 as depicted on Figure A-1, prepared a log of soils encountered in the exploration, and recorded pertinent observations regarding conditions, types of soils encountered, and the depth to water. The boring logs are presented on Figures A-2 and A-3. Soil descriptions include the following properties: relative density of sands and gravels/consistency of silts and clays, moisture, color, minor constituents, and major constituents. The presence of non-soil substances (e.g., debris etc.) and odors or visual observations such as sheen that may indicate contamination were also noted.

Monitoring Well Completion

The two new monitoring wells installed in October 2004 conform to current relevant standards.

After advancing the auger to depth, the well screen and casing were lowered down the center of the hollow-stem auger. As the auger was retracted, 10/20 silica sand was placed in the annular space from the base of the boring to approximately 2 to 3 feet above the top of the well screen.

Borehole depth and screen placement were determined in the field as work progressed based on soil samples collected and inferred groundwater elevations at each well location. The objective was to place the well screen within the permeable soils at or just below the water table, with the well screen straddling the water table. Soil sample depths and well completions are shown on the boring logs at the end of this appendix.

Well seals were constructed by placing bentonite chips in the annular space on top of the filter sand to within 2 feet of ground surface. After placement, the chips were hydrated. The remaining annular space was backfilled with concrete to complete the surface seal. The monitoring wells were completed with flush-mount monuments set in concrete.

Monitoring Well Development

The following procedures were used to develop the monitoring wells drilled at the subject property.

Upon arrival at a completed well, depth to water and depth to sediment were sounded with a Solinst or equivalent water level indicator before work began. The casing volume was then calculated along with the target development volume of water to be extracted (usually 10 casing volumes).

The wells were developed with either an electric submersible "whale" pump placed at the bottom of the casing. The volume of water extracted during development was measured with a 5-gallon bucket and recorded. Observations of water clarity or turbidity were also documented.

After several casing volumes of water were removed from the well, the depths to water, to sediment, and to the bottom of the well were measured again. To effectively stress the filter pack to dislodge and remove fine particles, the well was surged with the body of the submersible pump.

Alternating between surging, pumping/bailing, and measuring well characteristic depths was continued until the water contained a low sediment load and the sediment on the bottom of the well was removed. This procedure was expected to be completed in approximately 10 casing volumes, assuming an abundant inflow of water. Inflow of water was present during development; therefore, it was not necessary to add deionized water to suspend sediment in the well casing and filter pack before being pumped out.

Water Level Measurement

Water levels were measured using a water level indicator. Depth to water was measured below the top of casing and recorded to the nearest foot.

Groundwater Quality Sampling

During groundwater sampling on October 21, 2004 samples were collected from two new monitoring wells MW-1 and MW-2. Analytical data for groundwater samples from these sampling events are presented in Tables C-1 and C-2 of this appendix.

Sampling Equipment

Equipment used for the collection of groundwater samples for the October 2004 sampling event included:

- Peristaltic pump with appropriate tubing;

- Water level indicator;
- Laboratory-supplied pre-cleaned sample containers;
- Coolers with blue ice; and
- Hart Crowser Sample Custody Record and Groundwater Sampling Data forms.

Groundwater Sampling Procedures

Upon arrival at the site, field personnel recorded depth to water, and sediment in the wells using a water level indicator. The probe was cleaned between measurements to prevent cross-contamination of wells.

At least three casing volumes were purged from each well. Wells were bailed and sampled with a peristaltic pump with appropriate tubing. Groundwater samples were collected in laboratory-supplied pre-cleaned sample containers.

All non-disposable sampling equipment was decontaminated prior to reuse. The decontamination procedure consisted of cleaning equipment with a phosphate-free detergent (Alconox) followed by rinsing with potable water and then deionized water.

Sample Handling

Labeled sample containers were placed in coolers with blue ice. Samples were transferred under chain of custody procedures to Advanced Analytical of Redmond, Washington, for laboratory analysis.

CHEMICAL DATA QUALITY REVIEW

Four soil samples collected on October 20, 2004, were submitted to Advanced Analytical Laboratory of Redmond, WA for analysis of one or more of the following:

- Total Metals - Arsenic, Chromium, Cadmium, Lead, Mercury, Barium, Silver, and Selenium by EPA Method 7000 series;
- TPH-Gas;
- VOCs;
- TPH-Diesel extended; and
- SVOCs.

Two groundwater samples collected on October 21, 2004, were submitted to Advanced Analytical Laboratory of Redmond, WA for analysis of one or more of the following:

- Dissolved Metals – Arsenic, Chromium, Cadmium, Lead, Mercury, Barium, Silver, and Selenium by EPA Method 7000 series;
- TPH-Gas;
- VOCs;
- TPH-Diesel extended; and
- SVOCs.

The following criteria were evaluated in the standard data quality review process for the results:

- Holding Times;
- Method Blanks;
- Surrogate Recoveries;
- Laboratory Control Sample Recoveries;
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries; and
- Laboratory Duplicate Relative Percent Differences (RPDs).

Soil Samples

Total Metals. All required holding times were met. No method blank contamination was detected. Laboratory MS/MSD recoveries were acceptable.

TPH-Gas. All required holding times were met. No method blank contamination was detected. Laboratory duplicate RPDs were acceptable. Surrogate recoveries were within laboratory control limits.

TPH-Diesel. All required holding times were met. No method blank contamination was detected. Laboratory duplicate RPDs were acceptable. Surrogate recoveries were within laboratory control limits.

VOCs. All required holding times were met. No method blank contamination was detected. Surrogate recoveries and LCS recoveries were within laboratory control limits.

SVOCs. All required holding times were met. No method blank contamination was detected. Surrogate recoveries and LCS recoveries were within laboratory control limits.

The soil data are acceptable for use as reported.

Groundwater Samples

Dissolved Metals. All required holding times were met. No method blank contamination was detected. Laboratory MS/MSD recoveries were acceptable.

TPH-Gas. All required holding times were met. No method blank contamination was detected. Laboratory duplicate RPDs were acceptable. Surrogate recoveries were within laboratory control limits.

TPH-Diesel. All required holding times were met. No method blank contamination was detected. Laboratory duplicate RPDs were acceptable. Surrogate recoveries were within laboratory control limits.

VOCs. All required holding times were met. No method blank contamination was detected. Surrogate recoveries and LCS recoveries were within laboratory control limits.

SVOCs. All required holding times were met. No method blank contamination was detected. Surrogate recoveries, MS/MSD, and LCS recoveries were within laboratory control limits.

The groundwater data are acceptable for use as reported.

Attachments:

Table C-1 - Analytical Results for Soil Samples

Table C-2 - Analytical Results for Groundwater Samples

Certificates of Analysis, Advanced Analytical Laboratory

Table C-1 - Analytical Results for Groundwater Samples

Sample ID Depth in Feet	EPA Region 9 PRG(a)	MW-1 Comp	MW-2 Comp	MW1-S2 5.0 to 6.5	MW2-S2 5.0 to 6.6
Metals in mg/kg					
Lead	150(b)	11	32		
Chromium	210	3.4	8.3		
Arsenic	22	2 U	2.7		
NWTPH-Gx in mg/kg					
Mineral spirits/Stoddard		5.0 U	5.0 U		
Gasoline		5.0 U	5.0 U		
NWTPH-Dx in mg/kg					
Kerosene/Jet fuel		20 U	20 U		
Diesel/Fuel oil		20 U	20 U		
Heavy oil		50 U	50 U		
Volatiles(8260) in µg/kg					
MTBE	17000(b)			100	76
Semivolatiles in mg/kg					
All analytes		ND	ND		

U = Not detected at detection limit indicated.

ND = Not detected

Blank indicates sample not analyzed for specific analyte or no screening criteria available.

Detected concentrations are bolded.

Concentrations that exceed the screening criteria are boxed.

(a) EPA Region 9 PRG direct contact exposure value for residential soil.

(b) "California-modified PRG" direct contact exposure value for residential soil.

All samples were collected from the subject property on October 20, 2004.

Only detected analytes are shown. Semivolatiles, and additional metals and volatiles were not detected in any soil samples.

Table C-2 - Analytical Results for Groundwater Samples

Sample ID	EPA Region 9 MCL(a)	MW-1	MW-2
Metals in mg/l			
Arsenic	0.010	0.020	0.090
NWTPH-Gx in mg/l			
Mineral spirits/Stoddard		0.10 U	0.10 U
Gasoline		0.10 U	0.10 U
NWTPH-Dx in mg/l			
Kerosene/Jet fuel		0.20 U	0.20 U
Diesel/Fuel oil		0.20 U	0.20 U
Heavy oil		0.50 U	0.50 U
Volatiles(8260) in µg/l			
Chloroform		1.2	1.0
Semivolatiles in mg/kg		ND	ND

U = Not detected at detection limit indicated.
 ND = Not detected
 Blank indicates sample not analyzed for specific analyte or no screening criteria available.
 Detected concentrations are bolded.
 Concentrations that exceed the screening criteria are boxed.
 (a) EPA Region 9 MCL for drinking water.
 All samples were collected from the subject property on October 21, 2004.
 Only detected analytes are shown. Semivolatiles, and additional metals and volatiles were not detected in any groundwater samples.

Advanced Analytical Laboratory
 (425) 497-0110, fax (425) 497-8089

AAL Job Number: A41028-1
 Client: Hart Crowser, Inc.
 Project Manager: Jessica Robertson/Julie Wukelic
 Client Project Name: USCG Alameda
 Client Project Number: 17089-00
 Date received: 10/28/04

Analytical Results		Dupl			
		Comp	Comp	Comp	Comp
TPH-Gas, mg/kg		MTH BLK	MW1	MW2	MW2
Matrix	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	10/29/04	10/29/04	10/29/04	10/29/04
Date analyzed	Limits	10/29/04	10/29/04	10/29/04	10/29/04
Mineral spirits/Stoddard	5.0	nd	nd	nd	nd
Gasoline	5.0	nd	nd	nd	nd

Surrogate recoveries:

Trifluorotoluene	102%	128%	111%	120%
Bromofluorobenzene	112%	126%	108%	119%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
 na - not analyzed
 C - coelution with sample peaks
 M - matrix interference
 J - estimated value
 Results reported on dry-weight basis
 Acceptable Recovery limits: 70% TO 130%
 Acceptable RPD limit: 30%

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Date	11/3	# of pages	▶
To	JESSICA R	From	M. DEE
Co./Dept.	Hart Crowser	Co.	ADVANCED
Phone #		Phone #	
Fax #		Fax #	

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 Date received: 10/28/04

Analytical Results					Dupl
TPH-Gas, mg/L		MTH BLK	MW-1	MW-2	MW-2
Matrix	Water	Water	Water	Water	Water
Date analyzed	Reporting Limits	10/29/04	10/29/04	10/29/04	10/29/04
Mineral spirits/Stoddard	0.10	nd	nd	nd	nd
Gasoline	0.10	nd	nd	nd	nd

Surrogate recoveries:

Trifluorotoluene	102%	121%	110%	117%
Bromofluorobenzene	112%	126%	119%	125%

Data Qualifiers and Analytical Comments

- nd - not detected at listed reporting limits
- na - not analyzed
- C - coelution with sample peaks
- M - matrix interference
- J - estimated value
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Analytical Results		Comp		Dupl	
		MTH BLK	MW1	MW2	MW2
TPH-Diesel, mg/kg					
Matrix	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	10/29/04	10/29/04	10/29/04	10/29/04
Date analyzed	Limits	10/29/04	10/29/04	10/29/04	10/29/04
Kerosene/Jet fuel	20	nd	nd	nd	nd
Diesel/Fuel oil	20	nd	nd	nd	nd
Heavy oil	50	nd	nd	nd	nd

Surrogate recoveries:

Fluorobiphenyl	102%	104%	100%	103%
o-Terphenyl	99%	110%	95%	99%

Data Qualifiers and Analytical Comments

- nd - not detected at listed reporting limits
 - na - not analyzed
 - C - coelution with sample peaks
 - M - matrix interference
 - J - estimated value
- Results reported on dry-weight basis
 Acceptable Recovery limits: 70% TO 130%
 Acceptable RPD limit: 30%

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Analytical Results

TPH-Diesel, mg/l		MTH BLK	MW-1	MW-2
Matrix	Water	Water	Water	Water
Date extracted	Reporting	10/29/04	10/29/04	10/29/04
Date analyzed	Limits	10/29/04	10/29/04	10/29/04
Kerosene/Jet fuel	0.20	nd	nd	nd
Diesel/Fuel oil	0.20	nd	nd	nd
Heavy oil	0.50	nd	nd	nd

Surrogate recoveries:

Fluorobiphenyl	101%	102%	103%
o-Terphenyl	99%	98%	98%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

na - not analyzed

C - coelution with sample peaks

M - matrix interference

J - estimated value

Acceptable Recovery limits: 70% TO 130%

Acceptable RPD limit: 30%

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Analytical Results

8260, µg/kg		MTH BLK	LCS	MW-1 S-2	MW-2 S-2
Matrix	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	10/29/04	10/29/04	10/29/04	10/29/04
Date analyzed	Limits	10/29/04	10/29/04	10/29/04	10/29/04
MTBE	50	nd		100	76
Dichlorodifluoromethane	50	nd		nd	nd
Chloromethane	50	nd		nd	nd
Vinyl chloride	50	nd		nd	nd
Bromomethane	50	nd		nd	nd
Chloroethane	50	nd		nd	nd
Trichlorofluoromethane	50	nd		nd	nd
1,1-Dichloroethene	50	nd		nd	nd
Methylene chloride	20	nd		nd	nd
trans-1,2-Dichloroethene	50	nd		nd	nd
1,1-Dichloroethane	50	nd		nd	nd
2,2-Dichloropropane	50	nd		nd	nd
cis-1,2-Dichloroethene	50	nd		nd	nd
Chloroform	50	nd		nd	nd
1,1,1-Trichloroethane	50	nd		nd	nd
Carbontetrachloride	50	nd		nd	nd
1,1-Dichloropropene	50	nd		nd	nd
Benzene	50	nd	75%	nd	nd
1,2-Dichloroethane(EDC)	20	nd		nd	nd
Trichloroethene	20	nd	103%	nd	nd
1,2-Dichloropropane	50	nd		nd	nd
Dibromomethane	50	nd		nd	nd
Bromodichloromethane	50	nd		nd	nd
cis-1,3-Dichloropropene	50	nd		nd	nd
Toluene	50	nd	120%	nd	nd
trans-1,3-Dichloropropene	50	nd		nd	nd
1,1,2-Trichloroethane	50	nd		nd	nd
Tetrachloroethene	50	nd		nd	nd
1,3-Dichloropropane	50	nd		nd	nd
Dibromochloromethane	20	nd		nd	nd
1,2-Dibromoethane (EDB)*	5	nd		nd	nd
Chlorobenzene	50	nd	93%	nd	nd
1,1,1,2-Tetrachloroethane	50	nd		nd	nd
Ethylbenzene	50	nd		nd	nd
Xylenes	50	nd		nd	nd
Styrene	50	nd		nd	nd
Bromoform	50	nd		nd	nd

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Analytical Results

8260, µg/kg		MTH BLK	LCS	MW-1 S-2	MW-2 S-2
Matrix	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	10/29/04	10/29/04	10/29/04	10/29/04
Date analyzed	Limits	10/29/04	10/29/04	10/29/04	10/29/04
MTBE	50	nd		100	76
Isopropylbenzene	50	nd		nd	nd
1,2,3-Trichloropropane	50	nd		nd	nd
Bromobenzene	50	nd		nd	nd
1,1,2,2-Tetrachloroethane	50	nd		nd	nd
n-Propylbenzene	50	nd		nd	nd
2-Chlorotoluene	50	nd		nd	nd
4-Chlorotoluene	50	nd		nd	nd
1,3,5-Trimethylbenzene	50	nd		nd	nd
tert-Butylbenzene	50	nd		nd	nd
1,2,4-Trimethylbenzene	50	nd		nd	nd
sec-Butylbenzene	50	nd		nd	nd
1,3-Dichlorobenzene	50	nd		nd	nd
Isopropyltoluene	50	nd		nd	nd
1,4-Dichlorobenzene	50	nd		nd	nd
1,2-Dichlorobenzene	50	nd		nd	nd
n-Butylbenzene	50	nd		nd	nd
1,2-Dibromo-3-Chloropropane	50	nd		nd	nd
1,2,4-Trichlorobenzene	50	nd		nd	nd
Hexachloro-1,3-butadiene	50	nd		nd	nd
Naphthalene	50	nd		nd	nd
1,2,3-Trichlorobenzene	50	nd		nd	nd

*instrument detection limits

Surrogate recoveries

Dibromofluoromethane	82%	79%	73%	73%
Toluene-d8	108%	110%	109%	101%
1,2-Dichloroethane-d4	77%	79%	79%	81%
4-Bromofluorobenzene	110%	112%	110%	114%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

Acceptable Recovery limits: 70% TO 130%

Acceptable RPD limit: 30%

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Analytical Results		Dupl						MS
8260, µg/L		MTH BLK	LCS	MW-1	MW-2	MW-2	MW-1	
Matrix	Water	Water	Water	Water	Water	Water	Water	
Date analyzed	Reporting Limits	10/29/04	10/29/04	10/29/04	10/29/04	10/29/04	10/29/04	
MTBE	5.0	nd		nd	nd	nd		
Dichlorodifluoromethane	1.0	nd		nd	nd	nd		
Chloromethane	1.0	nd		nd	nd	nd		
Vinyl chloride(*)	0.2	nd		nd	nd	nd		
Bromomethane	1.0	nd		nd	nd	nd		
Chloroethane	1.0	nd		nd	nd	nd		
Trichlorofluoromethane	1.0	nd		nd	nd	nd		
1,1-Dichloroethene	1.0	nd		nd	nd	nd		
Methylene chloride	1.0	nd		nd	nd	nd		
trans-1,2-Dichloroethene	1.0	nd		nd	nd	nd		
1,1-Dichloroethane	1.0	nd		nd	nd	nd		
2,2-Dichloropropane	1.0	nd		nd	nd	nd		
cis-1,2-Dichloroethene	1.0	nd		nd	nd	nd		
Chloroform	1.0	nd		nd	1.2	1.0		
1,1,1-Trichloroethane	1.0	nd		nd	nd	nd		
Carbontetrachloride	1.0	nd		nd	nd	nd		
1,1-Dichloropropene	1.0	nd		nd	nd	nd		
Benzene	1.0	nd	75%	nd	nd	nd	78%	
1,2-Dichloroethane(EDC)	1.0	nd		nd	nd	nd		
Trichloroethene	1.0	nd	103%	nd	nd	nd	108%	
1,2-Dichloropropane	1.0	nd		nd	nd	nd		
Dibromomethane	1.0	nd		nd	nd	nd		
Bromodichloromethane	1.0	nd		nd	nd	nd		
cis-1,3-Dichloropropene	1.0	nd		nd	nd	nd		
Toluene	1.0	nd	120%	nd	nd	nd	125%	
trans-1,3-Dichloropropene	1.0	nd		nd	nd	nd		
1,1,2-Trichloroethane	1.0	nd		nd	nd	nd		
Tetrachloroethene	1.0	nd		nd	nd	nd		
1,3-Dichloropropane	1.0	nd		nd	nd	nd		
Dibromochloromethane	1.0	nd		nd	nd	nd		
1,2-Dibromoethane (EDB)*	0.01	nd		nd	nd	nd		
Chlorobenzene	1.0	nd	93%	nd	nd	nd	98%	
1,1,1,2-Tetrachloroethane	1.0	nd		nd	nd	nd		
Ethylbenzene	1.0	nd		nd	nd	nd		
Xylenes	1.0	nd		nd	nd	nd		
Styrene	1.0	nd		nd	nd	nd		
Bromoform	1.0	nd		nd	nd	nd		
Isopropylbenzene	1.0	nd		nd	nd	nd		
1,2,3-Trichloropropane	1.0	nd		nd	nd	nd		

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AAL Job Number: A41028-1
 Client: Hart Crowser, Inc.
 Project Manager: Jessica Robertson/Julie Wukelic
 Client Project Name: USCG Alameda
 Client Project Number: 17089-00
 Date received: 10/28/04

Analytical Results		Dupl			MS		
8260, µg/L		MTH BLK	LCS	MW-1	MW-2	MW-2	MW-1
Matrix	Water	Water	Water	Water	Water	Water	Water
Date analyzed	Reporting Limits	10/29/04	10/29/04	10/29/04	10/29/04	10/29/04	10/29/04
MTBE	5.0	nd		nd	nd	nd	
Bromobenzene	1.0	nd		nd	nd	nd	
1,1,2,2-Tetrachloroethane	1.0	nd		nd	nd	nd	
n-Propylbenzene	1.0	nd		nd	nd	nd	
2-Chlorotoluene	1.0	nd		nd	nd	nd	
4-Chlorotoluene	1.0	nd		nd	nd	nd	
1,3,5-Trimethylbenzene	1.0	nd		nd	nd	nd	
tert-Butylbenzene	1.0	nd		nd	nd	nd	
1,2,4-Trimethylbenzene	1.0	nd		nd	nd	nd	
sec-Butylbenzene	1.0	nd		nd	nd	nd	
1,3-Dichlorobenzene	1.0	nd		nd	nd	nd	
Isopropyltoluene	1.0	nd		nd	nd	nd	
1,4-Dichlorobenzene	1.0	nd		nd	nd	nd	
1,2-Dichlorobenzene	1.0	nd		nd	nd	nd	
n-Butylbenzene	1.0	nd		nd	nd	nd	
1,2Dibromo3Chloropropane	1.0	nd		nd	nd	nd	
1,2,4-Trichlorobenzene	1.0	nd		nd	nd	nd	
Hexachloro-1,3-butadiene	1.0	nd		nd	nd	nd	
Naphthalene	1.0	nd		nd	nd	nd	
1,2,3-Trichlorobenzene	1.0	nd		nd	nd	nd	

*-instrument detection limits

Surrogate recoveries

Dibromofluoromethane	82%	79%	77%	74%	77%	77%
Toluene-d8	108%	110%	109%	110%	112%	110%
1,2-Dichloroethane-d4	77%	79%	80%	82%	80%	80%
4-Bromofluorobenzene	110%	112%	114%	113%	110%	117%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
 Acceptable Recovery limits: 70% TO 130%
 Acceptable RPD limit: 30%

Advanced Analytical Laboratory
 (425) 497-0110, fax (425) 497-8089

AAL Job Number: A41028-1
 Client: Hart Crowser, Inc.
 Project Manager: Jessica Robertson/Julie Wukelic
 Client Project Name: USCG Alameda
 Client Project Number: 17089-00
 Date received: 10/28/04

Analytical Results		MSD		RPD
8260, µg/L		MTH BLK	MW-1	MW-1
Matrix	Water	Water	Water	Water
Date analyzed	Reporting Limits	10/29/04	10/29/04	10/29/04
MTBE	5.0	nd		
Dichlorodifluoromethane	1.0	nd		
Chloromethane	1.0	nd		
Vinyl chloride(*)	0.2	nd		
Bromomethane	1.0	nd		
Chloroethane	1.0	nd		
Trichlorofluoromethane	1.0	nd		
1,1-Dichloroethene	1.0	nd		
Methylene chloride	1.0	nd		
trans-1,2-Dichloroethene	1.0	nd		
1,1-Dichloroethane	1.0	nd		
2,2-Dichloropropane	1.0	nd		
cis-1,2-Dichloroethene	1.0	nd		
Chloroform	1.0	nd		
1,1,1-Trichloroethane	1.0	nd		
Carbontetrachloride	1.0	nd		
1,1-Dichloropropene	1.0	nd		
Benzene	1.0	nd	75%	3%
1,2-Dichloroethane(EDC)	1.0	nd		
Trichloroethene	1.0	nd	103%	5%
1,2-Dichloropropane	1.0	nd		
Dibromomethane	1.0	nd		
Bromodichloromethane	1.0	nd		
cis-1,3-Dichloropropene	1.0	nd		
Toluene	1.0	nd	118%	6%
trans-1,3-Dichloropropene	1.0	nd		
1,1,2-Trichloroethane	1.0	nd		
Tetrachloroethene	1.0	nd		
1,3-Dichloropropane	1.0	nd		
Dibromochloromethane	1.0	nd		
1,2-Dibromoethane (EDB)*	0.01	nd		
Chlorobenzene	1.0	nd	94%	5%
1,1,1,2-Tetrachloroethane	1.0	nd		
Ethylbenzene	1.0	nd		
Xylenes	1.0	nd		
Styrene	1.0	nd		
Bromoform	1.0	nd		
Isopropylbenzene	1.0	nd		
1,2,3-Trichloropropane	1.0	nd		

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AAL Job Number: A41028-1
Client: Hart Crowser, Inc.
Project Manager: Jessica Robertson/Julie Wukelic
Client Project Name: USCG Alameda
Client Project Number: 17089-00
Date received: 10/28/04

Analytical Results		MSD		RPD
8260, µg/L		MTH BLK	MW-1	MW-1
Matrix	Water	Water	Water	Water
Date analyzed	Reporting Limits	10/29/04	10/29/04	10/29/04
MTBE	5.0	nd		
Bromobenzene	1.0	nd		
1,1,2,2-Tetrachloroethane	1.0	nd		
n-Propylbenzene	1.0	nd		
2-Chlorotoluene	1.0	nd		
4-Chlorotoluene	1.0	nd		
1,3,5-Trimethylbenzene	1.0	nd		
tert-Butylbenzene	1.0	nd		
1,2,4-Trimethylbenzene	1.0	nd		
sec-Butylbenzene	1.0	nd		
1,3-Dichlorobenzene	1.0	nd		
Isopropyltoluene	1.0	nd		
1,4-Dichlorobenzene	1.0	nd		
1,2-Dichlorobenzene	1.0	nd		
n-Butylbenzene	1.0	nd		
1,2Dibromo3Chloropropane	1.0	nd		
1,2,4-Trichlorobenzene	1.0	nd		
Hexachloro-1,3-butadiene	1.0	nd		
Naphthalene	1.0	nd		
1,2,3-Trichlorobenzene	1.0	nd		
*-instrument detection limits				
Surrogate recoveries				
Dibromofluoromethane		82%	76%	
Toluene-d8		108%	107%	
1,2-Dichloroethane-d4		77%	81%	
4-Bromofluorobenzene		110%	113%	

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

Acceptable Recovery limits: 70% TO 130%

Acceptable RPD limit: 30%

Advanced Analytical Laboratory
(425) 497-0110, fax (425) 497-8089

AAL Job Number: A41028-1
Client: Hart Crowser, Inc.
Project Manager: Jessica Robertson/Julie Wukelic
Client Project Name: USCG Alameda
Client Project Number: 17089-00
Date received: 10/28/04

Analytical Results				Comp	Comp	Dupl Comp
8270, mg/kg		MTH BLK	LCS	MW1	MW2	MW2
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	10/29/04	10/29/04	10/29/04	10/29/04	10/29/04
Date analyzed	Limits	10/29/04	10/29/04	10/29/04	10/29/04	10/29/04
Phenol	0.50	nd	122%	nd	nd	nd
2-Chlorophenol	0.50	nd		nd	nd	nd
1,3-Dichlorobenzene	0.10	nd	73%	nd	nd	nd
1,4-Dichlorobenzene	0.10	nd	92%	nd	nd	nd
1,2-Dichlorobenzene	0.10	nd		nd	nd	nd
2-Methylphenol (o-cresol)	0.10	nd		nd	nd	nd
3,4-Methylphenol (m,p-cresc	0.10	nd		nd	nd	nd
Hexachloroethane	0.10	nd		nd	nd	nd
2-Nitrophenol	0.50	nd	81%	nd	nd	nd
2,4-Dimethylphenol	0.50	nd		nd	nd	nd
Bis (2-chloroethoxy) methan	0.10	nd		nd	nd	nd
2,4-Dichlorophenol	0.50	nd	81%	nd	nd	nd
1,2,4-Trichlorobenzene	0.10	nd		nd	nd	nd
Naphthalene	0.10	nd		nd	nd	nd
2,6-Dichlorophenol	0.50	nd		nd	nd	nd
Hexachlorobutadiene	0.50	nd		nd	nd	nd
4-Chloro-3-methylphenol	0.50	nd	80%	nd	nd	nd
Hexachlorocyclopentadiene	0.10	nd		nd	nd	nd
2,4,6-Trichlorophenol	0.50	nd	92%	nd	nd	nd
2,4,5-Trichlorophenol	0.50	nd	105%	nd	nd	nd
2-Chloronaphthalene	0.10	nd		nd	nd	nd
Dimethylphthalate	0.10	nd		nd	nd	nd
Acenaphthylene	0.10	nd		nd	nd	nd
Acenaphthene	0.10	nd	95%	nd	nd	nd
2,4-Dinitrophenol	0.50	nd		nd	nd	nd
4-Nitrophenol	0.50	nd		nd	nd	nd
2,3,4,6-Tetrachlorophenol	0.10	nd		nd	nd	nd
Diethylphthalate	0.10	nd		nd	nd	nd
4-Chlorophenyphenylether	0.50	nd		nd	nd	nd
Fluorene	0.10	nd		nd	nd	nd
N-Nitrosodiphenylamine	0.10	nd		nd	nd	nd
2,4,6-Tribromophenol	0.50	nd		nd	nd	nd
4-Bromophenyphenylether	0.10	nd		nd	nd	nd

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AAL Job Number: A41028-1
 Client: Hart Crowser, Inc.
 Project Manager: Jessica Robertson/Julie Wukelic
 Client Project Name: USCG Alameda
 Client Project Number: 17089-00
 Date received: 10/28/04

Analytical Results		Comp					Dupl
		MTH BLK	LCS	MW1	MW2	MW2	
8270, mg/kg							
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	
Date extracted	Reporting	10/29/04	10/29/04	10/29/04	10/29/04	10/29/04	
Date analyzed	Limits	10/29/04	10/29/04	10/29/04	10/29/04	10/29/04	
Hexachlorobenzene	0.10	nd		nd	nd	nd	
Pentachlorophenol	0.50	nd		nd	nd	nd	
Phenanthrene	0.10	nd		nd	nd	nd	
Anthracene	0.10	nd		nd	nd	nd	
Di-n-butylphthalate	0.10	nd		nd	nd	nd	
Fluoranthene	0.10	nd	113%	nd	nd	nd	
Pyrene	0.10	nd		nd	nd	nd	
Butylbenzylphthalate	0.50	nd		nd	nd	nd	
Benzo(a)anthracene	0.10	nd		nd	nd	nd	
Chrysene	0.10	nd		nd	nd	nd	
Bis (2-ethylhexyl) ether	0.10	nd		nd	nd	nd	
Di-n-octylphthalate	0.50	nd		nd	nd	nd	
Benzo(b)fluoranthene	0.10	nd		nd	nd	nd	
Benzo(k)fluoranthene	0.10	nd		nd	nd	nd	
Benzo(a)pyrene	0.10	nd	99%	nd	nd	nd	
Indeno(1,2,3-cd)pyrene	0.10	nd		nd	nd	nd	
Dibenzo(a,h)anthracene	0.10	nd		nd	nd	nd	
Benzo(ghi)perylene	0.10	nd		nd	nd	nd	

Surrogate recoveries

Nitrobenzene-d5	104%	99%	123%	110%	102%
2-Fluorobiphenyl	105%	130%	105%	108%	88%
4-Terphenyl-d14	75%	106%	92%	93%	95%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
 Acceptable Recovery limits: 70% TO 130%
 Acceptable RPD limit: 30%

Advanced Analytical Laboratory
(425) 497-0110, fax (425) 497-8089

AAL Job Number: A41028-1
Client: Hart Crowser, Inc.
Project Manager: Jessica Robertson/Julie Wukelic
Client Project Name: USCG Alameda
Client Project Number: 17089-00
Date received: 10/28/04

Analytical Results

8270, µg/L	MTH BLK	LCS	MW-1	MW-2
Matrix	Water	Water	Water	Water
Date extracted	Reporting	10/29/04	10/29/04	10/29/04
Date analyzed	Limits	10/29/04	10/29/04	10/29/04
Phenol	2.0	nd	nd	nd
2-Chlorophenol	2.0	nd	nd	nd
Bis (2-chloroethyl) ether	2.0	nd	nd	nd
1,3-Dichlorobenzene	2.0	nd	nd	nd
1,4-Dichlorobenzene	2.0	nd	123%	nd
1,2-Dichlorobenzene	2.0	nd	nd	nd
2-Methylphenol (o-cresol)	2.0	nd	nd	nd
Bis (2-chloroisopropyl) ether	2.0	nd	nd	nd
3,4-Methylphenol (m,p-cresc	2.0	nd	nd	nd
Hexachloroethane	2.0	nd	nd	nd
2-Nitrophenol	10	nd	127%	nd
2,4-Dimethylphenol	10	nd	nd	nd
Bis (2-chloroethoxy) methan	2.0	nd	nd	nd
2,4-Dichlorophenol	10	nd	91%	nd
1,2,4-Trichlorobenzene	2.0	nd	nd	nd
Naphthalene	0.1	nd	nd	nd
2,6-Dichlorophenol	10	nd	nd	nd
Hexachloropropylene	10	nd	nd	nd
Hexachlorobutadiene	10	nd	nd	nd
4-Chloro-3-methylphenol	10	nd	121%	nd
1,2,4,5-Tetrachlorobenzene	2.0	nd	nd	nd
Hexachlorocyclopentadiene	2.0	nd	nd	nd
2,4,6-Trichlorophenol	10	nd	nd	nd
2,4,5-Trichlorophenol	10	nd	nd	nd
2-Chloronaphthalene	2.0	nd	nd	nd
Dimethylphthalate	2.0	nd	nd	nd
Acenaphthylene	0.1	nd	nd	nd
Acenaphthene	0.1	nd	112%	nd
2,4-Dinitrophenol	10	nd	nd	nd
4-Nitrophenol	10	nd	nd	nd
Pentachlorobenzene	2.0	nd	nd	nd
2,3,4,6-Tetrachlorophenol	2.0	nd	nd	nd
Fluorene	0.1	nd	nd	nd
2,4,6-Tribromophenol	10	nd	nd	nd
Diethylphthalate	10	nd	nd	nd
4-Chlorophenyphenylether	2.0	nd	nd	nd
N-Nitrosodiphenylamine	2.0	nd	nd	nd
4-Bromophenyphenylether	2.0	nd	nd	nd

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AAL Job Number: A41028-1
 Client: Hart Crowser, Inc.
 Project Manager: Jessica Robertson/Julie Wukelic
 Client Project Name: USCG Alameda
 Client Project Number: 17089-00
 Date received: 10/28/04

Analytical Results

8270, µg/L		MTH BLK	LCS	MW-1	MW-2
Matrix	Water	Water	Water	Water	Water
Date extracted	Reporting	10/29/04	10/29/04	10/29/04	10/29/04
Date analyzed	Limits	10/29/04	10/29/04	10/29/04	10/29/04
Hexachlorobenzene	2.0	nd		nd	nd
Pentachlorophenol	10	nd		nd	nd
Phenanthrene	0.1	nd		nd	nd
Anthracene	0.1	nd		nd	nd
2-sec-Butyl-4,6-dinitrophenol	10	nd		nd	nd
Di-n-butylphthalate	2.0	nd		nd	nd
Fluoranthene	0.1	nd	97%	nd	nd
Pyrene	0.1	nd		nd	nd
Butylbenzylphthalate	10	nd		nd	nd
Benzo(a)anthracene	0.1	nd		nd	nd
Chrysene	0.1	nd		nd	nd
Bis (2-ethylhexyl) ether	2.0	nd		nd	nd
Di-n-octylphthalate	10	nd		nd	nd
Benzo(b)fluoranthene	0.1	nd		nd	nd
Benzo(k)fluoranthene	0.1	nd		nd	nd
Benzo(a)pyrene	0.1	nd	96%	nd	nd
Indeno(1,2,3-cd)pyrene	0.1	nd		nd	nd
Dibenzo(a,h)anthracene	0.1	nd		nd	nd
Benzo(ghi)perylene	0.1	nd		nd	nd

Surrogate recoveries

Nitrobenzene-d5	102%	100%	107%	112%
2,4,6-Tribromophenol	102%	101%	89%	86%
4-Terphenyl-d14	93%	112%	129%	112%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
 Acceptable Recovery limits: 70% TO 130%
 Acceptable RPD limit: 30%

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 (425) 497-0110, fax (425) 497-8089

AAL Job Number: A41028-1
 Client: Hart Crowser, Inc.
 Project Manager: Jessica Robertson/Julie Wukelic
 Client Project Name: USCG Alameda
 Client Project Number: 17089-00
 Date received: 10/28/04

Analytical Results				Comp	Comp	Dupl Comp
Metals (7010), mg/kg		MTH BLK	LCS	MW1	MW2	MW2
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	11/03/04	11/03/04	11/03/04	11/03/04	11/03/04
Date analyzed	Limits	11/03/04	11/03/04	11/03/04	11/03/04	11/03/04
Lead (Pb)	1.0	nd	110%	11	32	28
Chromium (Cr)	2.0	nd	118%	3.4	8.3	6.7
Cadmium (Cd)	1.0	nd	108%	nd	nd	nd
Barium (Ba)	10	nd	102%	nd	nd	nd
Silver (Ag)	1.0	nd	74%	nd	nd	nd
Arsenic (As)	2.0	nd	90%	nd	2.7	2.0
Selenium (Se)	10	nd	117%	nd	nd	nd
Mercury (Hg) (7470A)	0.5	nd	106%	nd	nd	nd

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

na - not analyzed

J - estimated value

Results reported on dry-weight basis

Acceptable Recovery limits: 65% TO 135%

Acceptable RPD limit: 30%

Post-it® Fax Note	7671	Date	11/5	# of pages	4
To	Jessica Robertson	From	Michael Dee		
Co./Dept.	Hart Crowser	Co.	Advanced		
Phone #		Phone #			
Fax #		Fax #			

Advanced Analytical Laboratory
 (425) 497-0110, fax (425) 497-8089

AAL Job Number: A41028-1
 Client: Hart Crowser, Inc.
 Project Manager: Jessica Robertson/Julie Wul
 Client Project Name: USCG Alameda
 Client Project Number: 17089-00
 Date received: 10/28/04

Analytical Results			MS Comp	MSD Comp	
Metals (7010), mg/kg		MTH BLK	MW2	MW2	RPD
Matrix	Soil	Soil	Soil	Soil	%
Date extracted	Reporting	11/03/04	11/03/04	11/03/04	
Date analyzed	Limits	11/03/04	11/03/04	11/03/04	
Lead (Pb)	1.0	nd	99%	103%	4%
Chromium (Cr)	2.0	nd	83%	78%	6%
Cadmium (Cd)	1.0	nd	100%	104%	4%
Barium (Ba)	10	nd	99%	115%	15%
Silver (Ag)	1.0	nd	96%	92%	4%
Arsenic (As)	2.0	nd	88%	95%	8%
Selenium (Se)	10	nd	111%	122%	9%
Mercury (Hg) (7470A)	0.5	nd	69%	81%	16%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

na - not analyzed

J - estimated value

Results reported on dry-weight basis

Acceptable Recovery limits: 65% TO 135%

Acceptable RPD limit: 30%

Advanced Analytical Laboratory
 (425) 497-0110, fax (425) 497-8089

AAL Job Number: A41028-1
 Client: Hart Crowser, Inc.
 Project Manager: Jessica Robertson/Julie Wukelic
 Client Project Name: USCG Alameda
 Client Project Number: 17089-00
 Date received: 10/28/04

Analytical Results

						Dupl
Metals Dissolved (7010), mg/l		MTH BLK	LCS	MW-1	MW-2	MW-2
Matrix	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	11/03/04	11/03/04	11/03/04	11/03/04	11/03/04
Date analyzed	Limits	11/03/04	11/03/04	11/03/04	11/03/04	11/03/04
Lead (Pb)	0.002	nd	110%	nd	nd	nd
Chromium (Cr)	0.01	nd	118%	nd	nd	nd
Cadmium (Cd)	0.005	nd	108%	nd	nd	nd
Barium (Ba)	0.05	nd	102%	nd	nd	nd
Silver (Ag)	0.01	nd	74%	nd	nd	nd
Arsenic (As)	0.005	nd	90%	0.020	0.090	0.098
Selenium (Se)	0.05	nd	117%	nd	nd	nd
Mercury (Hg) (7470A)	0.0005	nd	106%	nd	nd	nd

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
 na - not analyzed
 J - estimated value
 Acceptable Recovery limits: 65% TO 135%
 Acceptable RPD limit: 30%

Advanced Analytical Laboratory
 (425) 497-0110, fax (425) 497-8089

AAL Job Number: A41028-1
 Client: Hart Crowser, Inc.
 Project Manager: Jessica Robertson/Julie Wukelic
 Client Project Name: USCG Alameda
 Client Project Number: 17089-00
 Date received: 10/28/04

Analytical Results		MS		MSD	
Metals Dissolved (7010), mg/l		MTH BLK	MW-2	MW-2	RPD
Matrix	Water	Water	Water	Water	%
Date extracted	Reporting	11/03/04	11/03/04	11/03/04	
Date analyzed	Limits	11/03/04	11/03/04	11/03/04	
Lead (Pb)	0.002	nd	105%	101%	4%
Chromium (Cr)	0.01	nd	83%	94%	12%
Cadmium (Cd)	0.005	nd	101%	104%	3%
Barium (Ba)	0.05	nd	118%	110%	7%
Silver (Ag)	0.01	nd	90%	94%	4%
Arsenic (As)	0.005	nd	90%	95%	5%
Selenium (Se)	0.05	nd	110%	113%	3%
Mercury (Hg) (7470A)	0.0005	nd	85%	95%	11%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

na - not analyzed

J - estimated value

Acceptable Recovery limits: 65% TO 135%

Acceptable RPD limit: 30%