Dalton, Olmsted & Fuglevand, Inc. *Environmental Consultants*

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April 30, 1990

Mr. Jim Garrison
Bruce Blume and Company
146 N. Canal Street, Suite 310
Seattle, Washington 98103

Re: Phase II Environmental Assessment
CCA Property, Parcels 2 & 4, Renton, Washington

Dear Mr. Garrison:

This is our report on the Phase II environmental soil and water sampling and evaluations for the referenced property. The purpose of this work was to assess soil, surface water, and groundwater quality conditions in portions of Parcels 2 and 4, in accordance with recommendations made in our Phase I environmental assessment report, dated March 23, 1990, and our proposal of March 27, 1990.

The areas addressed in this report (see Figure 1) are:

- the drainfields where waste water was disposed of until 1987;
- the storm drain outfall where surface water drainage from the CCA facilities discharges into a low ponded area; and
- an area west of and adjacent to the CCA plant building where the underground plant oil/water separator, sump, and associated underground piping as well as above-ground alcohol and waste solvent storage tanks are located.

The scope of our services consisted of the following tasks:

- Drill and sample a shallow soil boring in each of the drainfields shown on Figure 1 to assess soil conditions immediately beneath the drainfields;

- Install three monitoring wells in the area surrounding the drainfields to assess depth to groundwater and groundwater quality conditions adjacent to these drainfields;

- Install two monitoring wells adjacent to waste water storage and treatment facilities and underground piping to evaluate soil and groundwater conditions in this area;

- Obtain a surface water sample and a soil sample at the discharge of the storm drain line to assess chemical quality of the soil and water at this location, since drainage is, in part, from the empty drum and flammable chemical storage area;

- Analyze selected soil and water samples using a qualified chemical laboratory for priority pollutant volatiles using EPA method 624/8240 and for priority pollutant metals; and

- Prepare this report which presents our findings.

SUMMARY OF FINDINGS AND RECOMMENDATIONS:

Drainfield Area - No priority pollutant volatile organic compounds were detected in the water samples from the three wells installed adjacent to the drainfields. Concentration levels of volatile organic compounds and metals that were detected in soil samples from beneath the drain fields are either below proposed cleanup levels (see Tables 1 and 2) or if no standard is given, below our estimate of cleanup standards using the formulas provided in the applicable draft regulations or for certain metals within approximate background ranges.

Storm Drain Outfall - Results of the laboratory analyses for priority pollutant volatile organic compounds of surface water and soil samples obtained at the outfall of the storm drain, where it discharges into the low ponded area, did not detect any of these compounds above detection limits (see Table 3).

Waste Water Storage and Treatment Area - Field and laboratory tests of samples of soils and water from the two monitoring wells installed adjacent to the waste storage and treatment facilities detected elevated, but relatively low levels, of some organic volatile compounds and metals (see Tables 4 and 5). It is likely that the plant

oil/water separator/sump and/or the interconnecting piping are the source of the volatile organic compounds detected. Spillage from adjacent loading docks may also have allowed volatile chemicals to migrate into groundwater.

We recommend that the sump and piping be evaluated to assure that they are not currently leaking. We further recommend that monitoring well MW-2 be resampled to confirm the first-round sampling results.

FIELD TESTING AND MONITORING WELL INSTALLATIONS

Locations of all wells, borings, and sampling points accomplished as a part of this work are shown on Figure 1. These locations were selected based upon the Phase I environmental assessment. The primary areas identified as warranting further evaluation were; (1) the drainfield area, where, prior to 1987, waste water was discharged, (2) the area on the west side of the existing CCA plant where waste water handling facilities are located, and (3) the outfall of the storm drain which drains the area south of the main CCA building and the area around the flammable chemical storage building.

The descriptions of samples, tests, and monitoring well installations are provided in Table A1 of Attachment A. Soil samples and drill cuttings were field-screened and monitored for volatile compounds using a photoionization detector (PID). Details of the procedures used for the field testing, sampling, and monitoring well installations are provided in Attachment A.

Drainfield Area Borings and Wells - We drilled and sampled a soil boring, approximately 5 to 7 feet deep, in each of the three drainfields shown on Figure 1. The purpose of these borings was to assess soil conditions immediately beneath the drainfields.

Three wells, MW-3, MW-4, and MW-5, surround the drainfields. The purpose of these wells was to assess depth to groundwater and groundwater quality conditions adjacent to these drainfields.

Storm Drain Outfall Soil and Water Samples - We obtained a surface water sample and a soil sample at the location of the discharge of the storm drain line that is located in the ponded area west of the plant. The purpose of these samples was to assess the chemical quality of the soil and water at this location, since drainage is, in part, from the empty drum and flammable chemical storage area.

Waste Water Storage and Treatment Area - Two groundwater monitoring wells (MW-1 and MW-2) are located adjacent to waste water storage and treatment facilities and underground piping west of the existing CCA building. The purpose of these wells was to evaluate soil and groundwater conditions in this area.

SOILS AND GROUNDWATER CONDITIONS

The overall Parcel 2 and 4 area is underlain with alluvial soils overlying weathered bedrock. The alluvial soils consist of loose to medium-dense fine sand with variable silt content and with silt containing variable amounts of clay, sand, and organic particles. The alluvial soils are underlain with weathered siltstone and sandstone bedrock. The bedrock slopes toward the west. Bedrock was encountered at depths on the order of 12 feet near the western edge of the existing CCA plant building. No bedrock was encountered further to the west where borings were drilled to about 30-feet deep during foundation explorations (Earth Consultants, 1989).

The ground surface slopes gently toward a low depression located as shown on Figure 1. Fill was placed during construction of the existing CCA facilities. The fill overlies the alluvial soil and bedrock. The approximate extent of fill is shown on Figure 1.

In the area of the drainfields, the groundwater elevation is about 8 feet (USC&GS datum), or about 7 to 13 feet deep depending upon ground surface elevation. Groundwater flows toward the Black River north of the site, based on our initial water level measurements made in early April.

Adjacent to the existing CCA building and the waste water handling facilities, the water levels are near the base of the existing fill. Water level elevations of 14 to 15 feet (USC&GS datum) or about 5 to 7 feet deep were measured in the monitoring wells in this area. Based on surface topography and the likely slope of bedrock, we estimate groundwater flows westerly from the CCA building toward the low area to the west.

LABORATORY ANALYSES AND RESULTS

Selected soil and water samples were analyzed by Laucks Testing Laboratories for priority pollutant volatiles using EPA method 624/8240 and for priority pollutant metals. Following is a summary of our sampling rationale and results. Detailed laboratory results are provided in Attachment B.

Drainfield and Waste Water Storage and Treatment Areas - The Phase 1 evaluation indicated solvents from the printer blanket washing operations and metals from plate washing were the principal potential contaminants. Groundwater samples from the monitoring wells were tested for priority volatile organic compounds. Selected soil samples from these areas were tested for priority volatile organic compounds and metals.

Methylene chloride was a solvent used at the CCA plant prior to about 1985. Earlier testing at the drainfield area (CH2MHill, 1985) indicated relatively high concentrations of methylene chloride in soil samples from the drainfield and in effluent from the Hyde Separator. Since methylene chloride is a common solvent used in the laboratory, special handling instructions were given, to avoid laboratory contamination with this compound.

To provide perspective on the concentrations of these chemicals detected during our work, we compared the concentrations to proposed cleanup standards in the March 9, 1990 draft of the Model Toxics Control Act (MTCA) (WAC 173-340). These standards have not been promulgated by Washington State, and the standards may change before final promulgation. The State projects that final cleanup regulations will be promulgated in October to November 1990, at the earliest. In the interim, these cleanup standards provide an interim means of assessing the magnitude of the contamination.

No priority volatile organic compounds were detected in the water samples from the three wells installed adjacent to the drainfield. Concentration levels of volatile organic compounds (methylene chloride and acetone) and metals that were detected in soil samples from the drainfields are either below proposed cleanup levels (see Tables 1 and 2) or if no standard is given, below our estimate of cleanup standards using the formulas provided in the applicable draft regulations or soil background.

Field and laboratory tests of samples of soils and water from the two monitoring wells installed adjacent to the waste storage and treatment facilities detected elevated, but relatively low levels, of some organic volatile compounds and metals (see Tables 4 and 5). It is likely that the plant oil/water separator/sump and/or the interconnecting piping are (or were) the source of the volatile organic compounds detected. During our work, we observed staining of the concrete at one of the loading docks and of the ground adjacent to two of the loading docks. There is some possibility that spillage in these areas could be a contributing source.

Stormwater Outfall - The most likely potential contaminant at this point was assumed to be solvents from potential spills or runoff from the flammable storage and empty drum storage area. Both surface water and sediment samples were taken from the outfall area.

Results of the laboratory analyses for priority volatile organic compounds of the surface water and soil samples obtained at the outfall of the storm drain, where it discharges into the low ponded area, did not detect any of these compounds above detection limits (see Table 3).

This report has been prepared using generally accepted professional practices, related to the nature of the work accomplished, in the same or similar localities, at the time the services were performed. This report was prepared for the exclusive use of Bruce Blume & Company for specific application to the project purpose. Our report should not be construed to represent a legal opinion. No other conditions, expressed or implied, should be understood.

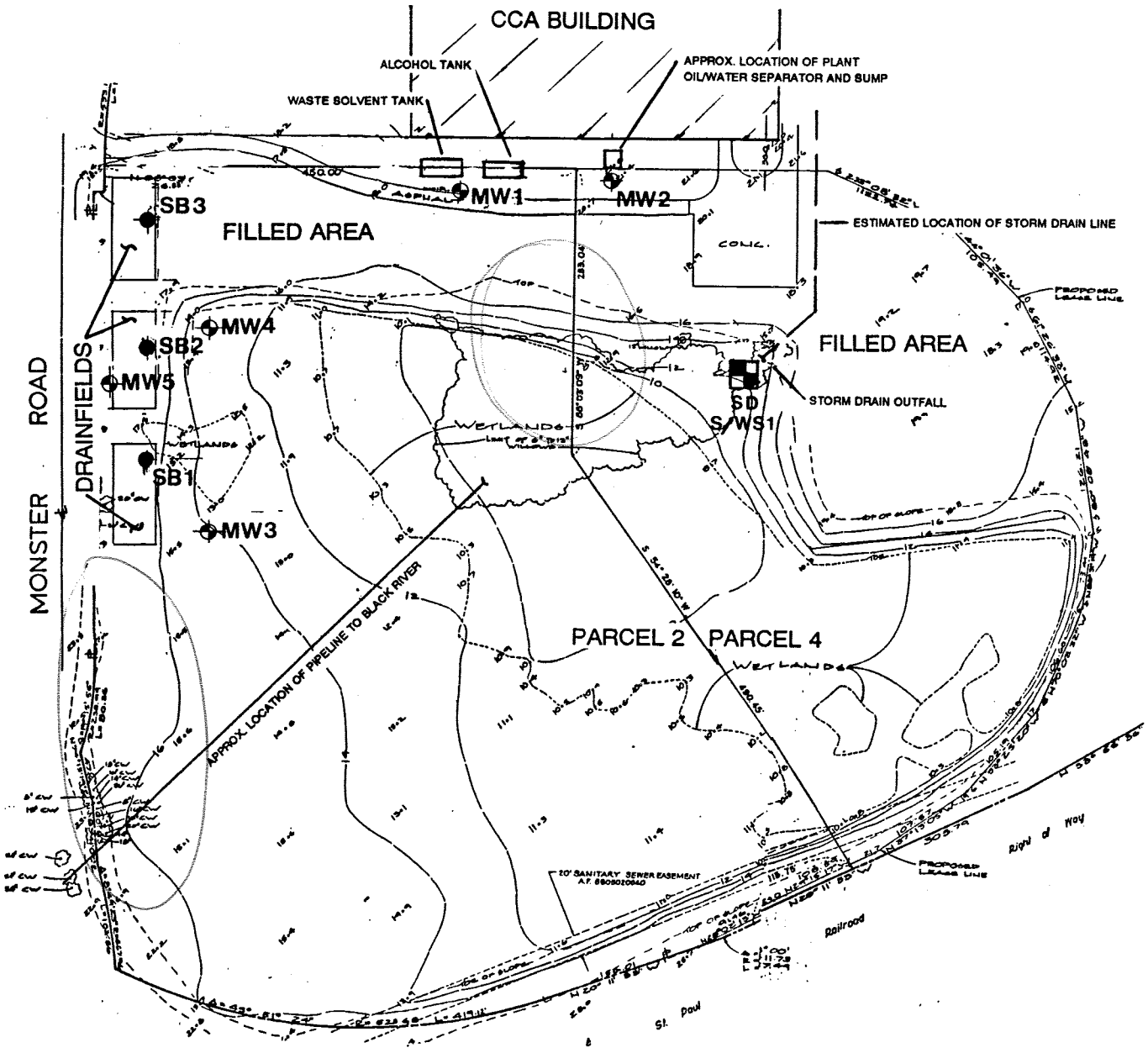
We appreciate the opportunity of providing you with our services. If you have any questions, please call.

Sincerely,
DALTON, OLMSTED & FUGLEVAND, INC.

Terry L. Olmsted
Sr. Consulting Engineering Geologist

Matthew G. Dalton
Sr. Consulting Hydrogeologist

Attachments: Figure 1
Tables 1 through 5
Attachment A, Field Procedures
Attachment B, Laboratory Reports
Attachment C, References



EXPLANATION

- MONITORING WELL LOCATION
- SOIL BORING LOCATION
- SURFACE SOIL & WATER SAMPLE LOCATION

(Base map from Bush, Roed & Hitchings Dwg C-1A 8/10/89)

APPROX. SCALE: 1" = 150'

BRUCE BLUME & COMPANY
CCA RENTON PROPERTY

SITE PLAN

HEW-003-01 **FIGURE 1**

DALTON, OLMSTED & FUGLEVAND, INC.

Table 1. Results of Laboratory Priority Volatile Organic Compounds Analyses, Drain Field Soil Samples (Concentrations in PPM mg/kg)

Parameter	SB-1 SOIL SAMPLE S-1 6.5 - 7 FEET	SB-2 SOIL SAMPLE S-1 5 - 6.5 FEET	SB-3 SOIL SAMPLE S-1 5 - 6.5 FEET	MCTA (1) PROPOSED CLEANUP STANDARDS - SOIL
PRIORITY VOLATILE ORGANICS*				
Methylene Chloride	ND	0.004	0.005	0.5
Acetone	0.019	ND	ND	1600 Est. (2)
PRIORITY METALS*				
Arsenic	0.62	ND	0.87	20
Chromium	18	16	17	80
Copper	150	150	110	500
Nickel	22	22	26	No Standard (3)
Selenium Hydride	0.70	0.78	0.79	No Standard (4)
Zinc	51	47	58	500

ND = below detection limits.
* All other priority volatile organic compounds and metals below detection limits - refer to laboratory data, Attachment B.

NOTES: (1) MTCA = Model Toxics Control Act (WAC 173-340), March 9, 1990 draft.

(2) Estimated using Method B (WAC 173-340-740(3)(c)) for residential sites using an Rfd of 1.0 E-01 mg/kg/day.

(3) Background concentration of nickel in soil based on work sponsored by Metro ranges between 10 and 70 ppm.

(4) Background concentration of selenium in soil based on work sponsored by Metro ranges between 0.06 and 0.70 ppm.

Table 2. Results of Laboratory Priority Volatile Organic Compounds Analyses, Drain Field Monitoring Well Water Samples.

Parameter	MW-3 WS-1 4/04/90	MW-4 WS-1 4/04/90	MW-5 WS-1 4/04/90
PRIORITY VOLATILE ORGANICS	ND	ND	ND

ND = below detection limits.
All priority volatile organic compounds below detection limits - refer to laboratory data, Attachment B.

Table 3. Results of Laboratory Priority Volatile Organic Compounds, Storm Drain Soil and Water Samples.

Parameter	SD S-1 SURFACE SOIL SAMPLE	SD WS-1 SURFACE WATER SAMPLE 4/04/90
PRIORITY VOLATILE ORGANICS	ND	ND

ND = below detection limits.
All priority volatile organic compounds below detection limits - refer to laboratory data, Attachment B.

Table 4. Results of Laboratory Priority Volatile Organic Compounds Analyses, Soil Samples, Monitoring Wells No. MW-1 and MW-2 (Concentrations in PPM mg/kg)

PARAMETER	MW-1 SOIL SAMPLE S-3 7.5 - 9 FEET	MW-2 SOIL SAMPLE S-3 7.5 - 9 FEET	MCTA (1) PROPOSED CLEANUP STANDARDS - SOIL
PRIORITY VOLATILE ORGANICS*			
Methylene Chloride	0.002	ND	0.5
Acetone	0.035	0.810	1600 Est. (2)
PRIORITY METALS*			
Arsenic	13	7.3	20
Chromium	25	42	80
Copper	27	47	500
Nickel	33	70	No Standard (3)
Selenium	0.82	1.3	No Standard (4)
Zinc	59	84	500

ND = below detection limits.
* All other priority volatile organic compounds and metals below detection limits - refer to laboratory data, Attachment B.

NOTES: (1) MTCA = Model Toxics Control Act (WAC 173-340), March 9, 1990 draft.

(2) Estimated using Method B (WAC 173-340-740(3)(c)) for residential sites using an Rfd of 1.0 E-01 mg/kg/day.

(3) Background concentration of nickel in soil based on work sponsored by Metro ranges between 10 and 70 ppm.

(4) Background concentration of selenium in soil based on work sponsored by Metro ranges between 0.06 and 0.70 ppm.

Table 5. Results of Laboratory Priority Volatile Organic Compounds Analyses, Water Samples, Monitoring Wells No. MW-1 and MW-2 (Concentrations in PPM mg/L)

PARAMETER	MW-1 WATER SAMPLE WS-1 3/30/90	MW-2 WATER SAMPLE WS-1 3/30/90	MCTA (1) PROPOSED CLEANUP STANDARDS - WATER
PRIORITY VOLATILE ORGANICS*			
Acetone	0.022	0.082	0.160 Est. (2)
1,1-Dichloroethane	ND	0.017	0.001 (3)
cis-1,2-Dichloroethene	ND	0.013	No Standard (0.07 PMCL(4))
Total 1,2-Dichoroethene	ND	0.013	No Standard (0.07 PMCL (4))
Trichloroethene	ND	0.001	0.005
Tetrachloroethene	ND	0.002	0.001
Toluene	ND	0.001	0.040
Ethylbenzene	ND	0.015	0.020 (5)
Total Xylene	0.002	0.037	0.020

ND = below detection limits.
* All other priority volatile organic compounds below detection limits - refer to laboratory data, Attachment B.

NOTES: (1) MTCA = Model Toxics Control Act (WAC 173-340), March 9, 1990 draft.

(2) Estimated using Method B (WAC 173-340-720(3)(b)) using an Rfd of 1.0 E-01 mg/kg/day.

(3) Based on same potency factor used to derive cleanup stands in Table A-1 of draft MTCA for 1,2 dichloroethane.

(4) PMCL = Proposed maximum contaminant level.

(5) May be a misprint in MTCA Table A-1; Footnotes to table indicate level is based on proposed secondary maximum contaminant level which is 0.030 ppm.

ATTACHMENT A

DESCRIPTION OF MONITORING WELL INSTALLATIONS AND SOIL AND WATER SAMPLING METHODS

Mc Donald/Holt Drilling Co., installed 5 monitoring wells and drilled 3 soil borings at the site from March 30, 1990 through April 3, 1990 using a truck-mounted hollow-stem auger rig (Mobile Drill Model B-61).

Mr. Terry Olmsted, Sr. Consulting Engineering Geologist of Dalton, Olmsted & Fuglevand, Inc., observed all drilling, sampling, and installation procedures, field-classified and described each sample, obtained water and surface soil samples, prepared samples for transport to the analytical laboratory, and prepared a field log for each boring or well, documenting the procedures and observations.

Boring and Well Locations

The relative locations and elevations of monitoring wells and borings were surveyed using a hand level and Jacob Staff and a distance-measuring meter. Elevations and locations shown for each well and boring are approximate.

Descriptions of all monitoring wells and borings incorporating field data, laboratory data, and geologic interpretations are provided in Table A1.

Soil Sampling

Borings and Monitoring Wells. Soil samples were obtained at the intervals indicated in Table A1 for each boring or well log. Each sample was taken by driving a 3-inch O.D. by 18-inch long sampler using a 140-pound hammer, with a free-fall of 30 inches. Samples obtained were described using the Unified Soil Classification (ASTM D 2488) as a general guide.

The samples were then transferred to glass jars using a stainless-steel spoon. The jars were immediately labeled, and those samples designated for transport to the laboratory were placed in a cooler with "blue ice" until delivered to the laboratory.

Sample Protocol

All samples for chemical analysis were placed in containers provided by Laucks Analytical Laboratories, Inc. All samples were labeled. A chain-of-custody form was completed for all samples to be transmitted to the laboratory. A copy of the form, signed by a representative of the laboratory who received the samples and by the person delivering the samples to the laboratory, was retained and kept in the project file.

PID Sample Headspace Measurements

Sample "headspace" readings were taken on most samples using a field-calibrated TIP II photoionization device (PID). The samples, immediately after being extracted from the boring, were placed in glass jars, which were filled to about half full, covered with aluminum foil, and capped. The samples were then allowed to set until the boring and installation was completed, generally for one to two hours. The sampling tube of the PID was then inserted through the aluminum foil, and a reading was taken. The resulting readings are shown on the sample description Table A1.

Surface Soil Samples. A surface soil sample was obtained at the outlet of the storm drain where it empties into a low ponded area. The sample was taken from beneath about 2 inches of water, using a stainless steel spoon. The sample was placed into a glass jar and placed in a cooler for transport to the laboratory.

Decontamination of Equipment

Soil Sampling equipment was cleaned after each sample was taken to prevent cross-contamination as follows: The sampler was washed in tap water followed by an Alconox wash. The sampler was then rinsed in clean tap water.

The drill rig, auger, rods, sampling tools, and all associated equipment was steam cleaned using clean tap water prior to drilling and following drilling of each hole.

Monitoring Well Installation

Monitoring wells consist of 2-inch, Schedule 40 PVC threaded pipe and screen sections. Ten-foot screen sections with 0.010-inch slots were used. The screened section was positioned with a portion of the screen remaining above the water table, in order to allow any floating free-product to enter the well. The PVC pipe and screen was installed through the hollow stem of the auger, and the annulus between the soil and screen was filled with 10/20 "Colorado Sand". The sand was slowly poured into the auger as the auger was pulled in order to form the desired sand pack. The sand pack was brought 1 foot above the screen. The remainder of the well was backfilled using bentonite chips which were brought to about 1-foot from the ground surface, prior to installing the monument covers.

For Monitoring Wells MW-1 and MW-1, located adjacent to the existing CCA plant, a cast aluminum "tamper-proof" flush-mounted monument was cemented-in and flushed with the surrounding surface. For Monitoring Wells MW-3, -4 and -5, located near the old drain field area, locking steel monument covers which extend about 1.5 feet above the ground surface were cemented in.

Monitoring Well Development

All monitoring wells were developed using a clear PVC bottom-filling bailer. The bailer was used to surge and remove sediment from the screened section of the well. The bailing continued until the water cleared or turbidity decreased. At least 5 casing volumes were removed during development. All equipment was decontaminated using an Alconox wash followed by two tap-water rinses, followed by a distilled water rinse. A new length of nylon rope was used for the bailer at each well.

Groundwater Sampling

Wells that were expected to have the lowest level of contamination, were sampled first. A water level measurement was made initially. The samples were collected by first removing at least 3 casing volumes of water using the clear-PVC bottom-filling bailer. The laboratory-supplied containers were then carefully filled, taking care to minimize air bubbles. Samples for volatile analysis were collected first. After filling, the bottles were tapped to minimize air bubbles. Samples were then immediately placed in chilled ice chests for transport to the laboratory. All groundwater sampling activities were documented on the Water Quality Sample Field Data Sheet.

Water Level Measurements

Water level measurements were made using an Olympic model 150 electric well probe and a steel tape. The probe was decontaminated between wells using de-alconox and distilled water. Water level measurements were read to the nearest 0.05 foot. Water levels for each well are shown on Table A2.

Table A1 (Sheet 1 of 7). Description of Samples, Tests, and Monitoring Well Installations for Monitoring Wells and Borings

MONITORING WELL NO. MW-1 - DESCRIPTION OF SAMPLES, TESTS AND INSTALLATION

APPROX. ELEVATION (DATUM USC&GS): 20.2 FEET

SAMPLE NO.	DEPTH FT.	TYPE	DESCRIPTION	TESTS	LOG	WELL INSTALLATION DETAILS
S-1	2.5-4	Drive	Damp, red-brown, fine sandy clayey **SILT** with coal fragments (FILL)	PID = 0	FILL	Monument Cover: Flush
S-2	5-6.5	Drive	Damp red-brown to gray, silty clayey **SILT** with coal fragments (FILL)	PID = 0.4		Riser Pipe to 5' depth: 2" Dia., Sch. 40, threaded PVC riser pipe (top of riser pipe 0.2' below ground surface)
S-3	7.5-9	Drive	Top 3" same as S-2 moist, dark gray clayey **SILT** (water on rods noted at 8 ft.)	PID = 0.6 VOC PMET	8'	Screen 5'-15' depth: 2" Dia. 0.010" slot, Sch. 40 PVC
S-4	10-11.5	Drive	Moist, dark gray, clayey **SILT** with fine sand - organic odor	PID = 3.3	SILT 13'	Backfill: 0 - 1' Concrete 1'- 4' Bentonite Seal 4'- 16.5' 10-20 Colorado Sand
S-5	15-16.5	Drive	Damp, yellow-brown & black slightly clayey fine sand & fine sandy silty clay (WEATHERED SANDSTONE)		BED-ROCK	
BOTTOM OF HOLE AT 16.5 FEET - COMPLETED 3/30/90						

NOTES: (1) The visual-manual classification methods of ASTM D 2488 were used as a guide for sample descriptions. The moisture condition, grain size, and plasticity descriptions are estimates and not based upon laboratory testing. The "LOG" is our generalized interpretation of the changes in materials based upon a combination of sample descriptions, drill action, and interpolation between samples.

(2) PID = Photoionization Device (TIP II) readings

Table A1 (Sheet 2 of 7). Description of Samples, Tests, and Monitoring Well Installations for Monitoring Wells and Borings

MONITORING WELL NO. MW-2 - DESCRIPTION OF SAMPLES, TESTS AND INSTALLATION
APPROX. ELEVATION (DATUM USC&GS): 21.4 FEET

SAMPLE NO.	DEPTH FT.	TYPE	DESCRIPTION	TESTS	LOG	WELL INSTALLATION DETAILS
S-1	2.5-4	Drive	Damp, red-brown, very silty, slightly clayey, fine **SAND** with scattered gravel and coal fragments (FILL)	PID = 2.7	FILL	Monument Cover: Flush
S-2	5-6.5	Drive	Same as sample S-1 (FILL)	PID = 1.8	7'	Riser Pipe to 5' depth: 2" Dia., Sch. 40, threaded PVC riser pipe (top of riser pipe 0.3' below ground surface)
S-3	7.5-9	Drive	Moist, dark gray, slightly sandy **SILT** with organic fragments	PID = 115. VOC PMET	SILT 12'	Screen 5'-15' depth: 2" Dia. 0.010" slot, Sch. 40 PVC
S-4	12.5-14	Drive	Damp, red-brown, very silty, slightly clayey, gravelly, fine to medium **SAND** (WEATHERED SANDSTONE) (Water on rods noted at 12')	PID = 4.7	BED-ROCK	Backfill: 0 - 1' Concrete 1'- 4' Bentonite Seal 4'- 15' 10-20 Colorado Sand
BOTTOM OF HOLE AT 15 FEET - COMPLETED 3/30/90						

Table A1 (Sheet 3 of 7). Description of Samples, Tests, and Monitoring Well Installations for Monitoring Wells and Borings

MONITORING WELL NO. MW-3 - DESCRIPTION OF SAMPLES, TESTS AND INSTALLATION
APPROX. ELEVATION (DATUM USC&GS): 14.5 FEET

SAMPLE NO.	DEPTH FT.	TYPE	DESCRIPTION	TESTS	LOG	WELL INSTALLATION DETAILS
S-1	2.5-4	Drive	Top 12" - Damp, brown, fine sandy, clayey **SILT** Bottom 6" - Damp, brown, fine sandy **SILT**	PID = 1.3	SILT	Monument Cover: Above ground, locking
S-2	7.5-9	Drive	Moist to wet, fine sandy **SILT**	PID = 0.9		Riser Pipe to 5'depth: 2" Dia., Sch. 40, threaded PVC riser pipe (top of riser pipe 1.8' above ground surface)
S-3	12.5-14	Drive	Top 12" - Wet brown fine sandy **SILT** Bottom 6" - Wet, dark gray, silty, fine **SAND** (Water noted on rods at 8.5 ft.)	PID = 0.8	13.5'--- - SAND	Screen 5'-15' depth: 2" Dia. 0.010" slot, Sch. 40 PVC Backfill: 0 - 1' Concrete 1'- 4' Bentonite Seal 4'- 15' 10-20 Colorado Sand
BOTTOM OF HOLE AT 15 FEET - COMPLETED 4/02/90						

Table A1 (Sheet 4 of 7). Description of Samples, Tests, and Monitoring Well Installations for Monitoring Wells and Borings

MONITORING WELL NO. MW-4 - DESCRIPTION OF SAMPLES, TESTS AND INSTALLATION
APPROX ELEVATION (DATUM USC&GS): 14.2 FEET

SAMPLE NO.	DEPTH FT.	TYPE	DESCRIPTION	TESTS	LOG	WELL INSTALLATION DETAILS
S-1	2.5-4	Drive	Damp, brown, fine sandy, slightly clayey **SILT** with 1" fine sand layer at bottom	PID = 1.5	SILT	Monument Cover: Above ground, locking Riser Pipe to 5'depth: 2" Dia., Sch. 40, threaded PVC riser pipe (top of riser pipe 1.8' above ground surface) Screen 5'-15' depth: 2" Dia. 0.010" slot, Sch. 40 PVC Backfill: 0 - 1' Concrete 1'- 4' Bentonite Seal 4'- 15' 10-20 Colorado Sand
S-2	7.5-9	Drive	Moist to wet, brown, fine sandy, slightly clayey **SILT**	PID = 1.5	11'-----	
S-3	12.5-14	Drive	Wet, gray, silty, fine **SAND**	PID = 1.5	SAND	
BOTTOM OF HOLE AT 15 FEET - COMPLETED 4/02/90						

Table A1 (Sheet 5 of 7). Description of Samples, Tests, and Monitoring Well Installations for Monitoring Wells and Borings

MONITORING WELL NO. MW-5 - DESCRIPTION OF SAMPLES, TESTS AND INSTALLATION
APPROX. ELEVATION (DATUM USC&GS): 18.9 FEET

SAMPLE NO.	DEPTH FT.	TYPE	DESCRIPTION	TESTS	LOG	WELL INSTALLATION DETAILS
S-1	2.5-4	Drive	Damp, dark gray-brown, silty fine **SAND**	PID = 2.1	SAND	Monument Cover: Above ground, locking
S-2	7.5-9	Drive	Damp, dark gray-brown, silty, fine **SAND** (water noted on drill rods at about 11')	PID = 2.0		Riser Pipe to 5'depth: 2" Dia., Sch. 40, threaded PVC riser pipe (top of riser pipe 1.4' above ground surface)
S-3	12.5-14	Drive	Wet, gray, silty, fine **SAND**	PID = 1.7		Screen 5'-15' depth: 2" Dia. 0.010" slot, Sch. 40 PVC Backfill: 0 - 1' Concrete 1'- 4' Bentonite Seal 4'- 15' 10-20 Colorado Sand
BOTTOM OF HOLE AT 15 FEET - COMPLETED 4/02/90						

Table A1 (Sheet 6 of 7). Description of Samples, Tests, and Monitoring Well Installations for Monitoring Wells and Borings

SOIL BORING NO. SB-1 - DESCRIPTION OF SAMPLES, AND TESTS
APPROX. ELEVATION (DATUM USC&GS): 19 FEET

SAMPLE NO.	DEPTH FT.	TYPE	DESCRIPTION	TESTS	LOG
S-1	5.5-7	Drive	Top 12" - Damp, red-brown, slightly gravelly, fine to medium **SAND** Bottom 6" - Damp, brown, very silty, fine **SAND** (gravelly zone noted in drill action from about 2 to 4.5 ' - piece of drain tile noted in drill cuttings)	PID = 1.2 VOC PMET	SAND/ GRAVEL 6.5'---- SAND
BOTTOM OF HOLE AT 7 FEET - COMPLETED 4/02/90					

SOIL BORING NO. SB-2 - DESCRIPTION OF SAMPLES, AND TESTS
APPROX. ELEVATION (DATUM USC&GS): 19 FEET

SAMPLE NO.	DEPTH FT.	TYPE	DESCRIPTION	TESTS	LOG
S-1	5-6.5	Drive	Top 12" - Damp, red-brown, slightly gravelly, fine to medium **SAND** Bottom 6" - Damp, brown, very silty, fine **SAND** (gravelly zone noted in drill action from about 3.5' to 4.5')	PID = 0.6 VOC PMET	SAND/ GRAVEL 4.5'---- SAND
BOTTOM OF HOLE AT 6.5 FEET - COMPLETED 4/02/90					

Table A1 (Sheet 7 of 7). Description of Samples, Tests, and Monitoring Well Installations for Monitoring Wells and Borings

SOIL BORING NO. SB-3 - DESCRIPTION OF SAMPLES, AND TESTS APPROX. ELEVATION (DATUM USC&GS): 19 FEET					
SAMPLE NO.	DEPTH FT.	TYPE	DESCRIPTION	TESTS	LOG
S-1	5-6.5	Drive	Top 6" - Damp, gray-brown, slightly clayey, silty fine **SAND** Bottom 12" - Damp, red-brown, slightly gravelly, fine to medium **SAND** (gravelly zone noted in drill action from about 3' to 4')	VOC PMET	SAND/ GRAVEL
BOTTOM OF HOLE AT 6.5 FEET - COMPLETED 4/02/90					

Table A2. Water Level Depth/Elevation Measurements

WELL	ELEV. G.S. (FT.)	ELEV. TOP OF PIPE (FT.)	DATE DEPTH TO WATER FROM TOP OF PIPE **ELEVATION OF WATER (FT.)** TIME				
DATE			4/03/90	4/04/90			
MW-1 DEPTH ELEV. TIME	20.2	20.0	4.7 **15.3** 14:45	4.7 **15.3** 12:45			
MW-2 DEPTH ELEV. TIME	21.4	21.1	6.8 **14.3** 15:30	7.0 **14.1** 13:10			
MW-3 DEPTH ELEV. TIME	14.5	16.3	8.6 **7.7** 13:30	8.5 **7.8** 11:30			
MW-4 DEPTH ELEV. TIME	14.2	16.0	7.7 **8.3** 12:30	8.2 **7.8** 10:45			
MW-5 DEPTH ELEV. TIME	18.9	20.3	13.5 **6.8** 14:15	13.2 **7.1** 12:10			

NOTE: All elevations approximate. Ground Surface and Top of Pipe Elevations are based upon a Jacob Staff/Handlevel survey.

ATTACHMENT B

ANALYTICAL LABORATORY REPORTS

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Chemistry, Microbiology, and Technical Services

CLIENT: Dalton, Olmsted and Fuglevand
22125-17th Avenue S.E., #110
Bothell, WA 98021

ATTN : Matt Dalton

Certificate of Analysis

Work Order# : 90-03-556
DATE RECEIVED : 03/30/90
DATE OF REPORT: 04/17/90
CLIENT JOB ID : HEW-003-01

Work ID : HEW-CCA
Taken By : Client
Transported by: Hand Delivered
Type : Soil/Water

SAMPLE IDENTIFICATION:

	Sample Description	Collection Date		Sample Description	Collection Date
01	MW1-S3 7.5 - 9'	03/30/90 11:00	09	MW4 WS1	04/04/90 10:45
02	MW2-S3 7.5 - 9'	03/30/90 03:00	10	MW5 WS1	04/04/90 12:10
03	SB-1/S-1 5.5 - 7'	04/02/90 03:00	11	SD WS1 Storm Drain	04/04/90 01:30
04	SB-2/S-1 5 - 6.5'	04/02/90 04:00	12	SD S1 Storm Drain Soil	04/04/90 01:30
05	SB-3/S-1 5 - 6.5'	04/02/90	13	Method Blank	N/A
06	MW1 WS1	04/04/90 12:45	14	Method Blank 2	N/A
07	MW2 WS1	04/04/90 01:10	15	Organic QC	N/A
08	MW3 WS1	04/04/90 11:30	16	Inorganic QC	N/A

Prior to analysis, soil samples are passed through a No. 10 mesh sieve. (If volatile organic compounds are to be determined, or an EP Toxicity extraction performed, sample aliquots are removed prior to sieving and retained for those purposes.) Only material passing the sieve is further analyzed. Percentage

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Work Order # 90-03-556

TESTS PERFORMED AND RESULTS:

Analyte	Units	01	02	03	04
Antimony (Method 7041)	mg/kg DB	1.0 U	1.0 U	1.0 U	1.0 U
Arsenic (Method 7061)	mg/kg DB	13.	7.3	0.62	0.5 U
Beryllium (Method 6010)	mg/kg DB	0.1 U	0.1 U	0.1 U	0.1 U
Cadmium (Method 6010)	mg/kg DB	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (Method 6010)	mg/kg DB	25.	42.	18.	16.
Copper (Method 6010)	mg/kg DB	27.	47.	150.	150.
Lead (Method 6010)	mg/kg DB	10. U	10. U	10. U	10. U
Mercury (Method 245.5)	mg/kg	0.1 U	0.1 U	0.1 U	0.1 U
Nickel (Method 6010)	mg/kg DB	33.	70.	22.	22.
Retained at 10 mesh	%	3	2. U	11	12
Retained, Major Component	Description	ROCK	NA	ROCK	ROCK
Retained, Minor Component	Description	NA	NA	NA	NA
Selenium (Method 7741)	mg/kg DB	0.82	1.3	0.70	0.78

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Certificate of Analysis

Work Order# : 90-03-556

of sample retained on the sieve is noted in this report.

NOTE ON DATE OF RECEIPT:

The electronic database accomodates only one "date of receipt", which is the date on which the first sample was received and the work order was initiated. This date, in this case 03/30/90, will show as the date of receipt for all samples.

In fact, samples on this work order were taken and received over several days, as shown below:

Sample No.	Date of Receipt
1 - 2	03/30/90
3 - 5	04/03/90
6 - 12	04/04/90

NOTE ON ANTIMONY DETERMINATION:

The long-term trend at Laucks has consistently demonstrated antimony recoveries in matrix spikes and matrix spike duplicates hovering near 20% in soil (not water) samples. Many steps have been taken, and are being taken, to isolate and correct this circumstance. However, we tend to believe it is not related to laboratory performance. In evaluating antimony data, please be aware that because antimony MS/MSD recoveries are consistently biased low in soils, it is

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Work Order# : 90-03-556

likely that soil sample results are similarly biased.

Unless otherwise instructed all samples will be discarded on 05/20/90

Respectfully submitted,
Laucks Testing Laboratories, Inc.

J. M. Owens

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Chemistry, Microbiology, and Technical Services

USING OUR NEW REPORTS

Laucks has installed an electronic Laboratory Information Management System which now produces both our reports and invoices. The following information and definitions will help you use the new formats; and we encourage you to call us if your questions are not answered here.

SAMPLE IDENTIFICATION - Sample IDs are recorded as they appear on your sample containers or chain-of-custody documents. One "sample" may have several "fractions" (different analytical tasks), so a sample's ID may appear more than once on the cover page. You may notice "extra" samples, not submitted by you. These were added by Laucks to allow our electronic system to accommodate quality control analyses, such as method blanks and matrix spikes.

TEST RESULTS - Analyses which result in a single data point are shown in alphabetical order in the body of the report. Tests which yield multiple results are generally reported on separate pages, on a sample-by-sample basis.

MEASUREMENT UNITS - The reporting units are shown to the right of the analyte name. In the event that a different unit was more appropriate to a specific sample, that exception is shown immediately beneath the test result. Units commonly employed are mg/kg (solids) or mg/L (liquids), comparable to parts per million; ug/kg (solids) or ug/L (liquids), comparable to parts per billion; and percent (%).

METHODS OF ANALYSIS - The EPA or Standard Methods method number is now shown in parentheses after the analyte name; or, for analyses which yield multiple data points, in the header information on the individual report page.

ABBREVIATIONS - Several abbreviations can appear in our reports. The most commonly employed abbreviations are:

U : The analyte of interest was not detected, to the limit of detection indicated.

B : The analyte of interest was detected in the method blank associated with the sample, as well as in the sample itself.

J : The analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.

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T : The flagged values represent the SUM of two co-eluting compounds. The SUM of these two values is shown as though it were a result for each of them, but in fact it represents the total and the two figures should not be further added together.

D : The value reported derives from analysis of a diluted sample or sample extract.

SDL : Sample Detection Limit. The SDL can vary from sample to sample, depending on sample size, matrix interferences, moisture content and other sample-specific conditions.

MDL : Method Detection Limit.

CRDL : Contract Recommended Detection Limit, usually the limit of detection specified at your request.

DB : Dry Basis. The value reported has been back-calculated to normalize for the moisture content of the sample.

AR : As-Received. The value has NOT been normalized for moisture.

Other abbreviations, used in special applications, are defined where they appear (as in the Surrogate Recovery Appendix).

DISPOSAL DATE - Our reports now include the date on which we will dispose of your samples. (In limited instances, we may require that the samples be returned to your custody.) If you wish to have the samples back, or would like to have them stored for a longer period, please notify us before the disposal date.

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CLIENT : Dalton, Olmsted and Fuglevand

Certificate of Analysis

Work Order # 90-03-556
Continued From Above

TESTS PERFORMED AND RESULTS:

Analyte	Units	01	02	03	04
Silver (Method 6010)	mg/kg DB	1. U	1. U	1. U	1. U
Thallium (Method 7841)	mg/kg DB	0.5 U	0.5 U	0.5 U	0.5 U
Total Solids	%	81.2	64.3	85.7	85.9
Zinc (Method 6010)	mg/kg DB	59.	84.	51.	47.

Analyte	Units	05
Antimony (Method 7041)	mg/kg DB	1.0 U
Arsenic (Method 7061)	mg/kg DB	0.87
Beryllium (Method 6010)	mg/kg DB	0.5 U
Cadmium (Method 6010)	mg/kg DB	0.5 U
Chromium (Method 6010)	mg/kg DB	17.
Copper (Method 6010)	mg/kg DB	110.

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Certificate of Analysis

Work Order # 90-03-556
Continued From Above

TESTS PERFORMED AND RESULTS:

Analyte	Units	05
Lead (Method 6010)	mg/kg DB	10. U
Mercury (Method 245.5)	mg/kg	0.1 U
Nickel (Method 6010)	mg/kg DB	26.
Retained at 10 mesh	%	11
Retained, Major Component	Description	ROCK
Retained, Minor Component	Description	NA
Selenium (Method 7741)	mg/kg DB	0.79
Silver (Method 6010)	mg/kg DB	1. U
Thallium (Method 7841)	mg/kg DB	0.5 U
Total Solids	%	84.2
Zinc (Method 6010)	mg/kg DB	58.

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REPORT ON SAMPLE: 9003556-01A
Client Sample ID: MW1-S3 7.5 - 9'

Date Received : 03/30/90
Date Extracted : N/A
Test Code : LXTCVS

Collection Date : 03/30/90
Date Analyzed : 04/03/90
Test Method : SW8240

Compound	Result (ug/kg)	SDL (ug/kg)	Compound	Result (ug/kg)	SDL (ug/kg)
Chloromethane	2 U	2	Bromodichloromethane	2 U	2
Bromomethane	2 U	2	1,2-Dichloropropane	2 U	2
Vinyl chloride	2 U	2	Trichloroethene	2 U	2
Chloroethane	5 U	5	Benzene	2 U	2
Methylene chloride	2	2	Dibromochloromethane	5 U	5
Acetone	35	9	1,1,2-Trichloroethane	2 U	2
Carbon disulfide	2 U	2	Bromoform	2 U	2
1,1-Dichloroethene	2 U	2	4-Methyl-2-pentanone	5 U	5
1,1-Dichloroethane	2 U	2	2-Hexanone	5 U	5
trans-1,2-Dichloroethene	2 U	2	1,1,2,2-Tetrachloroethane	5 U	5
cis-1,2-Dichloroethene	2 U	2	Tetrachloroethene	2 U	2
Total 1,2-Dichloroethene	2 U	2	Toluene	2 U	2
Chloroform	2 U	2	Chlorobenzene	5 U	5
2-Butanone	5 U	5	trans-1,3-Dichloropropene	5 U	5
1,2-Dichloroethane	2 U	2	Ethylbenzene	2 U	2
1,1,1-Trichloroethane	2 U	2	cis-1,3-Dichloropropene	5 U	5
Carbon tetrachloride	2 U	2	Styrene	2 U	2
Vinyl acetate	2 U	2	Total Xylene	2 U	2

Surrogate Recovery Report

Surrogate Compound	Percent Recovery	Limits: Min.	Max.
1,2-Dichloroethane d4	93	74	125
Toluene d8	107	77	121
p-Bromofluorobenzene	92	75	115

* Surrogate recovery is outside of control limits. See comments.

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REPORT ON SAMPLE: 9003556-02A
Client Sample ID: MW2-S3 7.5 - 9'

Date Received : 03/30/90
Date Extracted : N/A
Test Code : LXTCVS

Collection Date : 03/30/90
Date Analyzed : 04/03/90
Test Method : SW8240

Compound	Result (ug/kg)	SDL (ug/kg)	Compound	Result (ug/kg)	SDL (ug/kg)
Chloromethane	7 U	7	Bromodichloromethane	7 U	7
Bromomethane	7 U	7	1,2-Dichloropropane	7 U	7
Vinyl chloride	7 U	7	Trichloroethene	7 U	7
Chloroethane	21 U	21	Benzene	7 U	7
Methylene chloride	7 U	7	Dibromochloromethane	21 U	21
Acetone	810	35	1,1,2-Trichloroethane	7 U	7
Carbon disulfide	7 U	7	Bromoform	7 U	7
1,1-Dichloroethene	7 U	7	4-Methyl-2-pentanone	21 U	21
1,1-Dichloroethane	7 U	7	2-Hexanone	21 U	21
trans-1,2-Dichloroethene	7 U	7	1,1,2,2-Tetrachloroethane	21 U	21
cis-1,2-Dichloroethene	7 U	7	Tetrachloroethene	7 U	7
Total 1,2-Dichloroethene	7 U	7	Toluene	7 U	7
Chloroform	7 U	7	Chlorobenzene	21 U	21
2-Butanone	21 U	21	trans-1,3-Dichloropropene	21 U	21
1,2-Dichloroethane	7 U	7	Ethylbenzene	7 U	7
1,1,1-Trichloroethane	7 U	7	cis-1,3-Dichloropropene	21 U	21
Carbon tetrachloride	7 U	7	Styrene	7 U	7
Vinyl acetate	7 U	7	Total Xylene	7 U	7

Surrogate Recovery Report

Surrogate Compound	Percent Recovery	Limits: Min.	Max.
1,2-Dichloroethane d4	91	74	125
Toluene d8	100	77	121
p-Bromofluorobenzene	107	75	115

* Surrogate recovery is outside of control limits. See comments.

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REPORT ON SAMPLE: 9003556-03A
Client Sample ID: SB-1/S-1 5.5 - 7'

Date Received : 03/30/90
Date Extracted : N/A
Test Code : LXTCVS

Collection Date : 04/02/90
Date Analyzed : 04/03/90
Test Method : SW8240

Compound	Result (ug/kg)	SDL (ug/kg)	Compound	Result (ug/kg)	SDL (ug/kg)
Chloromethane	3 U	3	Bromodichloromethane	3 U	3
Bromomethane	3 U	3	1,2-Dichloropropane	3 U	3
Vinyl chloride	3 U	3	Trichloroethene	3 U	3
Chloroethane	8 U	8	Benzene	3 U	3
Methylene chloride	3 U	3	Dibromochloromethane	8 U	8
Acetone	19	14	1,1,2-Trichloroethane	3 U	3
Carbon disulfide	3 U	3	Bromoform	3 U	3
1,1-Dichloroethene	3 U	3	4-Methyl-2-pentanone	8 U	8
1,1-Dichloroethane	3 U	3	2-Hexanone	8 U	8
trans-1,2-Dichloroethene	3 U	3	1,1,2,2-Tetrachloroethane	8 U	8
cis-1,2-Dichloroethene	3 U	3	Tetrachloroethene	3 U	3
Total 1,2-Dichloroethene	3 U	3	Toluene	3 U	3
Chloroform	3 U	3	Chlorobenzene	8 U	8
2-Butanone	8 U	8	trans-1,3-Dichloropropene	8 U	8
1,2-Dichloroethane	3 U	3	Ethylbenzene	3 U	3
1,1,1-Trichloroethane	3 U	3	cis-1,3-Dichloropropene	8 U	8
Carbon tetrachloride	3 U	3	Styrene	3 U	3
Vinyl acetate	3 U	3	Total Xylene	3 U	3

Surrogate Recovery Report

Surrogate Compound	Percent Recovery	Limits: Min.	Max.
1,2-Dichloroethane d4	98	74	125
Toluene d8	108	77	121
p-Bromofluorobenzene	101	75	115

* Surrogate recovery is outside of control limits. See comments.

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REPORT ON SAMPLE: 9003556-04A
Client Sample ID: SB-2/S-1 5 - 6.5'

Date Received : 03/30/90
Date Extracted : N/A
Test Code : LXTCVS

Collection Date : 04/02/90
Date Analyzed : 04/03/90
Test Method : SW8240

Compound	Result (ug/kg)	SDL (ug/kg)	Compound	Result (ug/kg)	SDL (ug/kg)
Chloromethane	3 U	3	Bromodichloromethane	3 U	3
Bromomethane	3 U	3	1,2-Dichloropropane	3 U	3
Vinyl chloride	3 U	3	Trichloroethene	3 U	3
Chloroethane	8 U	8	Benzene	3 U	3
Methylene chloride	4	3	Dibromochloromethane	8 U	8
Acetone	13 U	13	1,1,2-Trichloroethane	3 U	3
Carbon disulfide	3 U	3	Bromoform	3 U	3
1,1-Dichloroethene	3 U	3	4-Methyl-2-pentanone	8 U	8
1,1-Dichloroethane	3 U	3	2-Hexanone	8 U	8
trans-1,2-Dichloroethene	3 U	3	1,1,2,2-Tetrachloroethane	8 U	8
cis-1,2-Dichloroethene	3 U	3	Tetrachloroethene	3 U	3
Total 1,2-Dichloroethene	3 U	3	Toluene	3 U	3
Chloroform	3 U	3	Chlorobenzene	8 U	8
2-Butanone	8 U	8	trans-1,3-Dichloropropene	8 U	8
1,2-Dichloroethane	3 U	3	Ethylbenzene	3 U	3
1,1,1-Trichloroethane	3 U	3	cis-1,3-Dichloropropene	8 U	8
Carbon tetrachloride	3 U	3	Styrene	3 U	3
Vinyl acetate	3 U	3	Total Xylene	3 U	3

Surrogate Recovery Report

Surrogate Compound	Percent Recovery	Limits: Min.	Max.
1,2-Dichloroethane d4	88	74	125
Toluene d8	98	77	121
p-Bromofluorobenzene	90	75	115

* Surrogate recovery is outside of control limits. See comments.

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Chemistry, Microbiology, and Technical Services

REPORT ON SAMPLE: 9003556-05A
Client Sample ID: SB-3/S-1 5 - 6.5'

Date Received : 03/30/90
Date Extracted : N/A
Test Code : LXTCVS

Collection Date : 04/02/90
Date Analyzed : 04/03/90
Test Method : SW8240

Compound	Result (ug/kg)	SDL (ug/kg)	Compound	Result (ug/kg)	SDL (ug/kg)
Chloromethane	3 U	3	Bromodichloromethane	3 U	3
Bromomethane	3 U	3	1,2-Dichloropropane	3 U	3
Vinyl chloride	3 U	3	Trichloroethene	3 U	3
Chloroethane	9 U	9	Benzene	3 U	3
Methylene chloride	5	3	Dibromochloromethane	9 U	9
Acetone	14 U	14	1,1,2-Trichloroethane	3 U	3
Carbon disulfide	3 U	3	Bromoform	3 U	3
1,1-Dichloroethene	3 U	3	4-Methyl-2-pentanone	9 U	9
1,1-Dichloroethane	3 U	3	2-Hexanone	9 U	9
trans-1,2-Dichloroethene	3 U	3	1,1,2,2-Tetrachloroethane	9 U	9
cis-1,2-Dichloroethene	3 U	3	Tetrachloroethene	3 U	3
Total 1,2-Dichloroethene	3 U	3	Toluene	3 U	3
Chloroform	3 U	3	Chlorobenzene	9 U	9
2-Butanone	9 U	9	trans-1,3-Dichloropropene	9 U	9
1,2-Dichloroethane	3 U	3	Ethylbenzene	3 U	3
1,1,1-Trichloroethane	3 U	3	cis-1,3-Dichloropropene	9 U	9
Carbon tetrachloride	3 U	3	Styrene	3 U	3
Vinyl acetate	3 U	3	Total Xylene	3 U	3

Surrogate Recovery Report

Surrogate Compound	Percent Recovery	Limits: Min.	Max.
1,2-Dichloroethane d4	87	74	125
Toluene d8	95	77	121
p-Bromofluorobenzene	84	75	115

* Surrogate recovery is outside of control limits. See comments.

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REPORT ON SAMPLE: 9003556-06A
Client Sample ID: MW1 WS1

Date Received : 03/30/90
Date Extracted : N/A
Test Code : LXTCVW

Collection Date : 04/04/90
Date Analyzed : 04/04/90
Test Method : SW8240

Compound	Result (ug/L)	SDL (ug/L)	Compound	Result (ug/L)	SDL (ug/L)
Chloromethane	1 U	1	Bromodichloromethane	1 U	1
Bromomethane	1 U	1	1,2-Dichloropropane	1 U	1
Vinyl chloride	1 U	1	Trichloroethene	1 U	1
Chloroethane	3 U	3	Benzene	1 U	1
Methylene chloride	1 U	1	Dibromochloromethane	3 U	3
Acetone	22	5	1,1,2-Trichloroethane	1 U	1
Carbon disulfide	1 U	1	Bromoform	1 U	1
1,1-Dichloroethene	1 U	1	4-Methyl-2-pentanone	3 U	3
1,1-Dichloroethane	1 U	1	2-Hexanone	3 U	3
trans-1,2-Dichloroethene	1 U	1	1,1,2,2-Tetrachloroethane	3 U	3
cis-1,2-Dichloroethene	1 U	1	Tetrachloroethene	1 U	1
Total 1,2-Dichloroethene	1 U	1	Toluene	1 U	1
Chloroform	1 U	1	Chlorobenzene	3 U	3
2-Butanone	3 U	3	trans-1,3-Dichloropropene	3 U	3
1,2-Dichloroethane	1 U	1	Ethylbenzene	1 U	1
1,1,1-Trichloroethane	1 U	1	cis-1,3-Dichloropropene	3 U	3
Carbon tetrachloride	1 U	1	Styrene	1 U	1
Vinyl acetate	1 U	1	Total Xylene	2	1

Surrogate Recovery Report

Surrogate Compound	Percent Recovery	Limits: Min.	Max.
1,2-Dichloroethane d4	102	79	116
Toluene d8	97	85	112
p-Bromofluorobenzene	105	82	114

* Surrogate recovery is outside of control limits. See comments.

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Chemistry, Microbiology, and Technical Services

REPORT ON SAMPLE: 9003556-07A
Client Sample ID: MW2 WS1

Date Received : 03/30/90
Date Extracted : N/A
Test Code : LXTCVW

Collection Date : 04/04/90
Date Analyzed : 04/04/90
Test Method : SW8240

Compound	Result (ug/L)	SDL (ug/L)	Compound	Result (ug/L)	SDL (ug/L)
Chloromethane	1 U	1	Bromodichloromethane	1 U	1
Bromomethane	1 U	1	1,2-Dichloropropane	1 U	1
Vinyl chloride	1 U	1	Trichloroethene	1	1
Chloroethane	3 U	3	Benzene	1 U	1
Methylene chloride	1 U	1	Dibromochloromethane	3 U	3
Acetone	82	5	1,1,2-Trichloroethane	1 U	1
Carbon disulfide	1 U	1	Bromoform	1 U	1
1,1-Dichloroethene	1 U	1	4-Methyl-2-pentanone	3 U	3
1,1-Dichloroethane	17	1	2-Hexanone	3 U	3
trans-1,2-Dichloroethene	1 U	1	1,1,2,2-Tetrachloroethane	3 U	3
cis-1,2-Dichloroethene	13	1	Tetrachloroethene	2	1
Total 1,2-Dichloroethene	13	1	Toluene	1	1
Chloroform	1 U	1	Chlorobenzene	3 U	3
2-Butanone	3 U	3	trans-1,3-Dichloropropene	3 U	3
1,2-Dichloroethane	1 U	1	Ethylbenzene	15	1
1,1,1-Trichloroethane	1 U	1	cis-1,3-Dichloropropene	3 U	3
Carbon tetrachloride	1 U	1	Styrene	1 U	1
Vinyl acetate	1 U	1	Total Xylene	37	1

Surrogate Recovery Report

Surrogate Compound	Percent Recovery	Limits: Min.	Max.
1,2-Dichloroethane d4	97	79	116
Toluene d8	105	85	112
p-Bromofluorobenzene	99	82	114

* Surrogate recovery is outside of control limits. See comments.

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REPORT ON SAMPLE: 9003556-08A
Client Sample ID: MW3 WS1

Date Received : 03/30/90
Date Extracted : N/A
Test Code : LXTCVW

Collection Date : 04/04/90
Date Analyzed : 04/05/90
Test Method : SW8240

Compound	Result (ug/L)	SDL (ug/L)	Compound	Result (ug/L)	SDL (ug/L)
Chloromethane	1 U	1	Bromodichloromethane	1 U	1
Bromomethane	1 U	1	1,2-Dichloropropane	1 U	1
Vinyl chloride	1 U	1	Trichloroethene	1 U	1
Chloroethane	3 U	3	Benzene	1 U	1
Methylene chloride	1 U	1	Dibromochloromethane	3 U	3
Acetone	5 U	5	1,1,2-Trichloroethane	1 U	1
Carbon disulfide	1 U	1	Bromoform	1 U	1
1,1-Dichloroethene	1 U	1	4-Methyl-2-pentanone	3 U	3
1,1-Dichloroethane	1 U	1	2-Hexanone	3 U	3
trans-1,2-Dichloroethene	1 U	1	1,1,2,2-Tetrachloroethane	3 U	3
cis-1,2-Dichloroethene	1 U	1	Tetrachloroethene	1 U	1
Total 1,2-Dichloroethene	1 U	1	Toluene	1 U	1
Chloroform	1 U	1	Chlorobenzene	3 U	3
2-Butanone	3 U	3	trans-1,3-Dichloropropene	3 U	3
1,2-Dichloroethane	1 U	1	Ethylbenzene	1 U	1
1,1,1-Trichloroethane	1 U	1	cis-1,3-Dichloropropene	3 U	3
Carbon tetrachloride	1 U	1	Styrene	1 U	1
Vinyl acetate	1 U	1	Total Xylene	1 U	1

Surrogate Recovery Report

Surrogate Compound	Percent Recovery	Limits: Min.	Max.
1,2-Dichloroethane d4	99	79	116
Toluene d8	110	85	112
p-Bromofluorobenzene	96	82	114

* Surrogate recovery is outside of control limits. See comments.

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REPORT ON SAMPLE: 9003556-09A
Client Sample ID: MW4 WS1

Date Received : 03/30/90
Date Extracted : N/A
Test Code : LXTCVW

Collection Date : 04/04/90
Date Analyzed : 04/05/90
Test Method : SW8240

Compound	Result (ug/L)	SDL (ug/L)	Compound	Result (ug/L)	SDL (ug/L)
Chloromethane	1 U	1	Bromodichloromethane	1 U	1
Bromomethane	1 U	1	1,2-Dichloropropane	1 U	1
Vinyl chloride	1 U	1	Trichloroethene	1 U	1
Chloroethane	3 U	3	Benzene	1 U	1
Methylene chloride	1 U	1	Dibromochloromethane	3 U	3
Acetone	5 U	5	1,1,2-Trichloroethane	1 U	1
Carbon disulfide	1 U	1	Bromoform	1 U	1
1,1-Dichloroethene	1 U	1	4-Methyl-2-pentanone	3 U	3
1,1-Dichloroethane	1 U	1	2-Hexanone	3 U	3
trans-1,2-Dichloroethene	1 U	1	1,1,2,2-Tetrachloroethane	3 U	3
cis-1,2-Dichloroethene	1 U	1	Tetrachloroethene	1 U	1
Total 1,2-Dichloroethene	1 U	1	Toluene	1 U	1
Chloroform	1 U	1	Chlorobenzene	3 U	3
2-Butanone	3 U	3	trans-1,3-Dichloropropene	3 U	3
1,2-Dichloroethane	1 U	1	Ethylbenzene	1 U	1
1,1,1-Trichloroethane	1 U	1	cis-1,3-Dichloropropene	3 U	3
Carbon tetrachloride	1 U	1	Styrene	1 U	1
Vinyl acetate	1 U	1	Total Xylene	1 U	1

Surrogate Recovery Report

Surrogate Compound	Percent Recovery	Limits: Min.	Max.
1,2-Dichlorcethane d4	99	79	116
Toluene d8	106	85	112
p-Bromofluorobenzene	101	82	114

* Surrogate recovery is outside of control limits. See comments.

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REPORT ON SAMPLE: 9003556-10A
Client Sample ID: MW5 WS1

Date Received : 03/30/90
Date Extracted : N/A
Test Code : LXTCVW

Collection Date : 04/04/90
Date Analyzed : 04/05/90
Test Method : SW8240

Compound	Result (ug/L)	SDL (ug/L)	Compound	Result (ug/L)	SDL (ug/L)
Chloromethane	1 U	1	Bromodichloromethane	1 U	1
Bromomethane	1 U	1	1,2-Dichloropropane	1 U	1
Vinyl chloride	1 U	1	Trichloroethene	1 U	1
Chloroethane	3 U	3	Benzene	1 U	1
Methylene chloride	1 U	1	Dibromochloromethane	3 U	3
Acetone	5 U	5	1,1,2-Trichloroethane	1 U	1
Carbon disulfide	1 U	1	Bromoform	1 U	1
1,1-Dichloroethene	1 U	1	4-Methyl-2-pentanone	3 U	3
1,1-Dichloroethane	1 U	1	2-Hexanone	3 U	3
trans-1,2-Dichloroethene	1 U	1	1,1,2,2-Tetrachloroethane	3 U	3
cis-1,2-Dichloroethene	1 U	1	Tetrachloroethene	1 U	1
Total 1,2-Dichloroethene	1 U	1	Toluene	1 U	1
Chloroform	1 U	1	Chlorobenzene	3 U	3
2-Butanone	3 U	3	trans-1,3-Dichloropropene	3 U	3
1,2-Dichloroethane	1 U	1	Ethylbenzene	1 U	1
1,1,1-Trichloroethane	1 U	1	cis-1,3-Dichloropropene	3 U	3
Carbon tetrachloride	1 U	1	Styrene	1 U	1
Vinyl acetate	1 U	1	Total Xylene	1 U	1

Surrogate Recovery Report

Surrogate Compound	Percent Recovery	Limits: Min.	Max.
1,2-Dichloroethane d4	95	79	116
Toluene d8	94	85	112
p-Bromofluorobenzene	95	82	114

* Surrogate recovery is outside of control limits. See comments.

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REPORT ON SAMPLE: 9003556-11A
Client Sample ID: SD WS1 Storm Drain

Date Received : 03/30/90
Date Extracted : N/A
Test Code : LXTCVW

Collection Date : 04/04/90
Date Analyzed : 04/05/90
Test Method : SW8240

Compound	Result (ug/L)	SDL (ug/L)	Compound	Result (ug/L)	SDL (ug/L)
Chloromethane	1 U	1	Bromodichloromethane	1 U	1
Bromomethane	1 U	1	1,2-Dichloropropane	1 U	1
Vinyl chloride	1 U	1	Trichloroethene	1 U	1
Chloroethane	3 U	3	Benzene	1 U	1
Methylene chloride	1 U	1	Dibromochloromethane	3 U	3
Acetone	5 U	5	1,1,2-Trichloroethane	1 U	1
Carbon disulfide	1 U	1	Bromoform	1 U	1
1,1-Dichloroethene	1 U	1	4-Methyl-2-pentanone	3 U	3
1,1-Dichloroethane	1 U	1	2-Hexanone	3 U	3
trans-1,2-Dichloroethene	1 U	1	1,1,2,2-Tetrachloroethane	3 U	3
cis-1,2-Dichloroethene	1 U	1	Tetrachloroethene	1 U	1
Total 1,2-Dichloroethene	1 U	1	Toluene	1 U	1
Chloroform	1 U	1	Chlorobenzene	3 U	3
2-Butanone	3 U	3	trans-1,3-Dichloropropene	3 U	3
1,2-Dichloroethane	1 U	1	Ethylbenzene	1 U	1
1,1,1-Trichloroethane	1 U	1	cis-1,3-Dichloropropene	3 U	3
Carbon tetrachloride	1 U	1	Styrene	1 U	1
Vinyl acetate	1 U	1	Total Xylene	1 U	1

Surrogate Recovery Report

Surrogate Compound	Percent Recovery	Limits: Min.	Max.
1,2-Dichloroethane d4	94	79	116
Toluene d8	96	85	112
p-Bromofluorobenzene	97	82	114

* Surrogate recovery is outside of control limits. See comments.

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REPORT ON SAMPLE: 9003556-12A
Client Sample ID: SD S1 Storm Drain Soil

Date Received : 03/30/90
Date Extracted : N/A
Test Code : LXTCVS

Collection Date : 04/04/90
Date Analyzed : 04/05/90
Test Method : SW8240

Compound	Result (ug/kg)	SDL (ug/kg)	Compound	Result (ug/kg)	SDL (ug/kg)
Chloromethane	3 U	3	Bromodichloromethane	3 U	3
Bromomethane	3 U	3	1,2-Dichloropropane	3 U	3
Vinyl chloride	3 U	3	Trichloroethene	3 U	3
Chloroethane	10 U	10	Benzene	3 U	3
Methylene chloride	3 U	3	Dibromochloromethane	10 U	10
Acetone	17 U	17	1,1,2-Trichloroethane	3 U	3
Carbon disulfide	3 U	3	Bromoform	3 U	3
1,1-Dichloroethene	3 U	3	4-Methyl-2-pentanone	10 U	10
1,1-Dichloroethane	3 U	3	2-Hexanone	10 U	10
trans-1,2-Dichloroethene	3 U	3	1,1,2,2-Tetrachloroethane	10 U	10
cis-1,2-Dichloroethene	3 U	3	Tetrachloroethene	3 U	3
Total 1,2-Dichloroethene	3 U	3	Toluene	3 U	3
Chloroform	3 U	3	Chlorobenzene	10 U	10
2-Butanone	10 U	10	trans-1,3-Dichloropropene	10 U	10
1,2-Dichloroethane	3 U	3	Ethylbenzene	3 U	3
1,1,1-Trichloroethane	3 U	3	cis-1,3-Dichloropropene	10 U	10
Carbon tetrachloride	3 U	3	Styrene	3 U	3
Vinyl acetate	3 U	3	Total Xylene	3 U	3

Surrogate Recovery Report

Surrogate Compound	Percent Recovery	Limits: Min.	Max.
1,2-Dichloroethane d4	93	74	125
Toluene d8	94	77	121
p-Bromofluorobenzene	88	75	115

* Surrogate recovery is outside of control limits. See comments.

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REPORT ON WORK ORDER 9003556 PREPARATION BLANKS

Test : **Beryllium (Method 6010)**
Blank Name : B0402ICPS01 Preparation Date: 04/02/90
Conc Found : 0.200 Control Limit : 0.200
Units : mg/kg DB

This blank and comments, if any, apply to the following sample(s): 1-5

Test : **Nickel (Method 6010)**
Blank Name : B0402ICPS01 Preparation Date: 04/02/90
Conc Found : 3.400 Control Limit : 4.000
Units : mg/kg DB

This blank and comments, if any, apply to the following sample(s): 1-5

Test : **Zinc (Method 6010)**
Blank Name : B0402ICPS01 Preparation Date: 04/02/90
Conc Found : 1.000 U Control Limit : 2.000
Units : mg/kg DB

This blank and comments, if any, apply to the following sample(s): 1-5

Test : **Cadmium (Method 6010)**
Blank Name : B0402ICPS01 Preparation Date: 04/02/90
Conc Found : 0.500 U Control Limit : 1.000
Units : mg/kg DB

This blank and comments, if any, apply to the following sample(s): 1-5

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REPORT ON WORK ORDER 9003556 PREPARATION BLANKS

Test : **Lead (Method 6010)**
Blank Name : B0402ICPS01 Preparation Date: 04/02/90
Conc Found : 10.000 U Control Limit : 20.000
Units : mg/kg DB

This blank and comments, if any, apply to the following sample(s):
1-5

Test : **Chromium (Method 6010)**
Blank Name : B0402ICPS01 Preparation Date: 04/02/90
Conc Found : 1.000 U Control Limit : 2.000
Units : mg/kg DB

This blank and comments, if any, apply to the following sample(s):
1-5

Test : **Copper (Method 6010)**
Blank Name : B0402ICPS01 Preparation Date: 04/02/90
Conc Found : 1.000 U Control Limit : 2.000
Units : mg/kg DB

This blank and comments, if any, apply to the following sample(s):
1-5

Test : **Silver (Method 6010)**
Blank Name : B0402ICPS01 Preparation Date: 04/02/90
Conc Found : 1.000 U Control Limit : 2.000
Units : mg/kg DB

This blank and comments, if any, apply to the following sample(s):
1-5

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REPORT ON WORK ORDER 9003556 PREPARATION BLANKS

Test : **Antimony (Method 7041)**
Blank Name : B0402ICPS01 Preparation Date: 04/02/90
Conc Found : 1.000 U Control Limit : 2.000
Units : mg/kg DB

This blank and comments, if any, apply to the following sample(s): 1-5

Test : **Thallium (Method 7841)**
Blank Name : B0402GF_S01 Preparation Date: 04/02/90
Conc Found : 0.500 U Control Limit : 1.000
Units : mg/kg DB

This blank and comments, if any, apply to the following sample(s): 1-5

Test : **Arsenic (Method 7061)**
Blank Name : B0402HY01 Preparation Date: 04/02/90
Conc Found : 0.500 U Control Limit : 1.000
Units : mg/kg DB

This blank and comments, if any, apply to the following sample(s): 1-5

Test : **Selenium (Method 7741)**
Blank Name : B0402HY01 Preparation Date: 04/02/90
Conc Found : 0.500 U Control Limit : 1.000
Units : mg/kg DB

This blank and comments, if any, apply to the following sample(s): 1-5

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REPORT ON WORK ORDER 9003556 PREPARATION BLANKS

Test : **Arsenic (Method 7061)**
Blank Name : B0404HY01 Preparation Date: 04/02/90
Conc Found : 0.500 U Control Limit : 1.000
Units : mg/kg DB

This blank and comments, if any, apply to the following sample(s): 1-5

Test : **Selenium (Method 7741)**
Blank Name : B0402HY01 Preparation Date: 04/02/90
Conc Found : 0.500 U Control Limit : 1.000
Units : mg/kg DB

This blank and comments, if any, apply to the following sample(s): 1-5

* = outside control limits
U = analtye not detected

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REPORT ON SAMPLE: 9003556-13A
Client Sample ID: Method Blank

Date Received : 03/30/90
Date Extracted : N/A
Test Code : LXTCVW

Collection Date :
Date Analyzed : 04/04/90
Test Method : SW8240

Compound	Result (ug/L)	SDL (ug/L)	Compound	Result (ug/L)	SDL (ug/L)
Chloromethane	1 U	1	Bromodichloromethane	1 U	1
Bromomethane	1 U	1	1,2-Dichloropropane	1 U	1
Vinyl chloride	1 U	1	Trichloroethene	1 U	1
Chloroethane	3 U	3	Benzene	1 U	1
Methylene chloride	1 U	1	Dibromochloromethane	3 U	3
Acetone	5 U	5	1,1,2-Trichloroethane	1 U	1
Carbon disulfide	1 U	1	Bromoform	1 U	1
1,1-Dichloroethene	1 U	1	4-Methyl-2-pentanone	3 U	3
1,1-Dichloroethane	1 U	1	2-Hexanone	3 U	3
trans-1,2-Dichloroethene	1 U	1	1,1,2,2-Tetrachloroethane	3 U	3
cis-1,2-Dichloroethene	1 U	1	Tetrachloroethene	1 U	1
Total 1,2-Dichloroethene	1 U	1	Toluene	1 U	1
Chloroform	1 U	1	Chlorobenzene	3 U	3
2-Butanone	3 U	3	trans-1,3-Dichloropropene	3 U	3
1,2-Dichloroethane	1 U	1	Ethylbenzene	1 U	1
1,1,1-Trichloroethane	1 U	1	cis-1,3-Dichloropropene	3 U	3
Carbon tetrachloride	1 U	1	Styrene	1 U	1
Vinyl acetate	1 U	1	Total Xylene	1 U	1

Surrogate Recovery Report

Surrogate Compound	Percent Recovery	Limits: Min.	Max.
1,2-Dichloroethane d4	94	79	116
Toluene d8	104	85	112
p-Bromofluorobenzene	97	82	114

* Surrogate recovery is outside of control limits. See comments.

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REPORT ON SAMPLE: 9003556-13A
Client Sample ID: Method Blank

Date Received : 03/30/90
Date Extracted : N/A
Test Code : LXTCVS

Collection Date :
Date Analyzed : 04/03/90
Test Method : SW8240

Compound	Result (ug/kg)	SDL (ug/kg)	Compound	Result (ug/kg)	SDL (ug/kg)
Chloromethane	1 U	1	Bromodichloromethane	1 U	1
Bromomethane	1 U	1	1,2-Dichloropropane	1 U	1
Vinyl chloride	1 U	1	Trichloroethene	1 U	1
Chloroethane	3 U	3	Benzene	1 U	1
Methylene chloride	1 U	1	Dibromochloromethane	3 U	3
Acetone	5 U	5	1,1,2-Trichloroethane	1 U	1
Carbon disulfide	1 U	1	Bromoform	1 U	1
1,1-Dichloroethene	1 U	1	4-Methyl-2-pentanone	3 U	3
1,1-Dichloroethane	1 U	1	2-Hexanone	3 U	3
trans-1,2-Dichloroethene	1 U	1	1,1,2,2-Tetrachloroethane	3 U	3
cis-1,2-Dichloroethene	1 U	1	Tetrachloroethene	1 U	1
Total 1,2-Dichloroethene	1 U	1	Toluene	1 U	1
Chloroform	1 U	1	Chlorobenzene	3 U	3
2-Butanone	3 U	3	trans-1,3-Dichloropropene	3 U	3
1,2-Dichloroethane	1 U	1	Ethylbenzene	1 U	1
1,1,1-Trichloroethane	1 U	1	cis-1,3-Dichloropropene	3 U	3
Carbon tetrachloride	1 U	1	Styrene	1 U	1
Vinyl acetate	1 U	1	Total Xylene	1 U	1

Surrogate Recovery Report

Surrogate Compound	Percent Recovery	Limits: Min.	Max.
1,2-Dichloroethane d4	92	74	125
Toluene d8	104	77	121
p-Bromofluorobenzene	100	75	115

* Surrogate recovery is outside of control limits. See comments.

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REPORT ON SAMPLE: 9003556-14A
Client Sample ID: Method Blank 2

Date Received : 03/30/90
Date Extracted : N/A
Test Code : LXTCVW

Collection Date :
Date Analyzed : 04/05/90
Test Method : SW8240

Compound	Result (ug/L)	SDL (ug/L)	Compound	Result (ug/L)	SDL (ug/L)
Chloromethane	1 U	1	Bromodichloromethane	1 U	1
Bromomethane	1 U	1	1,2-Dichloropropane	1 U	1
Vinyl chloride	1 U	1	Trichloroethene	1 U	1
Chloroethane	3 U	3	Benzene	1 U	1
Methylene chloride	1 U	1	Dibromochloromethane	3 U	3
Acetone	5 U	5	1,1,2-Trichloroethane	1 U	1
Carbon disulfide	1 U	1	Bromoform	1 U	1
1,1-Dichloroethene	1 U	1	4-Methyl-2-pentanone	3 U	3
1,1-Dichloroethane	1 U	1	2-Hexanone	3 U	3
trans-1,2-Dichloroethene	1 U	1	1,1,2,2-Tetrachloroethane	3 U	3
cis-1,2-Dichloroethene	1 U	1	Tetrachloroethene	1 U	1
Total 1,2-Dichloroethene	1 U	1	Toluene	1 U	1
Chloroform	1 U	1	Chlorobenzene	3 U	3
2-Butanone	3 U	3	trans-1,3-Dichloropropene	3 U	3
1,2-Dichloroethane	1 U	1	Ethylbenzene	1 U	1
1,1,1-Trichloroethane	1 U	1	cis-1,3-Dichloropropene	3 U	3
Carbon tetrachloride	1 U	1	Styrene	1 U	1
Vinyl acetate	1 U	1	Total Xylene	1 U	1

Surrogate Recovery Report

Surrogate Compound	Percent Recovery	Limits: Min.	Max.
1,2-Dichloroethane d4	101	79	116
Toluene d8	105	85	112
p-Bromofluorobenzene	100	82	114

* Surrogate recovery is outside of control limits. See comments.

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REPORT ON SAMPLE: 9003556-14A
Client Sample ID: Method Blank 2

Date Received : 03/30/90
Date Extracted : N/A
Test Code : LXTCVS

Collection Date :
Date Analyzed :
Test Method : SW8240

Compound	Result (ug/kg)	SDL (ug/kg)	Compound	Result (ug/kg)	SDL (ug/kg)
Chloromethane	1 U	1	Bromodichloromethane	1 U	1
Bromomethane	1 U	1	1,2-Dichloropropane	1 U	1
Vinyl chloride	1 U	1	Trichloroethene	1 U	1
Chloroethane	3 U	3	Benzene	1 U	1
Methylene chloride	1 U	1	Dibromochloromethane	3 U	3
Acetone	5 U	5	1,1,2-Trichloroethane	1 U	1
Carbon disulfide	1 U	1	Bromoform	1 U	1
1,1-Dichloroethene	1 U	1	4-Methyl-2-pentanone	3 U	3
1,1-Dichloroethane	1 U	1	2-Hexanone	3 U	3
trans-1,2-Dichloroethene	1 U	1	1,1,2,2-Tetrachloroethane	3 U	3
cis-1,2-Dichloroethene	1 U	1	Tetrachloroethene	1 U	1
Total 1,2-Dichloroethene	1 U	1	Toluene	1 U	1
Chloroform	1 U	1	Chlorobenzene	3 U	3
2-Butanone	3 U	3	trans-1,3-Dichloropropene	3 U	3
1,2-Dichloroethane	1 U	1	Ethylbenzene	1 U	1
1,1,1-Trichloroethane	1 U	1	cis-1,3-Dichloropropene	3 U	3
Carbon tetrachloride	1 U	1	Styrene	1 U	1
Vinyl acetate	1 U	1	Total Xylene	1 U	1

Surrogate Recovery Report

Surrogate Compound	Percent Recovery	Limits: Min.	Max.
1,2-Dichloroethane d4		74	125
Toluene d8		77	121
p-Bromofluorobenzene		75	115

* Surrogate recovery is outside of control limits. See comments.

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REPORT ON WORK ORDER 9003556 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Test	: **Beryllium (Method 6010)**		
Matrix Spike Recovery	: 96%		
Matrix Spike Duplicate Recovery	: 100%	Control Limits	
Relative percent difference	: 7	Recovery	RPD
Control limits	:	65 - 104	7

This MS/MSD and comments, if any, apply to the following sample(s): 1-5

Test	: **Nickel (Method 6010)**		
Matrix Spike Recovery	: 97%		
Matrix Spike Duplicate Recovery	: 110%	Control Limits	
Relative percent difference	: 8 *	Recovery	RPD
Control limits	:	68 - 130	6

This MS/MSD and comments, if any, apply to the following sample(s): 1-5 *All other QC parameters were in control for ICP metals. The RPD was considered an outlier.

Test	: **Zinc (Method 6010)**		
Matrix Spike Recovery	: 94%		
Matrix Spike Duplicate Recovery	: 95%	Control Limits	
Relative percent difference	: 1	Recovery	RPD
Control limits	:	68 - 126	5

This MS/MSD and comments, if any, apply to the following sample(s): 1-5

U = not detected
* = outside control limits

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Chemistry, Microbiology, and Technical Services

REPORT ON WORK ORDER 9003556 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Test	:	**Cadmium (Method 6010)**
Matrix Spike Recovery	:	100%
Matrix Spike Duplicate Recovery	:	110%
Relative percent difference	:	7
Control limits	:	

Control Limits	
Recovery	RPD
59 - 124	7

This MS/MSD and comments, if any, apply to the following sample(s): 1-5

Test	:	**Lead (Method 6010)**
Matrix Spike Recovery	:	110%
Matrix Spike Duplicate Recovery	:	110%
Relative percent difference	:	2
Control limits	:	

Control Limits	
Recovery	RPD
60 - 131	6

This MS/MSD and comments, if any, apply to the following sample(s): 1-5

Test	:	**Chromium (Method 6010)**
Matrix Spike Recovery	:	99%
Matrix Spike Duplicate Recovery	:	100%
Relative percent difference	:	3
Control limits	:	

Control Limits	
Recovery	RPD
65 - 123	8

This MS/MSD and comments, if any, apply to the following sample(s): 1-5

U = not detected
* = outside control limits

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REPORT ON WORK ORDER 9003556 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Test	:	**Copper (Method 6010)**
Matrix Spike Recovery	:	99%
Matrix Spike Duplicate Recovery	:	100%
Relative percent difference	:	1
Control limits	:	

Control Limits	
Recovery	RPD
67 - 123	5

This MS/MSD and comments, if any, apply to the following sample(s): 1-5

Test	:	**Silver (Method 6010)**
Matrix Spike Recovery	:	95%
Matrix Spike Duplicate Recovery	:	97%
Relative percent difference	:	3
Control limits	:	

Control Limits	
Recovery	RPD
40 - 120	6

This MS/MSD and comments, if any, apply to the following sample(s): 1-5

Test	:	**Antimony (Method 7041)**
Matrix Spike Recovery	:	11% *
Matrix Spike Duplicate Recovery	:	17% *
Relative percent difference	:	40
Control limits	:	

Control Limits	
Recovery	RPD
40 - 96	44

This MS/MSD and comments, if any, apply to the following sample(s): 1-5

U = not detected
* = outside control limits

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REPORT ON WORK ORDER 9003556 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Test	:	**Thallium (Method 7841)**
Matrix Spike Recovery	:	95%
Matrix Spike Duplicate Recovery	:	120%
Relative percent difference	:	23 *
Control limits	:	

Control Limits	
Recovery	RPD
44 - 134	20

This MS/MSD and comments, if any, apply to the following sample(s):
1-5 *Although RPD was outside of control limits, recoveries were in, supporting .5 U for all samples.

Test	:	**Arsenic (Method 7061)**
Matrix Spike Recovery	:	100%
Matrix Spike Duplicate Recovery	:	110%
Relative percent difference	:	5
Control limits	:	

Control Limits	
Recovery	RPD
57 - 131	7

This MS/MSD and comments, if any, apply to the following sample(s):
1-5

Test	:	**Selenium (Method 7741)**
Matrix Spike Recovery	:	110%
Matrix Spike Duplicate Recovery	:	120%
Relative percent difference	:	6
Control limits	:	

Control Limits	
Recovery	RPD
66 - 131	7

This MS/MSD and comments, if any, apply to the following sample(s):
1-5

U = not detected
* = outside control limits

Job No. 04071 Group No. DATE: 04/09/90

Sample No. 02B Matrix: Water Analysis: MS-VOA

Spiking Analyte	Percent Recovery MS	Percent Recovery MSD	Comment MS	Comment MSD	%RPD	Recovery Control Limits	%RPD Control Limit
1,1-Dichloroethene	71	72			1	53-131	7
Trichloroethene	104	107			2	70-134	7
Benzene	116	118			2	65-130	8
Toluene	125	126			1	64-131	13
Chlorobenzene	104	105			1	73-128	8

ATTACHMENT C

REFERENCES

Dalton, Olmsted & Fuglevand, Inc., 1990, Phase I Environmental Assessment, Container Corporation of America (CCA) Property, Parcels 2, 3, & 4, Renton, Washington

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CH2M Hill, Inc., 1985, Results of Wastewater Treatment System Sampling