12.3.60

SITE HAZARD ASSESSMENT

SUMMARY REPORT

FOR

NORTHWEST COOPERAGE COMPANY

SEATTLE, WASHINGTON

JULY, 1991

Prepared for:
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Contract Number: C0089006
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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION

This report summarizes the results of soil and sediment assessment performed at Northwest Cooperage located on First Avenue South near the Duwamish River in Seattle, Washington (Figure 1). This work was conducted on behalf of the Washington State Department of Ecology (Ecology). The objectives of the project included field screening and sampling to gather sufficient environmental data to assess the site using the Washington Ranking Method (WARM) guidelines. A Site Hazard Assessment (SHA), as defined in WAC 173-340-320, has been generated based on information gathered for this project. Included in this report are descriptions of the environmental setting and background (Section 2.0), objectives (Section 3.0), field procedures (Section 4.0), results (Section 5.0), and summary (Section 6.0). The attached appendices at the end of this report include the Site Hazard Assessment Data Summary Sheets (Appendix A) and Laboratory Analyses (Appendices B and C).

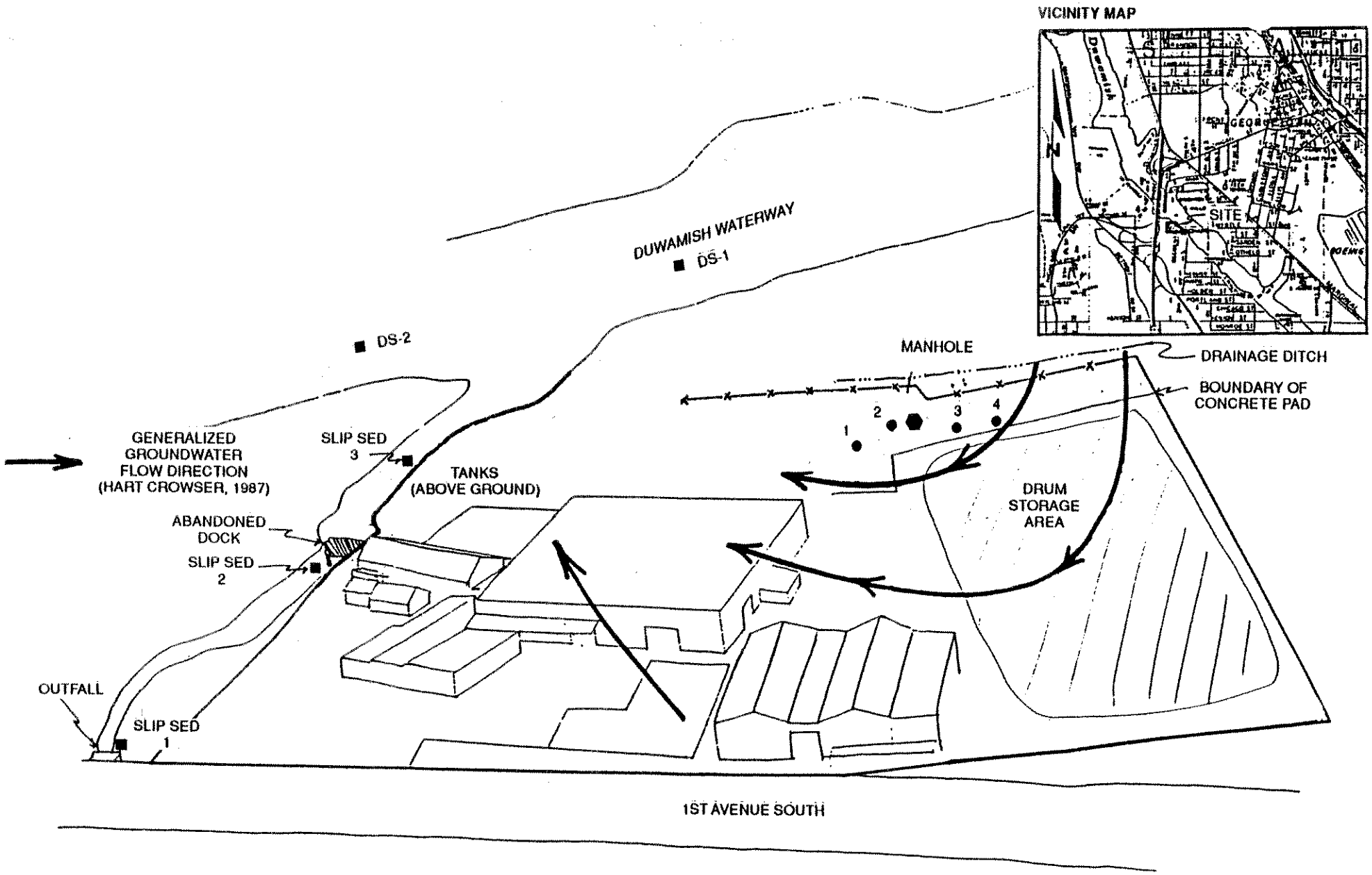


Figure 1
Site Map of Northwest Cooperage Indicating Sampling Locations (Modified From Phase III Site Assessment - Hart Crowser, 1987)

2. ENVIRONMENTAL SETTING AND BACKGROUND

The Northwest Cooperage Company reconditions used 55-gallon drums using a hot caustic pre-flush and exterior wash, followed by dent removal and drum painting. Northwest Cooperage is located on First Avenue South near the Duwamish River in an industrial/residential area of Seattle (Figure 1). The Duwamish River borders the north side of the property, and First Avenue South is to the south of the site. The depth to groundwater was previously measured at 10 ft in loose fill (Potential Hazardous Waste Site Preliminary Assessment, Ecology project file). The site has since been paved. It is anticipated that groundwater flows towards the Duwamish River.

The drums received by Northwest Cooperage for reconditioning contain residual material including oils, solvents, paints, and food. Prior to about 1970, an estimated 9,000 to 12,000 gallons of wastewater generated by the refurbishing process were discharged daily to an on-site lagoon, and ultimately to the Duwamish River. A pre-treatment system was installed at the site around 1970 that included a settling tank for oil skimming and sludge settlement. The wastewaters were then discharged to the sanitary sewer system under a Metro wastewater discharge permit. It is unknown where the skimmed oils and sludges were disposed. The lagoon was filled subsequent to the installation of the pretreatment system. It is not believed that sludges were removed from the lagoon prior to filling. The former lagoon location is presently used for the storage of incoming drums.

In 1973, Northwest Cooperage overfilled the facility's settling tank, resulting in a discharge of approximately 400 gallons of waste oil/caustic to the Duwamish River. The company was fined by Ecology. A series of concrete berms were installed on the site after the spill apparently to prevent subsequent discharges to the river.

From 1976 through the 1980s, Northwest Cooperage violated its Metro discharge permit on several occasions. The violations included exceedances of the permit limitations for oil and grease, lead, chromium, copper, zinc, and pH. In 1986, under enforcement action by Metro, Northwest Cooperage installed additional wastewater pre-treatment capabilities including equalization and mixing tanks for polymer addition and pH adjustment, and 2 gravity flow oil/water separation units.

Northwest Cooperage submitted a Notification of Hazardous Waste Activity form in 1980. A number of volatile organic compounds were listed as being handled at the facility, including benzene, toluene, xylene, acetone, tetrachloroethylene, 1,1,1-trichloroethane, and trichloroethene.

In 1984, a Puget Sound Air Pollution Control Authority (PSAPCA) inspector became ill while sampling stack emissions from the Northwest Cooperage facility.

A fire occurred at the Northwest Cooperage site in 1985 apparently caused by arson but not involving the chemicals located on-site. Also, in 1985, the U.S. Environmental Protection Agency (EPA) conducted a preliminary assessment of the facility. The following year, a joint EPA/Hart Crowser sampling effort at the site identified surface soil contamination in the zone from 0 to 2 ft. Identified contaminants included lead, chromium, cadmium, and mercury above present-day MTCA standards. High levels of cyanide were also found in the soil samples. In addition, traces of organic compounds including methylene chloride, acetone, toluene, xylene, 1,1,1-trichloroethane, trichloroethene, tetrachloroethene, chloroform, pentachlorophenol, phenanthrene, fluoranthene, pyrene, dieldrin, endrin, DDT and its breakdown products, and polychlorinated biphenyls (PCBs) were found in the on-site soil samples. Groundwater monitoring wells were subsequently installed on the site.

In 1987, Hart Crowser conducted a Phase III groundwater and soil quality assessment. Identified subsurface soil contaminants included lead, mercury, and PCBs above present-day MTCA standards. In addition, other organic contaminants were also detected including vinyl chloride, trichloroethylene, tetrachloroethylene, ethylbenxene, xylene, naphthalene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, dibenzofuran, 2-methylnaphthalene, and 4-methylphenol. Identified groundwater contaminants above present-day MTCA standards included arsenic, vinyl chloride, benzene, ethylbenzene, xylene, DDE, DDD, and DDT. In addition the following compounds were also detected in the groundwater: cadmium, nickel, zinc, methylene chloride, acetone, 1,1-dichloroethane, trans-1,2-dichloroethane, trichloroethylene, tetrachloroethylene, 4-methyl-2-pentanone, toluene, 1,2-dichlorobenzene, naphthalene, 4-chloro-m-cresol, 2-methylphenol, and 4-methylphenol. Copies of the Hart Crowser summary tables of lab analyses are provided in Appendix B.

In 1988, EPA issued a Compliant and Compliance Order and assessed an accompanying penalty for a series of Resource Conservation and Recovery Act (RCRA) violations. This included burning used oil classified as hazardous waste in a device that was not an industrial furnace or boiler. Northwest Cooperage conducted activities to come into compliance with RCRA, including capping the entire site with concrete in an attempt to reduce the off-site migration of contamination.

In 1990, Northwest Cooperage sent 26,300 lbs of unmanifested extremely hazardous waste to Northwest Enviroservice in Seattle. Northwest Cooperage officials were apparently unaware that the material was hazardous. Subsequent testing by Northwest Enviroservice identified the material as containing leachable quantities of cadmium, chromium, and lead.

3. OBJECTIVES

Parametrix developed a workplan for investigating the Northwest Cooperage site based on Ecology's scope of work, a review of Ecology's file, and conversations with Elaine Atkinson (Ecology). The objectives of that workplan are summarized below:

- Collect groundwater samples from three existing onsite monitoring wells installed by Hart-Crowser.

- Collect three sediment samples; one from upstream in the Duwamish River, one from downstream in the Duwamish River, and one from the slip adjacent to the facility.

- Collect one composite sample from unpaved areas on the site and/or immediately adjacent to the facility.

The above scope of work was developed without information contained in the 1987 Hart Crowser report. Upon arrival at the site, Parametrix personnel were informed that there would be a change in the scope of work, due to the procurement by Ecology of the 1987 Hart Crowser report. Elaine Atkinson (Ecology) decided to eliminate the groundwater samples and add two additional samples from the slip adjacent to the facility, and a sediment sample from a manhole on the site. Table 1 summarizes the field sample designations and analyses.

Table 1. Summary of field samples and analyses at Northwest Cooperage.

Sample Name	Sample Type	Date Sampled	Lab Analyses*
SC-1	surface soil	5/22/91	A & B
Slip Sed 1	sediment	5/29/91	A
Slip Sed 2	sediment	5/29/91	A & C
Slip Sed 3	sediment	5/29/91	A
DS-1	sediment	5/29/91	A
DS-2	sediment	5/29/91	A & D

* Laboratory analysis codes:

A = Volatile organics (EPA 8240), Polynuclear Aromatic Hydrocarbons (EPA 8100), Organochlorine Pesticides and PCBs (EPA 8080), Cyanide (EPA 9010/9012), Total Metals (As, Cd, Cr, Cu, Ni, Pb, Hg, An; EPA 6010) (Analyzed by Enseco

B = Dioxins/Dibenzofurans (EPA 8280) (Analyzed by Enseco)

C = Static Acute Fish Toxicity (Department of Ecology Biological Test Methods rev. July 1981) (Analyzed by Parametrix)

D = Sediment Pore Water Salinity (Puget Sound Estuary Program Protocols) (Analyzed by Parametrix)

SC = Soil composite

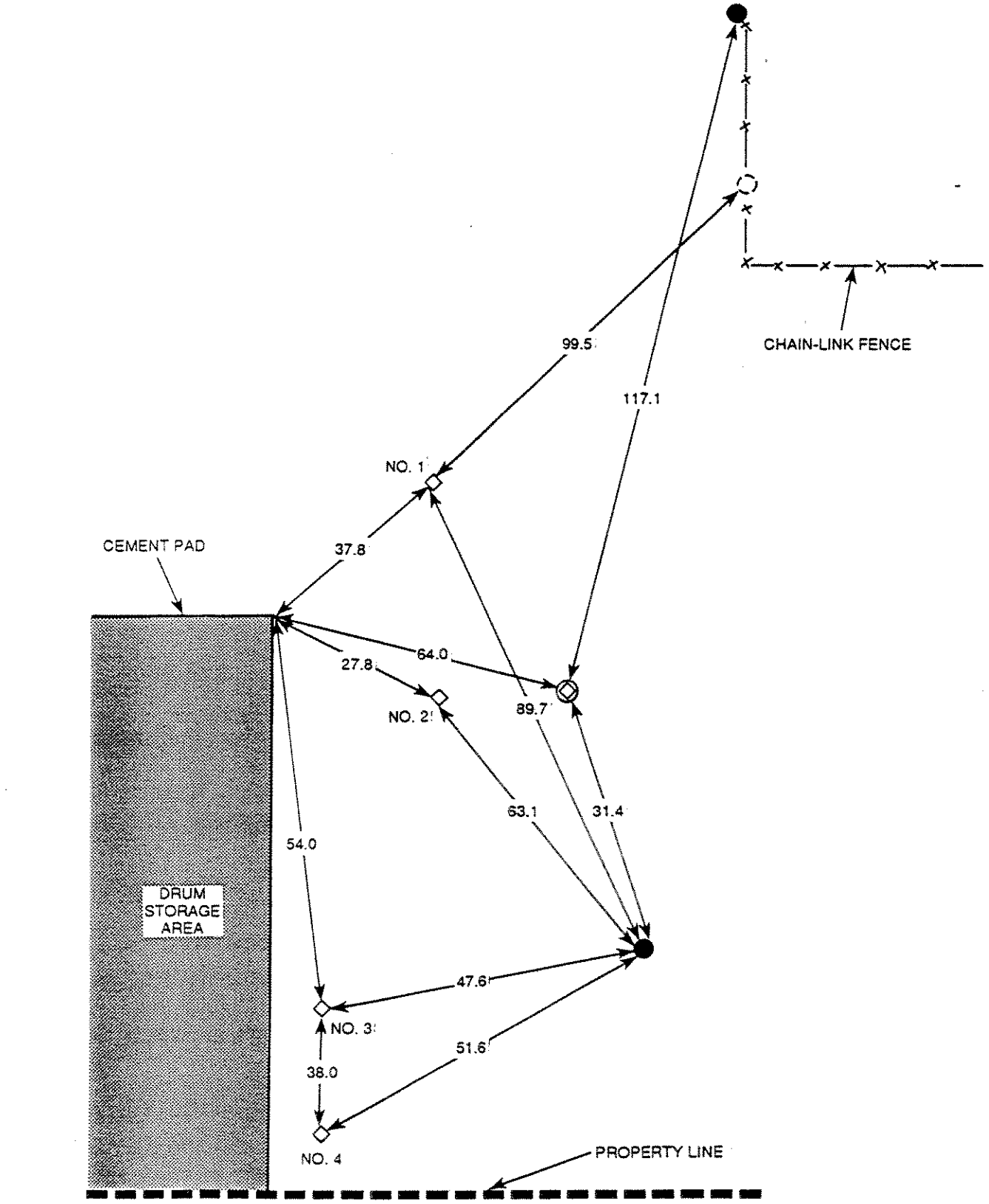
DS = Duwamish sediment

4. FIELD PROCEDURES

4.1 SEDIMENT AND MANHOLE SAMPLES

Five sediment samples were collected, including three from the slip adjacent to the facility and two background samples from the Duwamish River. The locations of the sediment samples are shown on Figure 2 and described in Table 2. Samples from the Duwamish were drawn as Van Veen grabs according to the Puget Sound Estuary Protocols. The Van Veen grab sample depth was 10 cm. No compositing of Van Veen samples was necessary. The samples from the slip were taken with a stainless steel spoon and bowl. These samples were collected using a decontaminated stainless steel spoon from a depth of approximately 0 to 3 inches and composited into a clean stainless steel bowl (except samples to be analyzed for VOCs, which were placed in a jar without mixing). Samples were collected into laboratory supplied glass wide-mouth jars with screw on lids. Jars were completely filled whenever possible, capped immediately after filling, and labeled. After labeling the jars were stored on ice prior to shipment to the selected laboratory under appropriate chain-of-custody documentation. The samples from the slip and from the Duwamish were analyzed for polynuclear aromatic hydrocarbons (Method SW 8270), volatile organic compounds (Method SW 8240), organochlorine pesticides and PCBs (Method SW 8080), cyanide (Method EPA 9012), and total metals (As, Cd, Cr, Cu, Ni, Pb, and Zn - 6000 Series: Hg SW 7471). One of the samples taken from the slip (selected based on visual contamination) was analyzed using the static acute fish toxicity test conducted in accordance with Ecology's Biological Test Methods (revised July 1981). One sample from the Duwamish was also analyzed for sediment pore water salinity per Puget Sound Estuary Program Protocols.

The manhole sample was collected from a manhole east of the drum storage area. The sample location is shown on Figures 1 and 2, and described in Table 2. The sample was analyzed for polynuclear aromatic hydrocarbons (Method SW 8270), volatile organic compounds (Method SW 8240), organochlorine pesticides and PCBs (Method SW 8080), cyanide (Method 9012 Modified), total metals (As, Cd, Cr, Cu, Ni, Pb, Hg, and Zn - 6000 Series :Hg SW 7471). The sample was collected using a decontaminated stainless steel spoon attached to a pole and sediment was scraped from the base of the manhole. The sample was collected into a laboratory supplied glass wide-mouth jar with a screw on lid. The jar was completely filled, capped immediately after filling, and labeled. After labeling the jar was stored on ice prior to shipment to the selected laboratory under appropriate chain-of-custody documentation.



Distances are in feet.

N

NOT TO SCALE

- Telephone Pole
- Manhole
- Metal Post
- Sample Locations

Figure 2.
Surface Soil Composite and Manhole Sample Locations
Northwest Cooperage, Seattle, Washington

4.2 SURFACE SOIL SAMPLES

A composite surface soil sample was assembled from samples (0" to 2" depth) collected from unpaved areas on the site and/or immediately downgradient from the site. The approximate sample locations are shown on Figures 1 and 2, and described in Table 2. The composite sample was analyzed for polynuclear aromatic hydrocarbons (Method SW 8270), volatile organic compounds (Method SW 8240), organochlorine pesticides and PCBs (Method SW 8080), cyanide (Method 9012 Modified), total metals (As, Cd, Cr, Cu, Ni, Pb, and Zn - 6000 Series :Hg SW 7471), and the dioxin/dibenzofuran compounds (Method SW 8280).

The surface soil sample was collected using a decontaminated stainless steel spoon from a depth of approximately 0 to 2 inches and composited into a clean stainless steel bowl (except samples to be analyzed for VOCs, which were placed in a jar without mixing). Samples were collected into laboratory supplied glass wide-mouth jars with screw on lids. Jars were completely filled whenever possible, capped immediately after filling, and labeled. After labeling the jars were stored on ice prior to shipment to the selected laboratory under appropriate chain-of-custody documentation.

All sampling equipment was washed in Alconox™ and rinsed with deionized water prior to arrival at the site. A different spoon and bowl was used at each sampling location.

Table 2. Description of sample locations for Northwest Cooperage.

Soil Composite Samples

1
- 37.8 feet northeast from corner of cement pad
- 99.5 feet southwest from large metal post on chain-link fence
- 89.7 feet northwest from telephone pole

2
- 27.8 feet southeast from corner of cement pad
- 63.1 feet northwest from telephone pole

3
- 54.0 feet south from corner of cement pad
- 147.6 feet west from telephone pole

4
- 92.0 feet south from corner of cement pad
- 51.6 feet southwest from telephone pole

Slip Sediment Samples

1
- 6.0 feet southeast from southwest corner of outfall
- 3.0 feet southwest from southeast corner of outfall

2
- 45.8 feet north from northeast corner of wooden shed with porch
- 47.8 feet northwest from telephone pole
- 1.7 feet northwest from piling for abandoned dock

3
- 34.6 feet south from sea wall
- 13.4 feet southeast from cement block in center of slip
- 56.4 feet northeast from northeast corner of blue tank at Northwest Cooperage

Manhole Sample

1
- 64.0 feet southeast from corner of cement pad
- 117.1 feet southwest from northeast telephone pole.
- 31.4 feet northwest from southwest telephone pole

Duwamish Sediment Samples

1 - aligned with south bank of mouth of slip 100' east from west shoreline of Duwamish

2 - aligned with north bank of mouth of slip 100' east from west shoreline of Duwamish

5. RESULTS

Summary tables of positive detections of analytes for each medium are presented in Tables 3 and 4. Copies of the lab data sheets with chain-of-custody documentation are included in Appendix C.

5.1 SEDIMENT AND MANHOLE SAMPLES

The slip sediment samples and the manhole sample were all collected on May 29, 1991. Approximate sampling locations are shown on Figure 1. Table 3 summarizes the results that were above detection limits and compares them to sediment management standards (WAC 173-204).

Volatile organic compounds (VOCs) were detected in all of the sediment samples. The highest levels of VOCs detected were as follows: methylene chloride in DS-1 at 14 ppb, acetone in Slip Sed 2 at 530 ppb, 2-butanone in Slip Sed 2 at 96 ppb, and total xylenes in DS-1 at 22 ppb. The highest level of arochlor 1260 was detected in Slip Sed 2 at 4200 ppb. The highest levels of metals detected were as follows: cadmium at 2.1 ppm in Slip Sed 2, chromium at 103 ppm in Slip Sed 2, copper at 370 ppm in Slip Sed 1, lead at 529 ppm in Slip Sed 1, nickel at 26.2 ppm in Slip Sed 2, zinc at 362 ppm in Slip Sed 2, and mercury at 1.8 ppm in Slip Sed 3. Sediment pore water salinity for DS-2 was 31 ppt and no significant fish mortality occurred in the standard acute fish toxicity test on Slip Sed 2.

The only VOC detected in the manhole sediments was methylene chloride at 6.6 ppb. The following metals were detected in the manhole sediments: chromium, copper, lead, nickel, and zinc.

5.2 SURFACE SOIL SAMPLES

The surface soil composite sample was collected on May 22, 1991. Table 4 summarizes the sample results that were above detection limits and compares them to MTCA standards.

No VOCs were detected in the surface soil composite sample. The following metals were detected in the surface soil sample: chromium, copper, lead, nickel, and zinc.

5.3 QUALITY ASSURANCE

5.3.1 Metals

The quality of the metals data is very good. Holding times and conditions were all acceptable. No metals were detected in the method blank. Check standards were all within 80-120% recovery. Analytical replicates, in this case the matrix spike duplicate, were all less than 20% relative percent difference. Matrix spike percent recoveries were all within 75-125% limits, except mercury which had a 149% recovery. This result indicates that mercury results may be biased high. Also, the reporting limit for mercury in Slip Sed 3 was elevated due to matrix interference problems.

5.3.2 Organics

The quality of the organic chemical data is very good. Holding times and conditions were all acceptable. No organic compounds were detected in the method blank. The matrix spike and matrix spike duplicate results were all within acceptable limits. The surrogate recoveries were all within CLP limits, except the pesticide/PCB results, which had low surrogate recoveries. The pesticide/PCB reporting limits were also elevated due to matrix interference problems.

Table 3. Compounds found above detection limits for sediment samples.

Compound	Units	WAC	Sample SS-1	SS-2	SS-3	DS-1	DS-2	Manhole
Cadmium	mg/Kg	5.1	<0.78	2.1	1.5	<0.9	<0.84	<0.6
Chromium	mg/Kg	260	60.2	103	89.9	24.4	20.1	27.7
Copper	mg/Kg	390	370	211	289	34.8	30.7	40
Lead	mg/Kg	450	247	529	422	14	12	93.3
Nickel	mg/Kg	ns	17.4	26.2	23.6	20.6	18.1	26.6
Zinc	mg/Kg	410	287	362	280	70.7	60.8	90.6
Mercury	mg/Kg	0.41	0.22	0.29	1.8	0.18	0.22	<0.12
Arochlor 1260	LAET 1000 ug/Kg ~~12000~~		220	4200	940	<61	<57	<41
Methylene Chloride	ug/Kg	ns	<7.8	11	<9.0	14	8.9	6.6
Acetone	ug/Kg	ns	75	530	<18	<18	110	<12
Xylene (total)	ug/Kg	ns	<7.8	<11	<9.0	22	<8.4	<6
2-Butanone	ug/Kg	ns	<16	96	<18	<18	<17	<12
Fish Toxicity	100 mg/L	ns	na	NM	na	na	na	na
Fish Toxicity	1000 mg/L	ns	na	NM	na	na	na	na
Pore Water Salinity	g/Kg	ns	na	na	na	na	31	na

Note: WAC = WAC 173-204 Sediment Management Standards

na = Not analyzed

NM = No significant mortality

ns = No standard available

Table 4. Compounds found above detection limits for surface soil samples

Compound	Units	MTCA A	MTCA B	Sample SC-1
Chromium	mg/Kg	100	1600	15.9
Copper	mg/Kg	592	ns	22
Lead	mg/Kg	250	ns	49.2
Nickel	mg/Kg	3.2 *	ns	15.8
Zinc	mg/Kg	ns	16000	58.1

MTCA = Model Toxics Control Act standards for cleanup.

* = Soluble salts of nickel

ns = No standard available

6. SUMMARY

The following observations were noted in reviewing the analytical data:

- Slip sediment sample 2 violated Sediment Management Standards for lead. This sample showed no significant mortality in the standard acute fish toxicity test.

- Slip sediment sample 3 violated the Sediment Management Standards for mercury and PCBs.

- Duwamish sediment samples 1 and 2 did not violate any Sediment Management Standards. The pore water salinity for Duwamish sediment sample 2 was 31 ppt.

- The manhole sediment sample did not violate any Sediment Management Standards for the parameters tested.

- The surface soil composite sample did not violate any MTCA standards, except possible nickel. Lab analyses measured total nickel and not soluble salts of nickel.

APPENDIX A

SITE HAZARD ASSESSMENT

DATA SUMMARY SHEETS

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
TOXICS CLEANUP PROGRAM

SITE HAZARD ASSESSMENT DATA COLLECTION SUMMARY SHEETS
FOR
WASHINGTON RANKING METHOD

Site Name: NW COOPERAGE

Location: NW¼ NW¼ SW¼ SECTION 29 T24N R4E

Site owner/operator: Herman Trotsky

Address: 7152 First Avenue South Seattle WA 98108

Any other known PLP(s): _____

Address: _____

Site Number: _____

Date(s) of field site hazard assessment: May 22 - 29, 1991

Samples or field measurements: X soil X sediment
_____ surface water
_____ air _____ ground water

(Attach copies of pertinent sampling and analytical data, as well as all other supporting documentation.)

Photographs: _____

Weather: Cloudy temp in 60s (°F)

Lead inspector: Victoria B. Martinez

Other inspectors: Kurt Easthouse

Signature: Victoria B. Martinez

A. List (continued)

Substance	Quantity	Units
10. Xylenes (total)	total quantity	unknown
11. 4,4'-DDE	↓	↓
12. 4,4'-DDD		
13 4,4'-DDT		

NOTES:

- Only noted compounds above MTCA or Sediment Management Standards
- site is approximately 5.5 acres (~240,000 ft²)

Routes

Number (from above)	Surface H_2O	Air	Groundwater
10. Xylenes (total)			X
11. 4,4'-DDE			X
12. 4,4'-DDD			X
13. 4,4'-DDT			X

PART I: Hazardous Substances

NOTE: Page numbers (e.g. SW-2) shown in parentheses throughout this checklist refer to the WARM Scoring Manual. WK- numbers refer to pages of the new scoring sheets (not those in the scoring manual).

A. LIST

List hazardous substances, known or suspected (check k or s), currently at the property, or that have been previously (check c or p) at the property (WK-2,3):

	Hazardous Substance (K) S (C) (P)	Quantity	Units
gw 1.	Arsenic	total quantity	unknown
S 2.	Chromium		
Sed, S, gw 3.	Lead		
Sed 4.	Mercury		
Sed, S 5.	Arochlor 1260		
gw 6.	Vinyl Chloride		
gw 7.	Methylene Chloride		
gw 8.	Benzene		
gw 9.	Ethylbenzene		

Additional? see attached tables (list on attachment)

By which routes are these available?

Number (from above)	Surface Water	Air	Groundwater
1. As			X
2. Cr			
3. Pb			
4. Hg			
5. Arochlor 1260			
6. Vinyl Chloride			X
7. Methylene Chloride			X
8. Benzene			X
9. Ethylbenzene			X

B. SOURCES

Check those known or observed (WK-3):

X	drums or other containers
	electrical transformers
X	above ground tanks
	below ground tanks
X	ponds, pits, or other impoundments * noted by Ecology
	pipelines (other than water, sewer, or gas)
	floor drains
X	exterior drains for rainwater, surface waters, spills, etc.
	other? Identify:

C. INDICATORS

Check those know or observed:

	discolored soils
	disturbed soils
	discolored standing water
	unusual or noxious odors
X	sick or dead vegetation
X	groundwater monitoring wells
	other? Identify:

If any are checked in B or C, explain details including exact locations (identify location in a map or drawing).

Additional information: drums stored on site, tanks on North end of site (see attached report)

PART II: Releases

A. KNOWN OR SUSPECTED RELEASES

List those hazardous substances identified (by number) in I.A. which are known, or suspected, to have been released (WK-2,3):

Substance (#)	Quantity Released	Units	Medium Released To
1 Arsenic	Unknown		groundwater
2 Cr			soil
3 Pb			sediment, soil, groundwater
4 Hg			Sediment
5 Arochlor 1260			sediment, soil

Additional information/reference? see attached next page only noted those above MTCA standard

B. SOURCES AND IMPACTS (Pages SW-5,6; A-9,10; GW-6,7)

List those hazardous substances identified (by number) in II.A. and identify the source and impact:

Substance No.	Source	Impacts/affects To	Area

Additional information/reference? Sources for all are cleaning of reconditioned drums. See above for impacted media.

Substance (#)	Quantity	Units	Medium Released to
6. Vinyl Chloride	Unknown		groundwater
7. Methylene chloride			groundwater
8. Benzene			groundwater
9. Ethylbenzene			groundwater
10. Xylenes (total)			sediment, groundwater
11. 4,4' - DDE			groundwater
12. 4,4' - DDD			groundwater
13. 4,4' - DDT			groundwater

III. Migration Potential

A. CONTAINMENT--LANDFILLS (SW-7; A-12; GW-8,9)

Present? No How many?_____

Check those that apply:

1. _____An engineered, maintained run-on/run-off control system
2. _____An engineered/maintained cover without ponding
3. _____Unmaintained run-on/runoff control system or cover
4. _____No run-on/runoff control or no cover
5. _____Uncontaminated soil cover greater than 6" thick
6. _____Uncontaminated soil cover less than 6" thick
7. _____Contaminated soil used as cover
8. _____A functioning vapor collection system
9. _____Mixing or agitation used
10. _____No liner
11. _____Single clay or compacted soil liner (permeability_____cm/sec)
12. _____Single synthetic liner (permeability_____cm/sec)
13. _____Double liner system (permeability_____cm/sec)
14. _____Leachate collection system, maintained and functioning
15. _____Leachate collection system, unknown condition or not functioning
16. _____Liquid wastes may have been disposed of
17. _____Liquid wastes were disposed of in landfill
18. _____Reliable evidence no liquid wastes were disposed

Additional comments:_____

B. CONTAINMENT--SURFACE IMPOUNDMENTS (SW-7,8; A-13; GW-10,11)

Present Previously How many? 1

Check those that apply:

1. _____The dike is apparently sound
2. _____The dike is regularly inspected and maintained
3. _____There is evidence of failure, erosion, slumping, or release of contents
4. _____Two feet of freeboard maintained automatically
5. _____The freeboard is manually controlled so that there is at least 2 feet of freeboard
6. _____Evidence of insufficient freeboard (<2 ft.)
7. _____A maintained cover
8. X Unmaintained cover, no cover
9. X No liner
10. _____Single synthetic liner
11. _____Single clay or compacted soil liner
12. _____Double liner
13. _____Working leak detection system
14. _____Evidence of loss of fluid (other than by evaporation)

Additional comments: this information provided by Elaine Atkinson (Ecology)

C. CONTAINMENT--DRUMS AND SMALL CONTAINERS (SW-9; A-11; GW-11)

Present yes How many? hundreds of empty drums

Check those that apply:

1. — No functional containment
2. — There is secondary containment capacity for the total volume of containers
3. X There is secondary containment with capacity for at least 110% of volume of the largest container
4. — The secondary containment is less that 110% of the volume of the largest container
5. — The containers are stored in single, or double layers on pallets, or in racks
6. X The containers are stored in an unstable manner
7. — Some containers are open or have visible liquid
8. — Some containers are leaking
9. — Containers are protected from weather
10. — Containers showing deterioration
11. X Containment surface is impervious
12. — Containment surface has cracks or semi-permeable
13. — No base material/permeable base such as gravel/base materials unknown
14. ? Containment is regularly inspected and maintained
15. — Evidence of containment failure

Additional comments: empty drums are stacked very high cement pad is bermed about 6 inches high.

D. CONTAINMENT--STORAGE TANKS (SW-9; A-11; GW-11)

Present yes How many? at least 3 - contents unknown
All known tanks are above ground

Check those that apply:

1. — Secondary containment with a capacity of 110% of the volume of the tanks
2. — Secondary containment at least 50% of the volume of all tanks
3. — Containment system with capacity for at least 10% of volume of containers or tanks
4. X No containment, or less than 10% capacity
5. ? Tank volumes maintained
6. ? Automatic controls used for volume maintenance
7. — Tanks are covered
8. ? Uncovered tanks have aeration, mixing, or heating of tank contents
9. X Containers sealed, protected
10. — Containers sealed, not protected
11. — Containers deteriorated
12. — Containers leaking
13. Record the #s of above which apply only to above ground tank _____
14. Record the #s of above which apply only to below ground tanks _____
15. Record the #s of above which apply to both above and below ground tanks: _____

Additional comments: _____

E. CONTAINMENT--WASTE PILES (SW-10; A-13; GW-12,13)

Present No How many?_____

Check those that apply:

1. _____Waste pile is outside, no protecting structure
2. _____Waste pile is outside, in open structure with roof
3. _____Waste pile is outside, with partial or unmaintained cover
4. _____Waste pile is outdoors, with maintained cover
5. _____No cover is present
6. _____Waste pile is fully enclosed, intact building
7. _____There is an engineered run-on/run-off control
8. _____The run-on/run-off is maintained
9. _____Run-on/runoff control present, unknown condition
10. _____No run-on/runoff control system present, or unknown if present
11. _____Liner or base present; _____Not present
12. _____Single clay or compacted soil liner
13. _____Single synthetic liner
14. _____Double liner
15. _____Maintained, functioning leachate collection system
16. _____Leachate collection system; _____Unknown condition; or _____Not functioning

Additional comments:_____

F. CONTAINMENT--SPILLS, DISCHARGES, AND CONTAMINATED SOIL (SW-10,11; A-13,14; GW-13)

Check those that apply:

1. X Spill, discharge, or contaminated soil only in the subsurface at the site--including dry wells, drain fields, leaking underground storage tanks

2. — Soil contamination that has been covered partially excavated and filled with at least 6 inches of clean soil

3. — Soil contamination that has been covered or partially excavated and filled with less than 6 inches of clean soil

4. — Uncontaminated soil cover >2 feet thick

5. ___ No cover; or X Cover <2 feet, but > 6" thick

6. — Spill, discharge, or contaminated soil present at the surface in an area with maintained run-on/run-off controls

7. — Spill, discharge, or contaminated soil present at the surface in an area with unmaintained run-on/run-off controls

8. — Spill, discharge, or contaminated soil present at the surface with no run-on/run-off controls or unknown controls

9. — Contaminated soil has been disturbed or excavated and stored above grade

10. — A functioning vapor recovery system

11. X No vapor recovery system

Additional comments: _____

G. CONTAINMENT--SITE CHARACTERISTICS (SW-11,12; A-6; GW-14; WK-5,6,8)

1. How would you evaluate the site soils? Circle predominant textural class.

X Sand, gravel, sandy gravel, well-graded sand, well-graded gravel, gravelly sand, gravelly sand loam, silty sandy loam? silt + clay → River deposits

_____ Poorly-graded sands with fines, silt-sand mixtures, loam, silt loam, sandy silt loam, clayey sand, clay sand loam?

_____ Clayey sands, sand-clay mixtures, clayey gravels, clay-sand-gravel mixtures, inorganic silts, clayey silt loam, silty clay loam, porous rock outcrop, sandy silty clay, sandy clay loam?

_____ Clay (organic and inorganic), clay loam, rock outcrop, peat, peaty clay?

Is the above based on personal observation, lab analysis, or professional judgment by a soil expert? (circle)

2. Total annual precipitation= 33.8 in./yr (SW-12; WK-5)

3. Max. 2-yr/24-hr precip.= 2.0 inches (SW-14; WK-5)

4. Net precipitation (see 2.2, GW-13)= 20.7 in. (WK-9)

5. Is the site not in a flood plain? X (SW-14; WK-5)
Is the site in a 500 year flood plain? _____ FIRM - Panel No. I-29
Is the site in a 100 year flood plain? _____ City of Seattle
Flood Insurance Rate Map Comm. Panel No. _____

This site is immediately adjacent to Duwamish - are you sure about this?

6. What is the terrain slope to the nearest surface water?
<2 % (SW-14,15; WK-6)

7. What is the subsurface hydraulic conductivity?
10^{-4} to 10^{-2} cm/sec (GW-14; WK-9) Per Hart Crowser, 1987

8. What is the vertical depth from the deepest point of known contamination to ground water? 0 feet (GW-15; WK-9)

Additional comments: _____

IV. Targets

A. DISTANCE TO SURFACE WATER (SW-16; WK-6)

1. What surface water(s) (lake, stream, river, pond, bay, etc.) is/are within 10,000 feet (downgradient) of the site?

Name	Dist. - ft.	Obs.	Meas.
DUWAMISH WATERWAY	~~500 ft~~ 0 ft		X
Slip that is tributary to Duwamish →	0 ft	X	

None?_____ Comments_____

2. What drinking water intakes are within 2 miles of the site? (all lake intakes, river intakes downstream only) (SW-12; WK-6)

None? X DRINKING WATER SOURCE IS A PROTECTED SOURCE IN THE CASCADE MOUNTAINS

Source	Location	Pop. Served

3. How much acreage (anywhere) is irrigated by surface water intakes (downstream only) or wells (anywhere) within 2 miles of the site? (SW-16; GW-18; W/S 5; WK-6,9)

None? X

SURFACE WATER: Acres _____ (1600 acres max.)

Source(s) _____;

GROUNDWATER: Acres _____ (4500 acres max.)

Source(s) _____

4. What is the distance to the nearest fishery resource (total of overland distance plus downgradient distance)? (SW-17; WK-6)

DUWAMISH WATERWAY 0 Ft

Over 10,000 feet?_____ Distance if less than 10,000 feet?_____ ft.

5. What are the names of, and the distances to the nearest sensitive environments (total of overland distances plus downgradient distances)? (SW-18; A-15; WK-6)

Over 10,000 feet?_____ Names and distance if less than 10,000 feet:

Duwamish River 0 ft

6. Is the aquifer a federally-designated sole source aquifer? NO (GW-16; WK-9)

7. Is the ground water used for: (GW-16; WK-9)

_____ private supply
_____ public supply
_____ irrigation of human food crops or livestock
_____ non-food (human) vegetation
_____ not used due to natural contaminants
X ground water not used, but usable

DRINKING WATER SOURCE IS A PROTECTED SURFACE SOURCE IN THE CASCADE MOUNTAINS.

8. Distance to nearest drinking water well?_____feet (GW-17; WK-9)

9. Is there an alternate source available to groundwater for private or public water supply? (WK-9) YES (see #7)

10. Population served by drinking water wells within 2 miles 0 ? (GW-17; WK-9)

11. Distance to the nearest population?_____feet (A-15, 16; WK-8)

12. Population within one-half mile radius? 1470 (A-16; WK-8)

Additional comments:_____

APPENDIX B

SUMMARY OF LAB ANALYSES

FROM HART CROWSER (1987)

Table 1 - Results of Chemical Analyses, Hart Crowser

Concentration in ppm	Groundwater Samples (May 14, 1986)			Subsurface Soil Composite Samples (May 5, 1986)		Surface Soil Composite Samples (February 4 and 5, 1986)						Groundwater Sample (3/20/87)
Analyte / Location	B-1	B-2	B-3	B-1	B-2	1	2	3	4	5	6	B-3
Antimony	ND	0.015	ND	5.	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	ND	0.017	ND	5.1	6.2	5.0	5.5	4.5	4.5	4.0	7.8	0.010
Beryllium	ND	ND	ND	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	ND
Cadmium	0.006	0.002	0.002	ND	ND	0.5	1.4	0.5	ND	ND	3.5	ND
Chromium	0.003	0.007	0.014	35.	120.	27.	200.	20.	37.	22.	200.	0.005
Copper	0.006	0.004	0.004	32.	72.	26.	28.	13.	15.	13.	100.	ND
Lead	ND	0.027	ND	63.	170.	1,400.	640.	48.	160.	60.	1,400.	ND
Mercury	ND	ND	ND	0.2	0.4	0.5	1.0	0.3	0.6	0.2	6.7	ND
Nickel	0.026	0.022	0.009	28.	61.	22.	21.	11.	15.	12.	47.	0.015
Silver	0.004	0.003	0.010	0.5	0.9	ND	1.2	0.2	0.1	ND	0.2	ND
Zinc	0.110	0.019	0.010	81.	290.	130.	440.	91.	120.	70.	640.	0.038
Total Cyanide	0.019	0.070	ND	0.7	8.3	0.6	3.6	1.9	9.8	3.6	4.5	0.300
Total Phenol	ND	0.180	0.009	0.7	1.6	ND	0.6	ND	ND	ND	ND	0.120
Vinyl Chloride	ND	0.010	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.250
Methylene Chloride	TRACE	0.011	0.006	0.130	0.350	0.060	0.040	TRACE	0.051	0.053	0.330	TRACE
Acetone	0.016	0.056	0.021	0.410	1.700	ND	ND	TRACE	0.040	0.044	0.092	0.012
Chloroform	ND	ND	ND	ND	ND	TRACE	TRACE	ND	TRACE	ND	TRACE	ND
1,1-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	TRACE	ND	ND	ND	ND	ND	ND	ND	ND	ND	TRACE
trans-1,2-Dichloroethylene	ND	0.190	ND	ND	TRACE	ND	ND	ND	ND	ND	ND	0.033
1,1,1-Trichloroethane	ND	ND	ND	TRACE	TRACE	ND	ND	NO	ND	ND	TRACE	ND
Trichloroethylene	ND	TRACE	ND	ND	TRACE	ND	TRACE	ND	ND	ND	0.039	TRACE
Tetrachloroethylene	ND	ND	ND	TRACE	0.130	TRACE	TRACE	ND	ND	ND	0.870	TRACE
Benzene	ND	0.017	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.016
4,-Methyl-2-pentanone	ND	0.011	ND	ND	ND	ND	ND	ND	ND	ND	ND	TRACE
Toluene	ND	0.270	ND	ND	0.035	ND	ND	ND	ND	ND	TRACE	0.290
Ethylbenzene	ND	0.460	ND	TRACE	0.190	ND	ND	ND	ND	ND	0.110	0.430
Xylene, all Isomers	TRACE	0.150	ND	0.028	0.360	ND	ND	ND	ND	ND	0.220	0.650
Phenol	ND	0.018	ND	ND	0.220	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.660	0.190
2,4-Dimethylphenol	ND	0.320	0.028	ND	0.930	ND	ND	ND	ND	ND	ND	ND
Naphthalene	TRACE	0.018	0.120	1.900	1.900	ND	ND	ND	ND	ND	ND	0.028
4-Chloro-m-cresol	ND	0.130	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.049
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	ND	ND	0.010	0.680	0.330	ND	ND	ND	ND	ND	ND	ND
Fluorene	ND	ND	ND	0.420	0.340	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	0.070	0.490	ND	ND	ND	0.810	ND
Phenanthrene	ND	ND	ND	0.930	0.990	0.085	0.640	ND	ND	ND	0.660	ND
Anthracene	ND	ND	ND	0.250	1.300	ND	ND	ND	ND	ND	ND	ND
Dibutylphthalate	ND	ND	ND	ND	0.530	0.057	0.190	ND	ND	ND	0.690	ND
Fluoranthene	ND	ND	ND	0.750	0.390	0.072	0.840	ND	ND	ND	ND	ND
Pyrene	ND	ND	ND	0.470	0.370	ND	0.510	ND	ND	ND	0.500	ND
Butyl benzyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.150	ND	ND
Bis(2-ethylhexyl)phthalate	TRACE	TRACE	TRACE	2.600	1.600	5.300	6.900	0.320	ND	0.360	4.800	ND
Di-n-octyl phthalate	ND	ND	ND	0.390	0.130	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	0.420	0.160	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ND	ND	0.010	0.770	1.500	ND	ND	ND	ND	ND	1.260	ND
2-Methylphenol	ND	0.026	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.011
4-Methylphenol	ND	0.070	ND	0.510	0.530	ND	ND	ND	ND	ND	ND	0.050
Dieldrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND	ND	ND	0.046	ND	ND	ND	0.420	0.054
4,4'-DDD	ND	ND	ND	ND	ND	ND	0.110	ND	0.219	0.019	ND	0.027
4,4'-DDT	ND	ND	ND	ND	ND	ND	ND	ND	0.246	0.199	0.884	0.032
Endrin	ND	ND	ND	ND	ND	0.104	ND	ND	ND	ND	ND	ND
PCB 1248	ND	ND	ND	1.900	1.700	ND	ND	ND	ND	ND	ND	ND
PCB 1260	ND	ND	ND	0.950	1.200	ND	ND	0.398	0.425	ND	ND	ND

Notes: This table summarizes the results of the analyses performed. Refer to Appendix A for discussion of sampling technique. Refer to Appendix B for method references, limits of detection, quality control information, and information regarding trace quantities.

APPENDIX C

LABORATORY ANALYSES

Enseco – CRL
7440 Lincoln Way • Garden Grove, CA 92641
(714) 898-6370 • (213) 598-0458 • (800) LAB-1-CRL
FAX: (714) 891-5917

June 20, 1991

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-001/008
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUNE-1991
Project: (55-1738-28) NORTHWEST COOPERAGE

Enclosed with this letter is the report on the chemical and physical analyses on the samples from ANALYSIS NO: G-9115410-001/008 shown above.

The samples were received by CRL in a chilled state, intact and with the chain-of-custody record attached.

Note that ND means not detected at the reporting limit expressed. The reporting limit is raised to reflect the dilution factor of the sample.

Solid samples are reported on "dry weight" basis.

Preliminary data for EPA 8240, 8100, Mercury and % Moisture were provided on June 12,1991 at 5:13 P.M. Preliminary data for Metals were provided on June 13,1991 at 11:14 A.M.

Reviewed

Approved

Field Sample Chain of Custody Sheet

6-9115410

Parametrix, Inc. • 13020 Northup Way, Suite 8 • Bellevue, Washington 98005

PROJECT NAME Northwest Cooperage PROJECT NO. 55-1738-28 CLIENT Ecology

SAMPLERS VBM RECORDER VBM

MATRIX: WATER	AIR	SEDIMENT	OTHER	# OF CONTAINERS AND PRESERVATIVE: UNPRESERVED	H_2SO_4	HNO_3	NAOH	NAOH AND ZINC ACETATE	OTHER	LOCATION/NO.	DATE: MONTH	DAY	YEAR	TIME	STATION AND SAMPLE DESCRIPTION	MISCELLANEOUS INFORMATION
		X		2						Slip Sed 1	5	29	91		Analyses marked on bottles 8100, 8240, 8080, CN, Total metals (As, Cd, Cr, Cu, Ni, Pb, Hg) Zn)	
		X		2						Slip Sed 2	↓	↓	↓		↓	
		X		2						Slip Sed 3	↓	↓	↓		↓	
		X		2						Manhole Sed 1	↓	↓	↓		↓	MS/MSD for all [illegible]
		X		2						DS-1	↓	↓	↓		↓	[illegible] 6-3
		X		2						DS-2	↓	↓	↓		↓	

TOTAL CONTAINERS :

LOCATION/NO.	MEASURING POINT	DEPTH TO WATER	TEMPERATURE DEGREES	pH	CONDUCTIVITY (UNITS)	VOLUME PURGED (GAL)

CHAIN OF CUSTODY RECORD (PLEASE PRINT)

RELINQUISHED BY: (NAME)	DATE	TIME	RECEIVED BY: (NAME)	DATE	TIME
Victoria B. Martz	5/31/91	3:50	Fedex		
[signature] NC Fed-Ex			Miles J. Cornwy	6/1/91	10:15

White Copy: Parametrix, Inc./Yellow Copy: Lab/Pink Copy: Client

6/87

Enseco
A Corning Company

Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE
Project: (55-1738-28) NORTHWEST COOPERAGE

Analysis No.: G-9115410-001/008
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Matrix Spike/Matrix Spike Duplicate Report

Sample Number	Parameter (Method)	Units	Observed Concentration Sample	MS	MSD	Amt. Spiked	% Recovery MS	MSD	Avg.	% RPD
9115410-004A	ARSENIC (EPA 6010)	mg/kg	ND	46.0	49.5	50	92	99	96	7
9115410-004A	CADMIUM (EPA 6010)	mg/kg	ND	3.95	4.19	5	79	84	82	6
9115410-004A	CHROMIUM (EPA 6010)	mg/kg	23.0	39.6	40.4	20	83	87	85	5
9115410-004A	COPPER (EPA 6010)	mg/kg	33.2	57.2	58.9	25	96	103	100	7
9115410-004A	LEAD (EPA 6010)	mg/kg	77.5	129	131	50	103	107	105	4
9115410-004A	NICKEL (EPA 6010)	mg/kg	22.1	64.3	66.4	50	84	89	86	5
9115410-004A	ZINC (EPA 6010)	mg/kg	75.3	117	120	50	83	89	86	7
9115410-004	MERCURY (EPA 7471)	mg/kg	ND	.260	.256	.175	149	146	148	2
9115410-005	LINDANE (EPA 8080)	ug/kg	ND	30.4	35.2	33.3	91	106	98	15
9115410-005	HEPTACHLOR (EPA 8080)	ug/kg	ND	33.0	37.6	33.3	99	113	106	13
9115410-005	ALDRIN (EPA 8080)	ug/kg	ND	39.9	41.9	33.3	120	126	123	5
9115410-005	DIELDRIN (EPA 8080)	ug/kg	ND	46.2	59.1	33.3	139	178	158	24
9115410-005	ENDRIN (EPA 8080)	ug/kg	ND	24.3	27.7	33.3	73	83	78	13
9115410-005	4,4'-DDT (EPA 8080)	ug/kg	ND	37.6	42.1	33.3	113	126	120	11
9115410-005B	ACENAPHTHENE (EPA 8100)	mg/kg	ND	2.89	3.04	6.66	43	46	44	5
9115410-005B	PYRENE (EPA 8100)	mg/kg	ND	2.38	2.36	6.66	36	35	36	1
9115410-005/6	1,1-DICHLOROETHENE (EPA 8240)	ug/kg	ND	44.8	46.6	50.0	90	93	92	4
9115410-005/6	TRICHLOROETHENE (EPA 8240)	ug/kg	ND	47.1	46.6	50.0	94	93	94	1
9115410-005/6	BENZENE (EPA 8240)	ug/kg	ND	50.9	52.3	50.0	102	105	104	3
9115410-005/6	TOLUENE (EPA 8240)	ug/kg	ND	52.0	55.1	50.0	104	110	107	6
9115410-005/6	CHLOROBENZENE (EPA 8240)	ug/kg	ND	48.2	48.5	50.0	96	97	96	1
9115410-001	CYANIDE, TOTAL (EPA 9012)	mg/kg	ND	4.85	5.10	5	97	102	100	5
9115602-021	CYANIDE, TOTAL (EPA 9012)	mg/kg	ND	41.2	41.2	50.0	82	82	82	0

Matrix Spike/Matrix Spike Duplicate Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
9115410-001	11-JUN-1991	CYANIDE, TOTAL (EPA 9012)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-007
			G-9115410-008
9115410-004	10-JUN-1991	MERCURY (EPA 7471)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
9115410-004A	10-JUN-1991	ARSENIC (EPA 6010)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
	10-JUN-1991	CADMIUM (EPA 6010)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
	10-JUN-1991	CHROMIUM (EPA 6010)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
	10-JUN-1991	COPPER (EPA 6010)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
	10-JUN-1991	LEAD (EPA 6010)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
	10-JUN-1991	NICKEL (EPA 6010)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
	10-JUN-1991	ZINC (EPA 6010)	G-9115410-001
			G-9115410-004

Matrix Spike/Matrix Spike Duplicate Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
9115410-005	6-JUN-1991	LINDANE (EPA 8080)	G-9115410-001
			G-9115410-004
			G-9115410-007
			G-9115410-008
	6-JUN-1991	HEPTACHLOR (EPA 8080)	G-9115410-001
			G-9115410-004
			G-9115410-007
			G-9115410-008
	6-JUN-1991	ALDRIN (EPA 8080)	G-9115410-001
			G-9115410-004
			G-9115410-007
			G-9115410-008
	6-JUN-1991	DIELDRIN (EPA 8080)	G-9115410-001
			G-9115410-004
			G-9115410-007
			G-9115410-008
	6-JUN-1991	ENDRIN (EPA 8080)	G-9115410-001
			G-9115410-004
			G-9115410-007
			G-9115410-008
	6-JUN-1991	4,4'-DDT (EPA 8080)	G-9115410-001
			G-9115410-004
			G-9115410-007
			G-9115410-008
9115410-005/6	5-JUN-1991	1,1-DICHLOROETHENE (EPA 8240)	G-9115410-001
			G-9115410-004
			G-9115410-007
			G-9115410-008
	5-JUN-1991	TRICHLOROETHENE (EPA 8240)	G-9115410-001
			G-9115410-004
			G-9115410-007
			G-9115410-008

Matrix Spike/Matrix Spike Duplicate Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
	5-JUN-1991	BENZENE (EPA 8240)	G-9115410-001
			G-9115410-004
			G-9115410-007
			G-9115410-008
	5-JUN-1991	TOLUENE (EPA 8240)	G-9115410-001
			G-9115410-004
			G-9115410-007
			G-9115410-008
	5-JUN-1991	CHLOROBENZENE (EPA 8240)	G-9115410-001
			G-9115410-004
			G-9115410-007
			G-9115410-008
9115410-005B	4-JUN-1991	ACENAPHTHENE (EPA 8100)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
	4-JUN-1991	PYRENE (EPA 8100)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
9115602-021	12-JUN-1991	CYANIDE, TOTAL (EPA 9012)	G-9115410-006

Matrix Spike/Matrix Spike Duplicate Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
9115410-001	11-JUN-1991	CYANIDE, TOTAL (EPA 9012)	G-9115410-002 G-9115410-003
9115410-004	10-JUN-1991	MERCURY (EPA 7471)	G-9115410-002 G-9115410-003
9115410-004A	10-JUN-1991	ARSENIC (EPA 6010)	G-9115410-002 G-9115410-003
	10-JUN-1991	CADMIUM (EPA 6010)	G-9115410-002 G-9115410-003
	10-JUN-1991	CHROMIUM (EPA 6010)	G-9115410-002 G-9115410-003
	10-JUN-1991	COPPER (EPA 6010)	G-9115410-002 G-9115410-003
	10-JUN-1991	LEAD (EPA 6010)	G-9115410-002 G-9115410-003
	10-JUN-1991	NICKEL (EPA 6010)	G-9115410-002 G-9115410-003
	10-JUN-1991	ZINC (EPA 6010)	G-9115410-002 G-9115410-003
9115410-005	6-JUN-1991	LINDANE (EPA 8080)	G-9115410-002 G-9115410-003
	6-JUN-1991	HEPTACHLOR (EPA 8080)	G-9115410-002 G-9115410-003
	6-JUN-1991	ALDRIN (EPA 8080)	G-9115410-002 G-9115410-003
	6-JUN-1991	HEPTACHLOR (EPA 8080)	G-9115410-002 G-9115410-003
	6-JUN-1991	DIELDRIN (EPA 8080)	G-9115410-002 G-9115410-003
	6-JUN-1991	ENDRIN (EPA 8080)	G-9115410-002 G-9115410-003
	6-JUN-1991	4,4'-DDT (EPA 8080)	G-9115410-002 G-9115410-003
	6-JUN-1991	ENDRIN (EPA 8080)	G-9115410-002 G-9115410-003
	6-JUN-1991	AROCLOR-1254 (EPA 8080)	G-9115410-002 G-9115410-003
9115410-005/6	5-JUN-1991	1,1-DICHLOROETHENE (EPA 8240)	G-9115410-002 G-9115410-003
	5-JUN-1991	TRICHLOROETHENE (EPA 8240)	G-9115410-002 G-9115410-003
	5-JUN-1991	BENZENE (EPA 8240)	G-9115410-002 G-9115410-003
	5-JUN-1991	TOLUENE (EPA 8240)	G-9115410-002 G-9115410-003
	5-JUN-1991	CHLOROBENZENE (EPA 8240)	G-9115410-002 G-9115410-003

Matrix Spike/Matrix Spike Duplicate Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
9115410-005B	4-JUN-1991	ACENAPHTHENE (EPA 8100)	G-9115410-002 G-9115410-003
	4-JUN-1991	PYRENE (EPA 8100)	G-9115410-002 G-9115410-003

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE
Project: (55-1738-28) NORTHWEST COOPERAGE

Analysis No.: G-9115410-001/008
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Laboratory Control Sample Report

QC Batch	Parameter (Method)	Amt. Spiked	Units	Avg. Spike Recov.	Acceptable Range	Rel. Pct. Diff.	Acceptable Range
L91163016	ARSENIC (EPA 6010)	50	mg/kg	100	80-120	2.	20
L91163016	CADMIUM (EPA 6010)	5	mg/kg	90	80-120	0.	20
L91163016	CHROMIUM (EPA 6010)	20	mg/kg	96	80-120	4.	20
L91163016	COPPER (EPA 6010)	25	mg/kg	101	80-120	2.	20
L91163016	LEAD (EPA 6010)	50	mg/kg	96	80-120	1.	20
L91163016	NICKEL (EPA 6010)	50	mg/kg	94	80-120	1.	20
L91163016	ZINC (EPA 6010)	50	mg/kg	99	80-120	2.	20
L91162027	MERCURY (EPA 7471)	.175	mg/kg	112	51-125	6.	42
L91154013	LINDANE (EPA 8080)	33.3	ug/kg	102	39-113	2.	33
L91154013	HEPTACHLOR (EPA 8080)	33.3	ug/kg	105	36-114	11.	32
L91154013	ALDRIN (EPA 8080)	33.3	ug/kg	106	37-109	0.	30
L91154013	DIELDRIN (EPA 8080)	33.3	ug/kg	105	56-112	3.	24
L91154013	ENDRIN (EPA 8080)	33.3	ug/kg	71	52-124	24.	27
L91154013	4,4'-DDT (EPA 8080)	33.3	ug/kg	91	49-123	2.	25
L91161010	ACENAPHTHENE (EPA 8100)	6.66	mg/kg	53	22-127	3.	31
L91161010	PYRENE (EPA 8100)	6.66	mg/kg	45	15-138	1.	36
91156040	1,1-DICHLOROETHENE (EPA 8240)	50.0	ug/kg	76	49-133	2.	15
L91156040	TRICHLOROETHENE (EPA 8240)	50.0	ug/kg	84	76-128	3.	15
L91156040	BENZENE (EPA 8240)	50.0	ug/kg	88	79-118	3.	14
L91156040	TOLUENE (EPA 8240)	50.0	ug/kg	89	75-118	1.	14
L91156040	CHLOROBENZENE (EPA 8240)	50.0	ug/kg	85	74-129	2.	14
L91164003	CYANIDE, TOTAL (EPA 9012)	5.00	mg/kg	86	69-124	8.	20
L91164017	CYANIDE, TOTAL (EPA 9012)	5	mg/kg	88	69-124	9.	20

Laboratory Control Sample Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
L91154013	24-MAY-1991	LINDANE (EPA 8080)	G-9115410-001
			G-9115410-004
			G-9115410-007
			G-9115410-008
		HEPTACHLOR (EPA 8080)	G-9115410-001
			G-9115410-004
			G-9115410-007
			G-9115410-008
		ALDRIN (EPA 8080)	G-9115410-001
			G-9115410-004
			G-9115410-007
			G-9115410-008
		DIELDRIN (EPA 8080)	G-9115410-001
			G-9115410-004
			G-9115410-007
			G-9115410-008
		ENDRIN (EPA 8080)	G-9115410-001
			G-9115410-004
			G-9115410-007
			G-9115410-008
		4,4'-DDT (EPA 8080)	G-9115410-001
			G-9115410-004
			G-9115410-007
			G-9115410-008
L91156040	4-JUN-1991	1,1-DICHLOROETHENE (EPA 8240)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
		TRICHLOROETHENE (EPA 8240)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
		BENZENE (EPA 8240)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008

Laboratory Control Sample Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
		TOLUENE (EPA 8240)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
		CHLOROBENZENE (EPA 8240)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
L91161010	25-MAY-1991	ACENAPHTHENE (EPA 8100)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
		PYRENE (EPA 8100)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
L91162027	10-JUN-1991	MERCURY (EPA 7471)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
L91163016	10-JUN-1991	LEAD (EPA 6010)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
		NICKEL (EPA 6010)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
		CADMIUM (EPA 6010)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008

Laboratory Control Sample Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
		ZINC (EPA 6010)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
		COPPER (EPA 6010)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
		CHROMIUM (EPA 6010)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
		ARSENIC (EPA 6010)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-006
			G-9115410-007
			G-9115410-008
L91164003	11-JUN-1991	CYANIDE, TOTAL (EPA 9012)	G-9115410-001
			G-9115410-004
			G-9115410-005
			G-9115410-007
			G-9115410-008
L91164017	12-JUN-1991	CYANIDE, TOTAL (EPA 9012)	G-9115410-006

Laboratory Control Sample Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
L91154013	24-MAY-1991	LINDANE (EPA 8080)	G-9115410-002
			G-9115410-003
		HEPTACHLOR (EPA 8080)	G-9115410-002
			G-9115410-003
		ALDRIN (EPA 8080)	G-9115410-002
			G-9115410-003
		HEPTACHLOR (EPA 8080)	G-9115410-002
			G-9115410-003
		DIELDRIN (EPA 8080)	G-9115410-002
			G-9115410-003
		ENDRIN (EPA 8080)	G-9115410-002
			G-9115410-003
		4,4'-DDT (EPA 8080)	G-9115410-002
			G-9115410-003
		ENDRIN (EPA 8080)	G-9115410-002
			G-9115410-003
L91156040	4-JUN-1991	1,1-DICHLOROETHENE (EPA 8240)	G-9115410-002
			G-9115410-003
		TRICHLOROETHENE (EPA 8240)	G-9115410-002
			G-9115410-003
		BENZENE (EPA 8240)	G-9115410-002
			G-9115410-003
		TOLUENE (EPA 8240)	G-9115410-002
			G-9115410-003
		CHLOROBENZENE (EPA 8240)	G-9115410-002
			G-9115410-003
L91161010	25-MAY-1991	ACENAPHTHENE (EPA 8100)	G-9115410-002
			G-9115410-003
		PYRENE (EPA 8100)	G-9115410-002
			G-9115410-003
L91162027	10-JUN-1991	MERCURY (EPA 7471)	G-9115410-002
			G-9115410-003
L91163016	10-JUN-1991	LEAD (EPA 6010)	G-9115410-002
			G-9115410-003
		NICKEL (EPA 6010)	G-9115410-002
			G-9115410-003
		CADMIUM (EPA 6010)	G-9115410-002
			G-9115410-003
		ZINC (EPA 6010)	G-9115410-002
			G-9115410-003
		COPPER (EPA 6010)	G-9115410-002
			G-9115410-003
		CHROMIUM (EPA 6010)	G-9115410-002
			G-9115410-003
		ARSENIC (EPA 6010)	G-9115410-002
			G-9115410-003

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Laboratory Control Sample Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
L91164003	11-JUN-1991	CYANIDE, TOTAL (EPA 9012)	G-9115410-002 G-9115410-003

Table 2 - Results of Chemical Analyses, USEPA Soil Analysis

(Reference "Log and Sample Data Sheets" for Soil Sample Locations)
September 18-19, 1986
Concentration in ppm

	Soil Boring B-1A				Soil Boring B-3A				Soil Boring B-4			Soil Boring B-5				
Analyte / Location	S	C-1	C-2	C-3	S	C-1	C-2	C-3	C-1	C-2	C-3	S-1	C-1	C-2	C-3	S-2
Antimony	0.200	ND	0.600	0.400	ND	0.200	0.100	0.200	0.200	0.203	0.500	ND	ND	0.300	0.100	0.200
Arsenic	7.800	2.930	3.400	7.660	1.200	3.203	6.400	1.300	1.500	4.100	2.100	4.800	2.400	3.900	1.800	3.000
Beryllium	3.500	2.900	2.700	3.600	1.100	1.500	2.900	1.400	1.700	3.000	1.200	3.900	1.700	3.630	2.300	3.300
Cadmium	0.720	0.740	0.840	0.660	0.040	0.720	1.530	0.150	0.220	0.150	0.050	0.060	ND	0.070	0.030	0.050
Chromium	22.600	50.500	55.100	22.500	7.600	32.600	38.600	12.400	12.200	11.600	13.600	14.600	7.600	14.090	10.400	13.330
Copper	40.600	45.500	56.730	48.090	14.100	21.500	41.600	12.800	33.100	26.800	10.900	35.500	12.700	35.300	18.300	28.300
Lead	56.900	157.800	171.330	51.500	7.400	444.000	158.200	28.300	22.690	1.030	3.500	0.800	0.600	1.700	ND	ND
Mercury	0.050	0.190	0.223	0.050	0.020	0.263	2.180	0.360	0.120	0.020	0.010	3.020	0.030	0.020	0.020	0.020
Nickel	14.400	31.900	26.300	15.900	5.900	9.700	14.900	6.400	7.600	13.100	5.000	10.300	6.730	11.200	8.500	9.900
Silver	0.110	0.100	0.143	0.130	ND	0.030	0.170	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	91.000	140.000	141.000	87.000	19.000	149.000	217.000	33.300	37.000	34.200	22.000	35.000	32.000	35.000	29.000	32.000
Total Cyanide	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total Phenol	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vinyl Chloride	ND	ND	ND	ND	ND	ND	0.015	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	0.023	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	ND	ND	ND	ND	ND	ND	0.072	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	ND	0.420	0.350	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	0.012	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene, all Isomers	ND	1.300	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ND	2.800	2.900	ND	ND	1.700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloro-m-cresol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	ND	0.720	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	ND	0.600	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	ND	1.300	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	ND	0.360	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibutylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	ND	1.100	ND	ND	ND	0.500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	ND	ND	0.970	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butyl benzyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-octyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	ND	0.630	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ND	1.100	ND	ND	ND	2.000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methylphenol	ND	0.500	ND	ND	ND	0.600	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCB 1248	1.930	4.270	3.480	3.420	1.050	12.400	1.670	2.310	0.420	ND	ND	ND	ND	ND	ND	ND
PCB 1260	1.100	2.210	2.040	1.450	0.520	2.300	[illegible]	0.750	[illegible]							

Notes: This table summarizes the results of the analyses performed. Refer to Appendix A for discussion of sampling technique. Refer to Appendix B for method references, limits of detection, quality control information, and information regarding trace quantities.

ND = undetected, values that are estimated, values that did not meet MS criteria and values at estimated detection limit.

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-005
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
% Moisture: 14.9 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: MANHOLE SED 1 MS

Metals Prepared by EPA 3050 By NL on 10-JUN-1991

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Cyanide, Total (EPA 9012)	mg/kg	15.7	0.59	ND	0.5	06/11/91	06/11/91	TM
Arsenic (EPA 6010)	mg/kg	54.1	12	ND	10	06/10/91	06/11/91	JW
Cadmium (EPA 6010)	mg/kg	4.7	0.59	ND	0.5	06/10/91	06/11/91	JW
Chromium (EPA 6010)	mg/kg	46.5	1.2	ND	1	06/10/91	06/11/91	JW
Copper (EPA 6010)	mg/kg	67.2	2.4	ND	2	06/10/91	06/11/91	JW
Lead (EPA 6010)	mg/kg	152	5.9	ND	5	06/10/91	06/11/91	JW
Nickel (EPA 6010)	mg/kg	75.6	4.7	ND	4	06/10/91	06/11/91	JW
Zinc (EPA 6010)	mg/kg	137	2.4	ND	2	06/10/91	06/11/91	JW
Mercury (EPA 7471)	mg/kg	0.31	0.12	ND	0.1	06/10/91	06/11/91	CV
Moisture (ASTM D-2216)	%	14.9	0.1	ND	0.1	06/07/91	06/07/91	DR

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-005
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
Date Prepared: 4-JUN-1991
Prep Method: EPA 3550 By: JB
Date Analyzed: 6-JUN-1991 By: LT
% Moisture: 14.9 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: MANHOLE SED 1 MS

Organochlorine Pesticides & PCB'S (EPA 8080)

Units: ug/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
alpha-BHC	NA	8.0	NA	1.7
beta-BHC	NA	8.0	NA	1.7
delta-BHC	NA	8.0	NA	1.7
Lindane	36	8.0	NA	1.7
Heptachlor	39	8.0	NA	1.7
Aldrin	47	8.0	NA	1.7
Heptachlor epoxide	NA	8.0	NA	1.7
Endosulfan I	NA	8.0	NA	1.7
Dieldrin	54	16	NA	3.4
4,4'-DDE	NA	16	NA	3.4
Endrin	29	16	NA	3.4
Endosulfan II	NA	16	NA	3.4
4,4'-DDD	NA	16	NA	3.4
Endosulfan sulfate	NA	16	NA	3.4
4,4'-DDT	44	16	NA	3.4
Endrin Aldehyde	NA	16	NA	3.4
Methoxychlor	NA	80	NA	17
Technical Chlordane	NA	80	NA	17
Toxaphene	NA	170	NA	34
Aroclor-1016	NA	80	NA	17
Aroclor-1221	NA	80	NA	17
Aroclor-1232	NA	80	NA	17
Aroclor-1242	NA	80	NA	17
Aroclor-1248	NA	80	NA	17
Aroclor-1254	NA	80	NA	17
Aroclor-1260	NA	80	NA	17

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-005
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Project: (55-1738-28) NORTHWEST COOPERAGE

Organochlorine Pesticides & PCB'S (EPA 8080) Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
4-JUN-1991	DIBUTYL CHLORENDATE (DBC) (EPA 8080)	38	36-134

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-005
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
Date Prepared: 6-JUN-1991
Prep Method: EPA 5030 By: LR
Date Analyzed: 6-JUN-1991 By: LR
% Moisture: 14.9 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: MANHOLE SED 1 MS

Purgeable Organics, EPA 8240

Units: ug/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
Chloromethane	ND	12	ND	10
Bromomethane	ND	12	ND	10
Vinyl Chloride	ND	12	ND	10
Chloroethane	ND	12	ND	10
Methylene Chloride	7.1	5.9	ND	5
Acetone	ND	12	ND	10
Carbon Disulfide	ND	5.9	ND	5
Trichlorofluoromethane	ND	5.9	ND	5
1,1-Dichloroethene	55	5.9	ND	5
1,1-Dichloroethane	ND	5.9	ND	5
Total 1,2-Dichloroethene	ND	5.9	ND	5
Chloroform	ND	5.9	ND	5
1,2-Dichloroethane	ND	5.9	ND	5
2-Butanone	ND	12	ND	10
1,1,1-Trichloroethane	ND	5.9	ND	5
Carbon Tetrachloride	ND	5.9	ND	5
Vinyl Acetate	ND	12	ND	10
Bromodichloromethane	ND	5.9	ND	5
1,2-Dichloropropane	ND	5.9	ND	5
cis-1,3-Dichloropropene	ND	5.9	ND	5
Trichloroethene	55	5.9	ND	5
Dibromochloromethane	ND	5.9	ND	5
1,1,2-Trichloroethane	ND	5.9	ND	5
Benzene	61	5.9	ND	5
cis-1,3-Dichloropropene	ND	5.9	ND	5
2-Chloroethylvinyl ether	ND	12	ND	10
Bromoform	ND	5.9	ND	5
4-Methyl-2-pentanone	ND	12	ND	10
2-Hexanone	ND	12	ND	10
Tetrachloroethene	ND	5.9	ND	5
1,1,2,2-Tetrachloroethane	ND	5.9	ND	5
Toluene	65	5.9	ND	5
Chlorobenzene	58	5.9	ND	5
Ethylbenzene	ND	5.9	ND	5
Styrene	ND	5.9	ND	5
Xylenes, Total	ND	5.9	ND	5

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-005
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Project: (55-1738-28) NORTHWEST COOPERAGE

Purgeable Organics, EPA 8240 Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
6-JUN-1991	1,2 DICHLOROETHANE-D4 (EPA 8240)	96	70-135
6-JUN-1991	TOLUENE-D8 (EPA 8240)	107	69-138
6-JUN-1991	BROMOFLUOROBENZENE (EPA 8240)	88	60-137

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-005
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
Date Prepared: 4-JUN-1991
Prep Method: EPA 3550 By: JB
Date Analyzed: 7-JUN-1991 By: SW
% Moisture: 14.9 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: MANHOLE SED 1 MS

Polynuclear Aromatics EPA 8270 (8100 Analytes)

Units: mg/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
Naphthalene	ND	0.39	ND	0.33
Acenaphthylene	ND	0.39	ND	0.33
Acenaphthene	3.4	0.39	ND	0.33
Fluorene	ND	0.39	ND	0.33
Phenanthrene	ND	0.39	ND	0.33
Anthracene	ND	0.39	ND	0.33
Fluoranthene	ND	0.39	ND	0.33
Pyrene	2.8	0.39	ND	0.33
Benzo(a)anthracene	ND	0.39	ND	0.33
Chrysene	ND	0.39	ND	0.33
Benzo(b)fluoranthene	ND	0.39	ND	0.33
Benzo(k)fluoranthene	ND	0.39	ND	0.33
Benzo(a)pyrene	ND	0.39	ND	0.33
Indeno(1,2,3-cd)pyrene	ND	0.39	ND	0.33
Dibenz(a,h)anthracene	ND	0.39	ND	0.33
Benzo(g,h,i)perylene	ND	0.39	ND	0.33

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-005
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Project: (55-1738-28) NORTHWEST COOPERAGE

Polynuclear Aromatics EPA 8270 (8100 Analytes)Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
4-JUN-1991	2-FLUOROBIPHENYL (EPA 8100)	65	20-137
4-JUN-1991	NITROBENZENE-D5 (EPA 8100)	64	20-139
4-JUN-1991	TERPHENYL-D14 (EPA 8100)	65	20-180

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-006
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
% Moisture: 16.5 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: MANHOLE SED 1 MSD

Metals Prepared by EPA 3050 By NL on 10-JUN-1991

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Cyanide, Total (EPA 9012)	mg/kg	15.6	0.6	ND	0.5	06/12/91	06/12/91	TM
Arsenic (EPA 6010)	mg/kg	59.3	12	ND	10	06/10/91	06/11/91	JW
Cadmium (EPA 6010)	mg/kg	5.0	0.6	ND	0.5	06/10/91	06/11/91	JW
Chromium (EPA 6010)	mg/kg	48.4	1.2	ND	1	06/10/91	06/11/91	JW
Copper (EPA 6010)	mg/kg	70.5	2.4	ND	2	06/10/91	06/11/91	JW
Lead (EPA 6010)	mg/kg	157	6.0	ND	5	06/10/91	06/11/91	JW
Nickel (EPA 6010)	mg/kg	79.5	4.8	ND	4	06/10/91	06/11/91	JW
Zinc (EPA 6010)	mg/kg	144	2.4	ND	2	06/10/91	06/11/91	JW
Mercury (EPA 7471)	mg/kg	0.31	0.12	ND	0.1	06/10/91	06/11/91	CV
Moisture (ASTM D-2216)	%	16.5	0.1	ND	0.1	06/07/91	06/07/91	DR

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-006
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
Date Prepared: 4-JUN-1991
Prep Method: EPA 3550 By: JB
Date Analyzed: 6-JUN-1991 By: LT
% Moisture: 16.5 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: MANHOLE SED 1 MSD

Organochlorine Pesticides & PCB'S (EPA 8080)

Units: ug/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
alpha-BHC	NA	8.1	NA	1.7
beta-BHC	NA	8.1	NA	1.7
delta-BHC	NA	8.1	NA	1.7
Lindane	42	8.1	NA	1.7
Heptachlor	45	8.1	NA	1.7
Aldrin	50	8.1	NA	1.7
Heptachlor epoxide	NA	8.1	NA	1.7
Endosulfan I	NA	8.1	NA	1.7
Dieldrin	71	17	NA	3.4
4,4'-DDE	NA	17	NA	3.4
Endrin	33	17	NA	3.4
Endosulfan II	NA	17	NA	3.4
4,4'-DDD	NA	17	NA	3.4
Endosulfan sulfate	NA	17	NA	3.4
4,4'-DDT	50	17	NA	3.4
Endrin Aldehyde	NA	17	NA	3.4
Methoxychlor	NA	81	NA	17
Technical Chlordane	NA	81	NA	17
Toxaphene	NA	170	NA	34
Aroclor-1016	NA	81	NA	17
Aroclor-1221	NA	81	NA	17
Aroclor-1232	NA	81	NA	17
Aroclor-1242	NA	81	NA	17
Aroclor-1248	NA	81	NA	17
Aroclor-1254	NA	81	NA	17
Aroclor-1260	NA	81	NA	17

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-006
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Project: (55-1738-28) NORTHWEST COOPERAGE

Organochlorine Pesticides & PCB'S (EPA 8080) Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
4-JUN-1991	DIBUTYL CHLORENDATE (DBC) (EPA 8080)	39	36-134

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-006
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
Date Prepared: 6-JUN-1991
Prep Method: EPA 5030 By: LR
Date Analyzed: 6-JUN-1991 By: LR
% Moisture: 16.5 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: MANHOLE SED 1 MSD

Purgeable Organics, EPA 8240

Units: ug/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
Chloromethane	ND	12	ND	10
Bromomethane	ND	12	ND	10
Vinyl Chloride	ND	12	ND	10
Chloroethane	ND	12	ND	10
Methylene Chloride	6.8	6.0	ND	5
Acetone	ND	12	ND	10
Carbon Disulfide	ND	6.0	ND	5
Trichlorofluoromethane	ND	6.0	ND	5
1,1-Dichloroethene	54	6.0	ND	5
1,1-Dichloroethane	ND	6.0	ND	5
Total 1,2-Dichloroethene	ND	6.0	ND	5
Chloroform	ND	6.0	ND	5
1,2-Dichloroethane	ND	6.0	ND	5
2-Butanone	ND	12	ND	10
1,1,1-Trichloroethane	ND	6.0	ND	5
Carbon Tetrachloride	ND	6.0	ND	5
Vinyl Acetate	ND	12	ND	10
Bromodichloromethane	ND	6.0	ND	5
1,2-Dichloropropane	ND	6.0	ND	5
cis-1,3-Dichloropropene	ND	6.0	ND	5
Trichloroethene	56	6.0	ND	5
Dibromochloromethane	ND	6.0	ND	5
1,1,2-Trichloroethane	ND	6.0	ND	5
Benzene	61	6.0	ND	5
cis-1,3-Dichloropropene	ND	6.0	ND	5
2-Chloroethylvinyl ether	ND	12	ND	10
Bromoform	ND	6.0	ND	5
4-Methyl-2-pentanone	ND	12	ND	10
2-Hexanone	ND	12	ND	10
Tetrachloroethene	ND	6.0	ND	5
1,1,2,2-Tetrachloroethane	ND	6.0	ND	5
Toluene	62	6.0	ND	5
Chlorobenzene	57	6.0	ND	5
Ethylbenzene	ND	6.0	ND	5
Styrene	ND	6.0	ND	5
Xylenes, Total	ND	6.0	ND	5

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-006
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Project: (55-1738-28) NORTHWEST COOPERAGE

Purgeable Organics, EPA 8240 Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
6-JUN-1991	1,2 DICHLOROETHANE-D4 (EPA 8240)	97	70-135
6-JUN-1991	TOLUENE-D8 (EPA 8240)	103	69-138
6-JUN-1991	BROMOFLUOROBENZENE (EPA 8240)	89	60-137

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-006
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
Date Prepared: 4-JUN-1991
Prep Method: EPA 3550 By: JB
Date Analyzed: 7-JUN-1991 By: SW
% Moisture: 16.5 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: MANHOLE SED 1 MSD

Polynuclear Aromatics EPA 8270 (8100 Analytes)

Units: mg/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
Naphthalene	ND	0.4	ND	0.33
Acenaphthylene	ND	0.4	ND	0.33
Acenaphthene	3.6	0.4	ND	0.33
Fluorene	ND	0.4	ND	0.33
Phenanthrene	ND	0.4	ND	0.33
Anthracene	ND	0.4	ND	0.33
Fluoranthene	ND	0.4	ND	0.33
Pyrene	2.9	0.4	ND	0.33
Benzo(a)anthracene	ND	0.4	ND	0.33
Chrysene	ND	0.4	ND	0.33
Benzo(b)fluoranthene	ND	0.4	ND	0.33
Benzo(k)fluoranthene	ND	0.4	ND	0.33
Benzo(a)pyrene	ND	0.4	ND	0.33
Indeno(1,2,3-cd)pyrene	ND	0.4	ND	0.33
Dibenz(a,h)anthracene	ND	0.4	ND	0.33
Benzo(g,h,i)perylene	ND	0.4	ND	0.33

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-006
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Project: (55-1738-28) NORTHWEST COOPERAGE

Polynuclear Aromatics EPA 8270 (8100 Analytes)Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
4-JUN-1991	2-FLUOROBIPHENYL (EPA 8100)	71	20-137
4-JUN-1991	NITROBENZENE-D5 (EPA 8100)	72	20-139
4-JUN-1991	TERPHENYL-D14 (EPA 8100)	63	20-180

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-004
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
% Moisture: 16.9 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: MANHOLE SED 1

Metals Prepared by EPA 3050 By NL on 10-JUN-1991

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Cyanide, Total (EPA 9012)	mg/kg	ND	0.6	ND	0.5	06/11/91	06/11/91	TM
Arsenic (EPA 6010)	mg/kg	ND	12	ND	10	06/10/91	06/11/91	JW
Cadmium (EPA 6010)	mg/kg	ND	0.6	ND	0.5	06/10/91	06/11/91	JW
Chromium (EPA 6010)	mg/kg	27.7	1.2	ND	1	06/10/91	06/11/91	JW
Copper (EPA 6010)	mg/kg	40.0	2.4	ND	2	06/10/91	06/11/91	JW
Lead (EPA 6010)	mg/kg	93.3	6.0	ND	5	06/10/91	06/11/91	JW
Nickel (EPA 6010)	mg/kg	26.6	4.8	ND	4	06/10/91	06/11/91	JW
Zinc (EPA 6010)	mg/kg	90.6	2.4	ND	2	06/10/91	06/11/91	JW
Mercury (EPA 7471)	mg/kg	ND	0.12	ND	0.1	06/10/91	06/11/91	CV
Moisture (ASTM D-2216)	%	16.9	0.1	ND	0.1	06/07/91	06/07/91	DR

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-004
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
Date Prepared: 4-JUN-1991
Prep Method: EPA 3550 By: JB
Date Analyzed: 8-JUN-1991 By: LT
% Moisture: 16.9 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: MANHOLE SED 1

Organochlorine Pesticides & PCB'S (EPA 8080)

Units: ug/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL	FN
alpha-BHC	ND	4.1	ND	1.7	G
beta-BHC	ND	4.1	ND	1.7	G
delta-BHC	ND	4.1	ND	1.7	G
Lindane	ND	4.1	ND	1.7	G
Heptachlor	ND	4.1	ND	1.7	G
Aldrin	ND	4.1	ND	1.7	G
Heptachlor epoxide	ND	4.1	ND	1.7	G
Endosulfan I	ND	4.1	ND	1.7	G
Dieldrin	ND	8.2	ND	3.4	G
4,4'-DDE	ND	8.2	ND	3.4	G
Endrin	ND	8.2	ND	3.4	G
Endosulfan II	ND	8.2	ND	3.4	G
4,4'-DDD	ND	8.2	ND	3.4	G
Endosulfan sulfate	ND	8.2	ND	3.4	G
4,4'-DDT	ND	8.2	ND	3.4	G
Endrin Aldehyde	ND	8.2	ND	3.4	G
Methoxychlor	ND	41	ND	17	G
Technical Chlordane	ND	41	ND	17	G
Toxaphene	ND	82	ND	34	G
Aroclor-1016	ND	41	ND	17	G
Aroclor-1221	ND	41	ND	17	G
Aroclor-1232	ND	41	ND	17	G
Aroclor-1242	ND	41	ND	17	G
Aroclor-1248	ND	41	ND	17	G
Aroclor-1254	ND	41	ND	17	G
Aroclor-1260	ND	41	ND	17	G

G Reporting limit elevated due to sample matrix interference.

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-004
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Project: (55-1738-28) NORTHWEST COOPERAGE

Organochlorine Pesticides & PCB'S (EPA 8080) Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range	FN
4-JUN-1991	DIBUTYL CHLORENDATE (DBC) (EPA 8080)	27	36-134	I

I Surrogate recovery outside of limits due to sample matrix interference.

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-004
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
Date Prepared: 6-JUN-1991
Prep Method: EPA 5030 By: LR
Date Analyzed: 6-JUN-1991 By: LR
% Moisture: 16.9 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: MANHOLE SED 1

Purgeable Organics, EPA 8240

Units: ug/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
Chloromethane	ND	12	ND	10
Bromomethane	ND	12	ND	10
Vinyl Chloride	ND	12	ND	10
Chloroethane	ND	12	ND	10
Methylene Chloride	6.6	6.0	ND	5
Acetone	ND	12	ND	10
Carbon Disulfide	ND	6.0	ND	5
Trichlorofluoromethane	ND	6.0	ND	5
1,1-Dichloroethene	ND	6.0	ND	5
1,1-Dichloroethane	ND	6.0	ND	5
Total 1,2-Dichloroethene	ND	6.0	ND	5
Chloroform	ND	6.0	ND	5
1,2-Dichloroethane	ND	6.0	ND	5
2-Butanone	ND	12	ND	10
1,1,1-Trichloroethane	ND	6.0	ND	5
Carbon Tetrachloride	ND	6.0	ND	5
Vinyl Acetate	ND	12	ND	10
Bromodichloromethane	ND	6.0	ND	5
1,2-Dichloropropane	ND	6.0	ND	5
cis-1,3-Dichloropropene	ND	6.0	ND	5
Trichloroethene	ND	6.0	ND	5
Dibromochloromethane	ND	6.0	ND	5
1,1,2-Trichloroethane	ND	6.0	ND	5
Benzene	ND	6.0	ND	5
cis-1,3-Dichloropropene	ND	6.0	ND	5
2-Chloroethylvinyl ether	ND	12	ND	10
Bromoform	ND	6.0	ND	5
4-Methyl-2-pentanone	ND	12	ND	10
2-Hexanone	ND	12	ND	10
Tetrachloroethene	ND	6.0	ND	5
1,1,2,2-Tetrachloroethane	ND	6.0	ND	5
Toluene	ND	6.0	ND	5
Chlorobenzene	ND	6.0	ND	5
Ethylbenzene	ND	6.0	ND	5
Styrene	ND	6.0	ND	5
Xylenes, Total	ND	6.0	ND	5

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-004
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Project: (55-1738-28) NORTHWEST COOPERAGE

Purgeable Organics, EPA 8240 Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
6-JUN-1991	1,2 DICHLOROETHANE-D4 (EPA 8240)	93	70-135
6-JUN-1991	TOLUENE-D8 (EPA 8240)	99	69-138
6-JUN-1991	BROMOFLUOROBENZENE (EPA 8240)	88	60-137

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-004
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
Date Prepared: 4-JUN-1991
Prep Method: EPA 3550 By: JB
Date Analyzed: 8-JUN-1991 By: SW
% Moisture: 16.9 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: MANHOLE SED 1

Polynuclear Aromatics EPA 8270 (8100 Analytes)

Units: mg/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
Naphthalene	ND	0.4	ND	0.33
Acenaphthylene	ND	0.4	ND	0.33
Acenaphthene	ND	0.4	ND	0.33
Fluorene	ND	0.4	ND	0.33
Phenanthrene	ND	0.4	ND	0.33
Anthracene	ND	0.4	ND	0.33
Fluoranthene	ND	0.4	ND	0.33
Pyrene	ND	0.4	ND	0.33
Benzo(a)anthracene	ND	0.4	ND	0.33
Chrysene	ND	0.4	ND	0.33
Benzo(b)fluoranthene	ND	0.4	ND	0.33
Benzo(k)fluoranthene	ND	0.4	ND	0.33
Benzo(a)pyrene	ND	0.4	ND	0.33
Indeno(1,2,3-cd)pyrene	ND	0.4	ND	0.33
Dibenz(a,h)anthracene	ND	0.4	ND	0.33
Benzo(g,h,i)perylene	ND	0.4	ND	0.33

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-004
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Project: (55-1738-28) NORTHWEST COOPERAGE

Polynuclear Aromatics EPA 8270 (8100 Analytes)Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
4-JUN-1991	2-FLUOROBIPHENYL (EPA 8100)	76	20-137
4-JUN-1991	NITROBENZENE-D5 (EPA 8100)	74	20-139
4-JUN-1991	TERPHENYL-D14 (EPA 8100)	74	20-180

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-001
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
% Moisture: 35.6 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: SLIP SED 1

Metals Prepared by EPA 3050 By NL on 10-JUN-1991

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Cyanide, Total (EPA 9012)	mg/kg	ND	0.78	ND	0.5	06/11/91	06/11/91	TM
Arsenic (EPA 6010)	mg/kg	ND	16	ND	10	06/10/91	06/11/91	JW
Cadmium (EPA 6010)	mg/kg	ND	0.78	ND	0.5	06/10/91	06/11/91	JW
Chromium (EPA 6010)	mg/kg	60.2	1.6	ND	1	06/10/91	06/11/91	JW
Copper (EPA 6010)	mg/kg	370	3.1	ND	2	06/10/91	06/11/91	JW
Lead (EPA 6010)	mg/kg	247	7.8	ND	5	06/10/91	06/11/91	JW
Nickel (EPA 6010)	mg/kg	17.4	6.2	ND	4	06/10/91	06/11/91	JW
Zinc (EPA 6010)	mg/kg	287	3.1	ND	2	06/10/91	06/11/91	JW
Mercury (EPA 7471)	mg/kg	0.22	0.16	ND	0.1	06/10/91	06/11/91	CV
Moisture (ASTM D-2216)	%	35.6	0.1	ND	0.1	06/07/91	06/07/91	DR

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-001
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
Date Prepared: 4-JUN-1991
Prep Method: EPA 3550 By: JB
Date Analyzed: 8-JUN-1991 By: LT
% Moisture: 35.6 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: SLIP SED 1

Organochlorine Pesticides & PCB'S (EPA 8080)

Units: ug/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL	FN
alpha-BHC	ND	5.3	ND	1.7	Q
beta-BHC	ND	5.3	ND	1.7	Q
delta-BHC	ND	5.3	ND	1.7	Q
Lindane	ND	5.3	ND	1.7	Q
Heptachlor	ND	5.3	ND	1.7	Q
Aldrin	ND	5.3	ND	1.7	Q
Heptachlor epoxide	ND	5.3	ND	1.7	Q
Endosulfan I	ND	5.3	ND	1.7	Q
Dieldrin	ND	11	ND	3.4	Q
4,4'-DDE	ND	11	ND	3.4	Q
Endrin	ND	11	ND	3.4	Q
Endosulfan II	ND	11	ND	3.4	Q
4,4'-DDD	ND	11	ND	3.4	Q
Endosulfan sulfate	ND	11	ND	3.4	Q
4,4'-DDT	ND	11	ND	3.4	Q
Endrin Aldehyde	ND	11	ND	3.4	Q
Methoxychlor	ND	53	ND	17	Q
Technical Chlordane	ND	53	ND	17	Q
Toxaphene	ND	110	ND	34	Q
Aroclor-1016	ND	53	ND	17	Q
Aroclor-1221	ND	53	ND	17	Q
Aroclor-1232	ND	53	ND	17	Q
Aroclor-1242	ND	53	ND	17	Q
Aroclor-1248	ND	53	ND	17	Q
Aroclor-1254	ND	53	ND	17	Q
Aroclor-1260	220	53	ND	17	Q

Q Reporting limit raised due to high level of another analyte in sample.

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-001
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Project: (55-1738-28) NORTHWEST COOPERAGE

Organochlorine Pesticides & PCB'S (EPA 8080) Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range	FN
4-JUN-1991	DIBUTYL CHLORENDATE (DBC) (EPA 8080)	28	36-134	I

I Surrogate recovery outside of limits due to sample matrix interference.

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-001
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
Date Prepared: 6-JUN-1991
Prep Method: EPA 5030 By: LR
Date Analyzed: 6-JUN-1991 By: LR
% Moisture: 35.6 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: SLIP SED 1

Purgeable Organics, EPA 8240

Units: ug/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
Chloromethane	ND	16	ND	10
Bromomethane	ND	16	ND	10
Vinyl Chloride	ND	16	ND	10
Chloroethane	ND	16	ND	10
Methylene Chloride	ND	7.8	ND	5
Acetone	75	16	ND	10
Carbon Disulfide	ND	7.8	ND	5
Trichlorofluoromethane	ND	7.8	ND	5
1,1-Dichloroethene	ND	7.8	ND	5
1,1-Dichloroethane	ND	7.8	ND	5
Total 1,2-Dichloroethene	ND	7.8	ND	5
Chloroform	ND	7.8	ND	5
1,2-Dichloroethane	ND	7.8	ND	5
2-Butanone	ND	16	ND	10
1,1,1-Trichloroethane	ND	7.8	ND	5
Carbon Tetrachloride	ND	7.8	ND	5
Vinyl Acetate	ND	16	ND	10
Bromodichloromethane	ND	7.8	ND	5
1,2-Dichloropropane	ND	7.8	ND	5
cis-1,3-Dichloropropene	ND	7.8	ND	5
Trichloroethene	ND	7.8	ND	5
Dibromochloromethane	ND	7.8	ND	5
1,1,2-Trichloroethane	ND	7.8	ND	5
Benzene	ND	7.8	ND	5
cis-1,3-Dichloropropene	ND	7.8	ND	5
2-Chloroethylvinyl ether	ND	16	ND	10
Bromoform	ND	7.8	ND	5
4-Methyl-2-pentanone	ND	16	ND	10
2-Hexanone	ND	16	ND	10
Tetrachloroethene	ND	7.8	ND	5
1,1,2,2-Tetrachloroethane	ND	7.8	ND	5
Toluene	ND	7.8	ND	5
Chlorobenzene	ND	7.8	ND	5
Ethylbenzene	ND	7.8	ND	5
Styrene	ND	7.8	ND	5
Xylenes, Total	ND	7.8	ND	5

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-001
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Project: (55-1738-28) NORTHWEST COOPERAGE

Purgeable Organics, EPA 8240 Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
6-JUN-1991	1,2 DICHLOROETHANE-D4 (EPA 8240)	94	70-135
6-JUN-1991	TOLUENE-D8 (EPA 8240)	105	69-138
6-JUN-1991	BROMOFLUOROBENZENE (EPA 8240)	84	60-137

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-001
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
Date Prepared: 4-JUN-1991
Prep Method: EPA 3550 By: JB
Date Analyzed: 8-JUN-1991 By: SW
% Moisture: 35.6 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: SLIP SED 1

Polynuclear Aromatics EPA 8270 (8100 Analytes)

Units: mg/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
Naphthalene	ND	0.51	ND	0.33
Acenaphthylene	ND	0.51	ND	0.33
Acenaphthene	ND	0.51	ND	0.33
Fluorene	ND	0.51	ND	0.33
Phenanthrene	ND	0.51	ND	0.33
Anthracene	ND	0.51	ND	0.33
Fluoranthene	ND	0.51	ND	0.33
Pyrene	ND	0.51	ND	0.33
Benzo(a)anthracene	ND	0.51	ND	0.33
Chrysene	ND	0.51	ND	0.33
Benzo(b)fluoranthene	ND	0.51	ND	0.33
Benzo(k)fluoranthene	ND	0.51	ND	0.33
Benzo(a)pyrene	ND	0.51	ND	0.33
Indeno(1,2,3-cd)pyrene	ND	0.51	ND	0.33
Dibenz(a,h)anthracene	ND	0.51	ND	0.33
Benzo(g,h,i)perylene	ND	0.51	ND	0.33

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-001
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Project: (55-1738-28) NORTHWEST COOPERAGE

Polynuclear Aromatics EPA 8270 (8100 Analytes)Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
4-JUN-1991	2-FLUOROBIPHENYL (EPA 8100)	79	20-137
4-JUN-1991	NITROBENZENE-D5 (EPA 8100)	73	20-139
4-JUN-1991	TERPHENYL-D14 (EPA 8100)	73	20-180

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-002
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SLUDGE
% Moisture: 55.0 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: SLIP SED 2

Metals Prepared by EPA 3050 By NL on 10-JUN-1991

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Cyanide, Total (EPA 9012)	mg/kg	ND	1.1	ND	0.5	06/11/91	06/11/91	TM
Arsenic (EPA 6010)	mg/kg	ND	22	ND	10	06/10/91	06/11/91	JW
Cadmium (EPA 6010)	mg/kg	2.1	1.1	ND	0.5	06/10/91	06/11/91	JW
Chromium (EPA 6010)	mg/kg	103	2.2	ND	1	06/10/91	06/11/91	JW
Copper (EPA 6010)	mg/kg	211	4.4	ND	2	06/10/91	06/11/91	JW
Lead (EPA 6010)	mg/kg	529	11	ND	5	06/10/91	06/11/91	JW
Nickel (EPA 6010)	mg/kg	26.2	8.9	ND	4	06/10/91	06/11/91	JW
Zinc (EPA 6010)	mg/kg	362	4.4	ND	2	06/10/91	06/11/91	JW
Mercury (EPA 7471)	mg/kg	0.29	0.22	ND	0.1	06/10/91	06/11/91	CV
Moisture (ASTM D-2216)	%	55.0	0.1	ND	0.1	06/07/91	06/07/91	DR

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-002
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SLUDGE
Date Prepared: 4-JUN-1991
Prep Method: EPA 3550 By: JB
Date Analyzed: 8-JUN-1991 By: LT
% Moisture: 55.0 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: SLIP SED 2

Organochlorine Pesticides & PCB'S (EPA 8080)

Units: ug/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL	FN
alpha-BHC	ND	190	ND	1.7	Q
beta-BHC	ND	190	ND	1.7	Q
delta-BHC	ND	190	ND	1.7	Q
Lindane	ND	190	ND	1.7	Q
Heptachlor	ND	190	ND	1.7	Q
Aldrin	ND	190	ND	1.7	Q
Heptachlor epoxide	ND	190	ND	1.7	Q
Endosulfan I	ND	190	ND	1.7	Q
Dieldrin	ND	380	ND	3.4	Q
4,4'-DDE	ND	380	ND	3.4	Q
Endrin	ND	380	ND	3.4	Q
Endosulfan II	ND	380	ND	3.4	Q
4,4'-DDD	ND	380	ND	3.4	Q
Endosulfan sulfate	ND	380	ND	3.4	Q
4,4'-DDT	ND	380	ND	3.4	Q
Endrin Aldehyde	ND	380	ND	3.4	Q
Methoxychlor	ND	1900	ND	17	Q
Technical Chlordane	ND	1900	ND	17	Q
Toxaphene	ND	3800	ND	34	Q
Aroclor-1016	ND	1900	ND	17	Q
Aroclor-1221	ND	1900	ND	17	Q
Aroclor-1232	ND	1900	ND	17	Q
Aroclor-1242	ND	1900	ND	17	Q
Aroclor-1248	ND	1900	ND	17	Q
Aroclor-1254	ND	1900	ND	17	Q
Aroclor-1260	4200	1900	ND	17	Q

Q Reporting limit raised due to high level of another analyte in sample.

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-002
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SLUDGE

Project: (55-1738-28) NORTHWEST COOPERAGE

Organochlorine Pesticides & PCB'S (EPA 8080) Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range	FN
4-JUN-1991	DIBUTYL CHLORENDATE (DBC) (EPA 8080)	27	36-134	I

I Surrogate recovery outside of limits due to sample matrix interference.

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-002
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SLUDGE
Date Prepared: 6-JUN-1991
Prep Method: EPA 5030 By: LR
Date Analyzed: 6-JUN-1991 By: LR
% Moisture: 55.0 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: SLIP SED 2

Purgeable Organics, EPA 8240

Units: ug/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
Chloromethane	ND	22	ND	10
Bromomethane	ND	22	ND	10
Vinyl Chloride	ND	22	ND	10
Chloroethane	ND	22	ND	10
Methylene Chloride	11	11	ND	5
Acetone	530	22	ND	10
Carbon Disulfide	ND	11	ND	5
Trichlorofluoromethane	ND	11	ND	5
1,1-Dichloroethene	ND	11	ND	5
1,1-Dichloroethane	ND	11	ND	5
Total 1,2-Dichloroethene	ND	11	ND	5
Chloroform	ND	11	ND	5
1,2-Dichloroethane	ND	11	ND	5
2-Butanone	96	22	ND	10
1,1,1-Trichloroethane	ND	11	ND	5
Carbon Tetrachloride	ND	11	ND	5
Vinyl Acetate	ND	22	ND	10
Bromodichloromethane	ND	11	ND	5
1,2-Dichloropropane	ND	11	ND	5
cis-1,3-Dichloropropene	ND	11	ND	5
Trichloroethene	ND	11	ND	5
Dibromochloromethane	ND	11	ND	5
1,1,2-Trichloroethane	ND	11	ND	5
Benzene	ND	11	ND	5
cis-1,3-Dichloropropene	ND	11	ND	5
2-Chloroethylvinyl ether	ND	22	ND	10
Bromoform	ND	11	ND	5
4-Methyl-2-pentanone	ND	22	ND	10
2-Hexanone	ND	22	ND	10
Tetrachloroethene	ND	11	ND	5
1,1,2,2-Tetrachloroethane	ND	11	ND	5
Toluene	ND	11	ND	5
Chlorobenzene	ND	11	ND	5
Ethylbenzene	ND	11	ND	5
Styrene	ND	11	ND	5
Xylenes, Total	ND	11	ND	5

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-002
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SLUDGE

Project: (55-1738-28) NORTHWEST COOPERAGE

Purgeable Organics, EPA 8240 Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
6-JUN-1991	1,2 DICHLOROETHANE-D4 (EPA 8240)	99	70-135
6-JUN-1991	TOLUENE-D8 (EPA 8240)	113	69-138
6-JUN-1991	BROMOFLUOROBENZENE (EPA 8240)	82	60-137

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-002
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SLUDGE
Date Prepared: 4-JUN-1991
Prep Method: EPA 3550 By: JB
Date Analyzed: 7-JUN-1991 By: SW
% Moisture: 55.0 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: SLIP SED 2

Polynuclear Aromatics EPA 8270 (8100 Analytes)

Units: mg/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
Naphthalene	ND	0.73	ND	0.33
Acenaphthylene	ND	0.73	ND	0.33
Acenaphthene	ND	0.73	ND	0.33
Fluorene	ND	0.73	ND	0.33
Phenanthrene	ND	0.73	ND	0.33
Anthracene	ND	0.73	ND	0.33
Fluoranthene	ND	0.73	ND	0.33
Pyrene	ND	0.73	ND	0.33
Benzo(a)anthracene	ND	0.73	ND	0.33
Chrysene	ND	0.73	ND	0.33
Benzo(b)fluoranthene	ND	0.73	ND	0.33
Benzo(k)fluoranthene	ND	0.73	ND	0.33
Benzo(a)pyrene	ND	0.73	ND	0.33
Indeno(1,2,3-cd)pyrene	ND	0.73	ND	0.33
Dibenz(a,h)anthracene	ND	0.73	ND	0.33
Benzo(g,h,i)perylene	ND	0.73	ND	0.33

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-002
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SLUDGE

Project: (55-1738-28) NORTHWEST COOPERAGE

Polynuclear Aromatics EPA 8270 (8100 Analytes)Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
4-JUN-1991	2-FLUOROBIPHENYL (EPA 8100)	63	20-137
4-JUN-1991	NITROBENZENE-D5 (EPA 8100)	59	20-139
4-JUN-1991	TERPHENYL-D14 (EPA 8100)	82	20-180

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-003
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SLUDGE
% Moisture: 44.6 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: SLIP SED 3

Metals Prepared by EPA 3050 By NL on 10-JUN-1991

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By	FN
Cyanide, Total (EPA 9012)	mg/kg	ND	0.9	ND	0.5	06/11/91	06/11/91	TM	
Arsenic (EPA 6010)	mg/kg	ND	18	ND	10	06/10/91	06/11/91	JW	
Cadmium (EPA 6010)	mg/kg	1.5	0.9	ND	0.5	06/10/91	06/11/91	JW	
Chromium (EPA 6010)	mg/kg	89.9	1.8	ND	1	06/10/91	06/11/91	JW	
Copper (EPA 6010)	mg/kg	289	3.6	ND	2	06/10/91	06/11/91	JW	
Lead (EPA 6010)	mg/kg	422	9.0	ND	5	06/10/91	06/11/91	JW	
Nickel (EPA 6010)	mg/kg	23.6	7.2	ND	4	06/10/91	06/11/91	JW	
Zinc (EPA 6010)	mg/kg	280	3.6	ND	2	06/10/91	06/11/91	JW	
Mercury (EPA 7471)	mg/kg	1.8	0.36	ND	0.1	06/10/91	06/11/91	CV	G
Moisture (ASTM D-2216)	%	44.6	0.1	ND	0.1	06/07/91	06/07/91	DR	

G Reporting limit elevated due to sample matrix interference.

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-003
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SLUDGE
Date Prepared: 4-JUN-1991
Prep Method: EPA 3550 By: JB
Date Analyzed: 8-JUN-1991 By: LT
% Moisture: 44.6 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: SLIP SED 3

Organochlorine Pesticides & PCB'S (EPA 8080)

Units: ug/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL	FN
alpha-BHC	ND	150	ND	1.7	Q
beta-BHC	ND	150	ND	1.7	Q
delta-BHC	ND	150	ND	1.7	Q
Lindane	ND	150	ND	1.7	Q
Heptachlor	ND	150	ND	1.7	Q
Aldrin	ND	150	ND	1.7	Q
Heptachlor epoxide	ND	150	ND	1.7	Q
Endosulfan I	ND	150	ND	1.7	Q
Dieldrin	ND	310	ND	3.4	Q
4,4'-DDE	ND	310	ND	3.4	Q
Endrin	ND	310	ND	3.4	Q
Endosulfan II	ND	310	ND	3.4	Q
4,4'-DDD	ND	310	ND	3.4	Q
Endosulfan sulfate	ND	310	ND	3.4	Q
4,4'-DDT	ND	310	ND	3.4	Q
Endrin Aldehyde	ND	310	ND	3.4	Q
Methoxychlor	ND	1500	ND	17	Q
Technical Chlordane	ND	1500	ND	17	Q
Toxaphene	ND	3100	ND	34	Q
Aroclor-1016	ND	1500	ND	17	Q
Aroclor-1221	ND	1500	ND	17	Q
Aroclor-1232	ND	1500	ND	17	Q
Aroclor-1242	ND	1500	ND	17	Q
Aroclor-1248	ND	1500	ND	17	Q
Aroclor-1254	ND	1500	ND	17	Q
Aroclor-1260	940	1500	ND	17	Q

Q Reporting limit raised due to high level of another analyte in sample.

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-003
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SLUDGE

Project: (55-1738-28) NORTHWEST COOPERAGE

Organochlorine Pesticides & PCB'S (EPA 8080) Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range	FN
4-JUN-1991	DIBUTYL CHLORENDATE (DBC) (EPA 8080)	29	36-134	I

I Surrogate recovery outside of limits due to sample matrix interference.

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-003
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SLUDGE

Project: (55-1738-28) NORTHWEST COOPERAGE

Purgeable Organics, EPA 8240 Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
6-JUN-1991	1,2 DICHLOROETHANE-D4 (EPA 8240)	96	70-135
6-JUN-1991	TOLUENE-D8 (EPA 8240)	96	69-138
6-JUN-1991	BROMOFLUOROBENZENE (EPA 8240)	93	60-137

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-003
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SLUDGE
Date Prepared: 6-JUN-1991
Prep Method: EPA 5030 By: LR
Date Analyzed: 6-JUN-1991 By: LR
% Moisture: 44.6 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: SLIP SED 3

Purgeable Organics, EPA 8240

Units: ug/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
Chloromethane	ND	18	ND	10
Bromomethane	ND	18	ND	10
Vinyl Chloride	ND	18	ND	10
Chloroethane	ND	18	ND	10
Methylene Chloride	ND	9.0	ND	5
Acetone	ND	18	ND	10
Carbon Disulfide	ND	9.0	ND	5
Trichlorofluoromethane	ND	9.0	ND	5
1,1-Dichloroethene	ND	9.0	ND	5
1,1-Dichloroethane	ND	9.0	ND	5
Total 1,2-Dichloroethene	ND	9.0	ND	5
Chloroform	ND	9.0	ND	5
1,2-Dichloroethane	ND	9.0	ND	5
2-Butanone	ND	18	ND	10
1,1,1-Trichloroethane	ND	9.0	ND	5
Carbon Tetrachloride	ND	9.0	ND	5
Vinyl Acetate	ND	18	ND	10
Bromodichloromethane	ND	9.0	ND	5
1,2-Dichloropropane	ND	9.0	ND	5
cis-1,3-Dichloropropene	ND	9.0	ND	5
Trichloroethene	ND	9.0	ND	5
Dibromochloromethane	ND	9.0	ND	5
1,1,2-Trichloroethane	ND	9.0	ND	5
Benzene	ND	9.0	ND	5
cis-1,3-Dichloropropene	ND	9.0	ND	5
2-Chloroethylvinyl ether	ND	18	ND	10
Bromoform	ND	9.0	ND	5
4-Methyl-2-pentanone	ND	18	ND	10
2-Hexanone	ND	18	ND	10
Tetrachloroethene	ND	9.0	ND	5
1,1,2,2-Tetrachloroethane	ND	9.0	ND	5
Toluene	ND	9.0	ND	5
Chlorobenzene	ND	9.0	ND	5
Ethylbenzene	ND	9.0	ND	5
Styrene	ND	9.0	ND	5
Xylenes, Total	ND	9.0	ND	5

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-003
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SLUDGE
Date Prepared: 4-JUN-1991
Prep Method: EPA 3550 By: JB
Date Analyzed: 8-JUN-1991 By: SW
% Moisture: 44.6 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: SLIP SED 3

Polynuclear Aromatics EPA 8270 (8100 Analytes)

Units: mg/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
Naphthalene	ND	0.6	ND	0.33
Acenaphthylene	ND	0.6	ND	0.33
Acenaphthene	ND	0.6	ND	0.33
Fluorene	ND	0.6	ND	0.33
Phenanthrene	ND	0.6	ND	0.33
Anthracene	ND	0.6	ND	0.33
Fluoranthene	ND	0.6	ND	0.33
Pyrene	ND	0.6	ND	0.33
Benzo(a)anthracene	ND	0.6	ND	0.33
Chrysene	ND	0.6	ND	0.33
Benzo(b)fluoranthene	ND	0.6	ND	0.33
Benzo(k)fluoranthene	ND	0.6	ND	0.33
Benzo(a)pyrene	ND	0.6	ND	0.33
Indeno(1,2,3-cd)pyrene	ND	0.6	ND	0.33
Dibenz(a,h)anthracene	ND	0.6	ND	0.33
Benzo(g,h,i)perylene	ND	0.6	ND	0.33

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-003
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SLUDGE

Project: (55-1738-28) NORTHWEST COOPERAGE

Polynuclear Aromatics EPA 8270 (8100 Analytes)Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
4-JUN-1991	2-FLUOROBIPHENYL (EPA 8100)	61	20-137
4-JUN-1991	NITROBENZENE-D5 (EPA 8100)	59	20-139
4-JUN-1991	TERPHENYL-D14 (EPA 8100)	75	20-180

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-007
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
% Moisture: 44.3 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: DS-1

Metals Prepared by EPA 3050 By NL on 10-JUN-1991

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Cyanide, Total (EPA 9012)	mg/kg	ND	0.9	ND	0.5	06/11/91	06/11/91	TM
Arsenic (EPA 6010)	mg/kg	ND	18	ND	10	06/10/91	06/11/91	JW
Cadmium (EPA 6010)	mg/kg	ND	0.9	ND	0.5	06/10/91	06/11/91	JW
Chromium (EPA 6010)	mg/kg	24.4	1.8	ND	1	06/10/91	06/11/91	JW
Copper (EPA 6010)	mg/kg	34.8	3.6	ND	2	06/10/91	06/11/91	JW
Lead (EPA 6010)	mg/kg	14	9.0	ND	5	06/10/91	06/11/91	JW
Nickel (EPA 6010)	mg/kg	20.6	7.2	ND	4	06/10/91	06/11/91	JW
Zinc (EPA 6010)	mg/kg	70.7	3.6	ND	2	06/10/91	06/11/91	JW
Mercury (EPA 7471)	mg/kg	ND	0.18	ND	0.1	06/10/91	06/11/91	CV
Moisture (ASTM D-2216)	%	44.3	0.1	ND	0.1	06/07/91	06/07/91	DR

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-007
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
Date Prepared: 4-JUN-1991
Prep Method: EPA 3550 By: JB
Date Analyzed: 8-JUN-1991 By: LT
% Moisture: 44.3 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: DS-1

Organochlorine Pesticides & PCB'S (EPA 8080)

Units: ug/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL	FN
alpha-BHC	ND	6.1	ND	1.7	G
beta-BHC	ND	6.1	ND	1.7	G
delta-BHC	ND	6.1	ND	1.7	G
Lindane	ND	6.1	ND	1.7	G
Heptachlor	ND	6.1	ND	1.7	G
Aldrin	ND	6.1	ND	1.7	G
Heptachlor epoxide	ND	6.1	ND	1.7	G
Endosulfan I	ND	6.1	ND	1.7	G
Dieldrin	ND	12	ND	3.4	G
4,4'-DDE	ND	12	ND	3.4	G
Endrin	ND	12	ND	3.4	G
Endosulfan II	ND	12	ND	3.4	G
4,4'-DDD	ND	12	ND	3.4	G
Endosulfan sulfate	ND	12	ND	3.4	G
4,4'-DDT	ND	12	ND	3.4	G
Endrin Aldehyde	ND	12	ND	3.4	G
Methoxychlor	ND	61	ND	17	G
Technical Chlordane	ND	61	ND	17	G
Toxaphene	ND	120	ND	34	G
Aroclor-1016	ND	61	ND	17	G
Aroclor-1221	ND	61	ND	17	G
Aroclor-1232	ND	61	ND	17	G
Aroclor-1242	ND	61	ND	17	G
Aroclor-1248	ND	61	ND	17	G
Aroclor-1254	ND	61	ND	17	G
Aroclor-1260	ND	61	ND	17	G

G Reporting limit elevated due to sample matrix interference.

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-007
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Project: (55-1738-28) NORTHWEST COOPERAGE

Organochlorine Pesticides & PCB'S (EPA 8080) Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range	FN
4-JUN-1991	DIBUTYL CHLORENDATE (DBC) (EPA 8080)	27	36-134	I

I Surrogate recovery outside of limits due to sample matrix interference.

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A Corning Company

Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-007
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
Date Prepared: 6-JUN-1991
Prep Method: EPA 5030 By: LR
Date Analyzed: 6-JUN-1991 By: LR
% Moisture: 44.3 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: DS-1

Purgeable Organics, EPA 8240

Units: ug/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
Chloromethane	ND	18	ND	10
Bromomethane	ND	18	ND	10
Vinyl Chloride	ND	18	ND	10
Chloroethane	ND	18	ND	10
Methylene Chloride	14	9.0	ND	5
Acetone	ND	18	ND	10
Carbon Disulfide	ND	9.0	ND	5
Trichlorofluoromethane	ND	9.0	ND	5
1,1-Dichloroethene	ND	9.0	ND	5
1,1-Dichloroethane	ND	9.0	ND	5
Total 1,2-Dichloroethene	ND	9.0	ND	5
Chloroform	ND	9.0	ND	5
1,2-Dichloroethane	ND	9.0	ND	5
2-Butanone	ND	18	ND	10
1,1,1-Trichloroethane	ND	9.0	ND	5
Carbon Tetrachloride	ND	9.0	ND	5
Vinyl Acetate	ND	18	ND	10
Bromodichloromethane	ND	9.0	ND	5
1,2-Dichloropropane	ND	9.0	ND	5
cis-1,3-Dichloropropene	ND	9.0	ND	5
Trichloroethene	ND	9.0	ND	5
Dibromochloromethane	ND	9.0	ND	5
1,1,2-Trichloroethane	ND	9.0	ND	5
Benzene	ND	9.0	ND	5
cis-1,3-Dichloropropene	ND	9.0	ND	5
2-Chloroethylvinyl ether	ND	18	ND	10
Bromoform	ND	9.0	ND	5
4-Methyl-2-pentanone	ND	18	ND	10
2-Hexanone	ND	18	ND	10
Tetrachloroethene	ND	9.0	ND	5
1,1,2,2-Tetrachloroethane	ND	9.0	ND	5
Toluene	ND	9.0	ND	5
Chlorobenzene	ND	9.0	ND	5
Ethylbenzene	ND	9.0	ND	5
Styrene	ND	9.0	ND	5
Xylenes, Total	22	9.0	ND	5

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-007
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Project: (55-1738-28) NORTHWEST COOPERAGE

Purgeable Organics, EPA 8240 Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
6-JUN-1991	1,2 DICHLOROETHANE-D4 (EPA 8240)	96	70-135
6-JUN-1991	TOLUENE-D8 (EPA 8240)	100	69-138
6-JUN-1991	BROMOFLUOROBENZENE (EPA 8240)	85	60-137

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-007
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
Date Prepared: 4-JUN-1991
Prep Method: EPA 3550 By: JB
Date Analyzed: 7-JUN-1991 By: SW
% Moisture: 44.3 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: DS-1

Polynuclear Aromatics EPA 8270 (8100 Analytes)

Units: mg/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
Naphthalene	ND	0.59	ND	0.33
Acenaphthylene	ND	0.59	ND	0.33
Acenaphthene	ND	0.59	ND	0.33
Fluorene	ND	0.59	ND	0.33
Phenanthrene	ND	0.59	ND	0.33
Anthracene	ND	0.59	ND	0.33
Fluoranthene	ND	0.59	ND	0.33
Pyrene	ND	0.59	ND	0.33
Benzo(a)anthracene	ND	0.59	ND	0.33
Chrysene	ND	0.59	ND	0.33
Benzo(b)fluoranthene	ND	0.59	ND	0.33
Benzo(k)fluoranthene	ND	0.59	ND	0.33
Benzo(a)pyrene	ND	0.59	ND	0.33
Indeno(1,2,3-cd)pyrene	ND	0.59	ND	0.33
Dibenz(a,h)anthracene	ND	0.59	ND	0.33
Benzo(g,h,i)perylene	ND	0.59	ND	0.33

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-007
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Project: (55-1738-28) NORTHWEST COOPERAGE

Polynuclear Aromatics EPA 8270 (8100 Analytes)Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
4-JUN-1991	2-FLUOROBIPHENYL (EPA 8100)	82	20-137
4-JUN-1991	NITROBENZENE-D5 (EPA 8100)	76	20-139
4-JUN-1991	TERPHENYL-D14 (EPA 8100)	77	20-180

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-008
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
% Moisture: 40.3 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: DS-2

Metals Prepared by EPA 3050 By NL on 10-JUN-1991

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Cyanide, Total (EPA 9012)	mg/kg	ND	0.84	ND	0.5	06/11/91	06/11/91	TM
Arsenic (EPA 6010)	mg/kg	ND	17	ND	10	06/10/91	06/11/91	JW
Cadmium (EPA 6010)	mg/kg	ND	0.84	ND	0.5	06/10/91	06/11/91	JW
Chromium (EPA 6010)	mg/kg	20.1	1.7	ND	1	06/10/91	06/11/91	JW
Copper (EPA 6010)	mg/kg	30.7	3.4	ND	2	06/10/91	06/11/91	JW
Lead (EPA 6010)	mg/kg	12	8.4	ND	5	06/10/91	06/11/91	JW
Nickel (EPA 6010)	mg/kg	18.1	6.7	ND	4	06/10/91	06/11/91	JW
Zinc (EPA 6010)	mg/kg	60.8	3.4	ND	2	06/10/91	06/11/91	JW
Mercury (EPA 7471)	mg/kg	0.22	0.17	ND	0.1	06/10/91	06/11/91	CV
Moisture (ASTM D-2216)	%	40.3	0.1	ND	0.1	06/07/91	06/07/91	DR

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-008
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
Date Prepared: 4-JUN-1991
Prep Method: EPA 3550 By: JB
Date Analyzed: 8-JUN-1991 By: LT
% Moisture: 40.3 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: DS-2

Organochlorine Pesticides & PCB'S (EPA 8080)

Units: ug/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL	FN
alpha-BHC	ND	5.7	ND	1.7	G
beta-BHC	ND	5.7	ND	1.7	G
delta-BHC	ND	5.7	ND	1.7	G
Lindane	ND	5.7	ND	1.7	G
Heptachlor	ND	5.7	ND	1.7	G
Aldrin	ND	5.7	ND	1.7	G
Heptachlor epoxide	ND	5.7	ND	1.7	G
Endosulfan I	ND	5.7	ND	1.7	G
Dieldrin	ND	11	ND	3.4	G
4,4'-DDE	ND	11	ND	3.4	G
Endrin	ND	11	ND	3.4	G
Endosulfan II	ND	11	ND	3.4	G
4,4'-DDD	ND	11	ND	3.4	G
Endosulfan sulfate	ND	11	ND	3.4	G
4,4'-DDT	ND	11	ND	3.4	G
Endrin Aldehyde	ND	11	ND	3.4	G
Methoxychlor	ND	57	ND	17	G
Technical Chlordane	ND	57	ND	17	G
Toxaphene	ND	110	ND	34	G
Aroclor-1016	ND	57	ND	17	G
Aroclor-1221	ND	57	ND	17	G
Aroclor-1232	ND	57	ND	17	G
Aroclor-1242	ND	57	ND	17	G
Aroclor-1248	ND	57	ND	17	G
Aroclor-1254	ND	57	ND	17	G
Aroclor-1260	ND	57	ND	17	G

G Reporting limit elevated due to sample matrix interference.

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-008
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Project: (55-1738-28) NORTHWEST COOPERAGE

Organochlorine Pesticides & PCB'S (EPA 8080) Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range	FN
4-JUN-1991	DIBUTYL CHLORENDATE (DBC) (EPA 8080)	29	36-134	I

I Surrogate recovery outside of limits due to sample matrix interference.

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-008
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
Date Prepared: 6-JUN-1991
Prep Method: EPA 5030 By: LR
Date Analyzed: 6-JUN-1991 By: LR
% Moisture: 40.3 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: DS-2

Purgeable Organics, EPA 8240

Units: ug/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
Chloromethane	ND	17	ND	10
Bromomethane	ND	17	ND	10
Vinyl Chloride	ND	17	ND	10
Chloroethane	ND	17	ND	10
Methylene Chloride	8.9	8.4	ND	5
Acetone	110	17	ND	10
Carbon Disulfide	ND	8.4	ND	5
Trichlorofluoromethane	ND	8.4	ND	5
1,1-Dichloroethene	ND	8.4	ND	5
1,1-Dichloroethane	ND	8.4	ND	5
Total 1,2-Dichloroethene	ND	8.4	ND	5
Chloroform	ND	8.4	ND	5
1,2-Dichloroethane	ND	8.4	ND	5
2-Butanone	ND	17	ND	10
1,1,1-Trichloroethane	ND	8.4	ND	5
Carbon Tetrachloride	ND	8.4	ND	5
Vinyl Acetate	ND	17	ND	10
Bromodichloromethane	ND	8.4	ND	5
1,2-Dichloropropane	ND	8.4	ND	5
cis-1,3-Dichloropropene	ND	8.4	ND	5
Trichloroethene	ND	8.4	ND	5
Dibromochloromethane	ND	8.4	ND	5
1,1,2-Trichloroethane	ND	8.4	ND	5
Benzene	ND	8.4	ND	5
cis-1,3-Dichloropropene	ND	8.4	ND	5
2-Chloroethylvinyl ether	ND	17	ND	10
Bromoform	ND	8.4	ND	5
4-Methyl-2-pentanone	ND	17	ND	10
2-Hexanone	ND	17	ND	10
Tetrachloroethene	ND	8.4	ND	5
1,1,2,2-Tetrachloroethane	ND	8.4	ND	5
Toluene	ND	8.4	ND	5
Chlorobenzene	ND	8.4	ND	5
Ethylbenzene	ND	8.4	ND	5
Styrene	ND	8.4	ND	5
Xylenes, Total	ND	8.4	ND	5

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-008
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Project: (55-1738-28) NORTHWEST COOPERAGE

Purgeable Organics, EPA 8240 Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
6-JUN-1991	1,2 DICHLOROETHANE-D4 (EPA 8240)	95	70-135
6-JUN-1991	TOLUENE-D8 (EPA 8240)	105	69-138
6-JUN-1991	BROMOFLUOROBENZENE (EPA 8240)	85	60-137

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9115410-008
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID
Date Prepared: 4-JUN-1991
Prep Method: EPA 3550 By: JB
Date Analyzed: 7-JUN-1991 By: SW
% Moisture: 40.3 (Results are dry-weight)

Project: (55-1738-28) NORTHWEST COOPERAGE
Sample ID: DS-2

Polynuclear Aromatics EPA 8270 (8100 Analytes)

Units: mg/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
Naphthalene	ND	0.55	ND	0.33
Acenaphthylene	ND	0.55	ND	0.33
Acenaphthene	ND	0.55	ND	0.33
Fluorene	ND	0.55	ND	0.33
Phenanthrene	ND	0.55	ND	0.33
Anthracene	ND	0.55	ND	0.33
Fluoranthene	ND	0.55	ND	0.33
Pyrene	ND	0.55	ND	0.33
Benzo(a)anthracene	ND	0.55	ND	0.33
Chrysene	ND	0.55	ND	0.33
Benzo(b)fluoranthene	ND	0.55	ND	0.33
Benzo(k)fluoranthene	ND	0.55	ND	0.33
Benzo(a)pyrene	ND	0.55	ND	0.33
Indeno(1,2,3-cd)pyrene	ND	0.55	ND	0.33
Dibenz(a,h)anthracene	ND	0.55	ND	0.33
Benzo(g,h,i)perylene	ND	0.55	ND	0.33

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Laboratory Report

PARAMETRIX, INC.
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ATTN: MR. BILL KANE

Analysis No.: G-9115410-008
Date Sampled: 29-MAY-1991
Date Sample Rec'd: 1-JUN-1991
Sample Type: SOLID

Project: (55-1738-28) NORTHWEST COOPERAGE

Polynuclear Aromatics EPA 8270 (8100 Analytes)Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
4-JUN-1991	2-FLUOROBIPHENYL (EPA 8100)	65	20-137
4-JUN-1991	NITROBENZENE-D5 (EPA 8100)	59	20-139
4-JUN-1991	TERPHENYL-D14 (EPA 8100)	71	20-180

Enseco – CRL
7440 Lincoln Way • Garden Grove, CA 92641
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FAX: (714) 891-5917

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June 13, 1991

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9114413-001
Date Sampled: 22-MAY-1991
Date Sample Rec'd: 23-MAY-1991
Project: (55-1738-28) NW COOPERAGE/ECOLOGY

Enclosed with this letter is the report on the chemical and physical analyses on the sample from ANALYSIS NO: G-9114413-001/001 shown above.

The sample was received by CRL in a chilled state, intact and with the chain-of-custody record attached.

Note that ND means not detected at the reporting limit expressed. The reporting limit is raised to reflect the dilution factor of the sample.

Solid sample is reported on "dry weight" basis.

Please note the cross-reference for Dioxins analysis is as follows:

Enseco-CAL Sample ID	Enseco-CRL Sample ID	Client's Sample ID
058585-001	G-9114413-001	SC-1

Reviewed

Approved

Enseco
A Corning Company

Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9114413-001
Date Sampled: 22-MAY-1991
Date Sample Rec'd: 23-MAY-1991
Sample Type: SOLID
% Moisture: 12.6 (Results are dry-weight)

Project: (55-1738-28) NW COOPERAGE/ECOLOGY
Sample ID: SC-1

Metals Prepared by EPA 3050 By NL on 4-JUN-1991

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Cyanide, Total (EPA 9012)	mg/kg	ND	0.57	ND	0.5	06/07/91	06/07/91	TM
Arsenic (EPA 6010)	mg/kg	ND	11	ND	10	06/04/91	06/05/91	JW
Cadmium (EPA 6010)	mg/kg	ND	0.57	ND	0.5	06/04/91	06/05/91	JW
Chromium (EPA 6010)	mg/kg	15.9	1.1	ND	1	06/04/91	06/05/91	JW
Copper (EPA 6010)	mg/kg	22.0	2.3	ND	2	06/04/91	06/05/91	JW
Lead (EPA 6010)	mg/kg	49.2	5.7	ND	5	06/04/91	06/05/91	JW
Nickel (EPA 6010)	mg/kg	15.8	4.6	ND	4	06/04/91	06/05/91	JW
Zinc (EPA 6010)	mg/kg	58.1	2.3	ND	2	06/04/91	06/05/91	JW
Mercury (EPA 7471)	mg/kg	ND	0.11	ND	0.1	06/04/91	06/05/91	CV
Moisture (ASTM D-2216)	%	12.6	0.1	ND	0.1	06/11/91	06/11/91	DR

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9114413-001
Date Sampled: 22-MAY-1991
Date Sample Rec'd: 23-MAY-1991
Sample Type: SOLID
Date Prepared: 28-MAY-1991
Prep Method: EPA 3550 By: JB
Date Analyzed: 2-JUN-1991 By: LT
% Moisture: 12.6 (Results are dry-weight)

Project: (55-1738-28) NW COOPERAGE/ECOLOGY
Sample ID: SC-1

Organochlorine Pesticides & PCB'S (EPA 8080)

Units: ug/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL	FN
alpha-BHC	ND	19	ND	1.7	G
beta-BHC	ND	19	ND	1.7	G
delta-BHC	ND	19	ND	1.7	G
Lindane	ND	19	ND	1.7	G
Heptachlor	ND	19	ND	1.7	G
Aldrin	ND	19	ND	1.7	G
Heptachlor epoxide	ND	19	ND	1.7	G
Endosulfan I	ND	19	ND	1.7	G
Dieldrin	ND	39	ND	3.4	G
4,4'-DDE	ND	39	ND	3.4	G
Endrin	ND	39	ND	3.4	G
Endosulfan II	ND	39	ND	3.4	G
4,4'-DDD	ND	39	ND	3.4	G
Endosulfan sulfate	ND	39	ND	3.4	G
4,4'-DDT	ND	39	ND	3.4	G
Endrin Aldehyde	ND	39	ND	3.4	G
Methoxychlor	ND	200	ND	17	G
Technical Chlordane	ND	200	ND	17	G
Toxaphene	ND	390	ND	34	G
Aroclor-1016	ND	200	ND	17	G
Aroclor-1221	ND	200	ND	17	G
Aroclor-1232	ND	200	ND	17	G
Aroclor-1242	ND	200	ND	17	G
Aroclor-1248	ND	200	ND	17	G
Aroclor-1254	ND	200	ND	17	G
Aroclor-1260	ND	200	ND	17	G

G Reporting limit elevated due to sample matrix interference.

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Laboratory Report

PARAMETRIX, INC.
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BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9114413-001
Date Sampled: 22-MAY-1991
Date Sample Rec'd: 23-MAY-1991
Sample Type: SOLID

Project: (55-1738-28) NW COOPERAGE/ECOLOGY

Organochlorine Pesticides & PCB'S (EPA 8080) Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
28-MAY-1991	DIBUTYL CHLORENDATE (DBC) (EPA 8080)	65	36-134

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE

Analysis No.: G-9114413-001
Date Sampled: 22-MAY-1991
Date Sample Rec'd: 23-MAY-1991
Sample Type: SOLID
Date Prepared: 31-MAY-1991
Prep Method: EPA 5030 By: LR
Date Analyzed: 31-MAY-1991 By: LR
% Moisture: 12.6 (Results are dry-weight)

Project: (55-1738-28) NW COOPERAGE/ECOLOGY
Sample ID: SC-1

Purgeable Organics, EPA 8240

Units: ug/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
Chloromethane	ND	11	ND	10
Bromomethane	ND	11	ND	10
Vinyl Chloride	ND	11	ND	10
Chloroethane	ND	11	ND	10
Methylene Chloride	ND	5.7	ND	5
Acetone	ND	11	ND	10
Carbon Disulfide	ND	5.7	ND	5
Trichlorofluoromethane	ND	5.7	ND	5
1,1-Dichloroethene	ND	5.7	ND	5
1,1-Dichloroethane	ND	5.7	ND	5
Total 1,2-Dichloroethene	ND	5.7	ND	5
Chloroform	ND	5.7	ND	5
1,2-Dichloroethane	ND	5.7	ND	5
2-Butanone	ND	11	ND	10
1,1,1-Trichloroethane	ND	5.7	ND	5
Carbon Tetrachloride	ND	5.7	ND	5
Vinyl Acetate	ND	11	ND	10
Bromodichloromethane	ND	5.7	ND	5
1,2-Dichloropropane	ND	5.7	ND	5
cis-1,3-Dichloropropene	ND	5.7	ND	5
Trichloroethene	ND	5.7	ND	5
Dibromochloromethane	ND	5.7	ND	5
1,1,2-Trichloroethane	ND	5.7	ND	5
Benzene	ND	5.7	ND	5
cis-1,3-Dichloropropene	ND	5.7	ND	5
2-Chloroethylvinyl ether	ND	11	ND	10
Bromoform	ND	5.7	ND	5
4-Methyl-2-pentanone	ND	11	ND	10
2-Hexanone	ND	11	ND	10
Tetrachloroethene	ND	5.7	ND	5
1,1,2,2-Tetrachloroethane	ND	5.7	ND	5
Toluene	ND	5.7	ND	5
Chlorobenzene	ND	5.7	ND	5
Ethylbenzene	ND	5.7	ND	5
Styrene	ND	5.7	ND	5
Xylenes, Total	ND	5.7	ND	5

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PARAMETRIX, INC.
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ATTN: MR. BILL KANE

Analysis No.: G-9114413-001
Date Sampled: 22-MAY-1991
Date Sample Rec'd: 23-MAY-1991
Sample Type: SOLID

Project: (55-1738-28) NW COOPERAGE/ECOLOGY

Purgeable Organics, EPA 8240 Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
31-MAY-1991	1,2 DICHLOROETHANE-D4 (EPA 8240)	83	70-135
31-MAY-1991	TOLUENE-D8 (EPA 8240)	89	69-138
31-MAY-1991	BROMOFLUOROBENZENE (EPA 8240)	77	60-137

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
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ATTN: MR. BILL KANE

Analysis No.: G-9114413-001
Date Sampled: 22-MAY-1991
Date Sample Rec'd: 23-MAY-1991
Sample Type: SOLID
Date Prepared: 29-MAY-1991
Prep Method: EPA 3550 By: JB
Date Analyzed: 4-JUN-1991 By: AP
% Moisture: 12.6 (Results are dry-weight)

Project: (55-1738-28) NW COOPERAGE/ECOLOGY
Sample ID: SC-1

Polynuclear Aromatics EPA 8270 (8100 Analytes)

Units: mg/kg

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
Naphthalene	ND	0.38	ND	0.33
Acenaphthylene	ND	0.38	ND	0.33
Acenaphthene	ND	0.38	ND	0.33
Fluorene	ND	0.38	ND	0.33
Phenanthrene	ND	0.38	ND	0.33
Anthracene	ND	0.38	ND	0.33
Fluoranthene	ND	0.38	ND	0.33
Pyrene	ND	0.38	ND	0.33
Benzo(a)anthracene	ND	0.38	ND	0.33
Chrysene	ND	0.38	ND	0.33
Benzo(b)fluoranthene	ND	0.38	ND	0.33
Benzo(k)fluoranthene	ND	0.38	ND	0.33
Benzo(a)pyrene	ND	0.38	ND	0.33
Indeno(1,2,3-cd)pyrene	ND	0.38	ND	0.33
Dibenz(a,h)anthracene	ND	0.38	ND	0.33
Benzo(g,h,i)perylene	ND	0.38	ND	0.33

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Analysis No.: G-9114413-001
Date Sampled: 22-MAY-1991
Date Sample Rec'd: 23-MAY-1991
Sample Type: SOLID

Project: (55-1738-28) NW COOPERAGE/ECOLOGY

Polynuclear Aromatics EPA 8270 (8100 Analytes)Surrogate Summary

Date	Parameter (Method)	Percent Recovery	Acceptable Range
29-MAY-1991	2-FLUOROBIPHENYL (EPA 8100)	69	20-137
29-MAY-1991	NITROBENZENE-D5 (EPA 8100)	63	20-139
29-MAY-1991	TERPHENYL-D14 (EPA 8100)	49	20-180

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Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE
Project: (55-1738-28) NW COOPERAGE/ECOLOGY

Analysis No.: G-9114413-001
Date Sampled: 22-MAY-1991
Date Sample Rec'd: 23-MAY-1991
Sample Type: SOLID

Matrix Spike/Matrix Spike Duplicate Report

Sample Number	Parameter (Method)	Units	Observed Concentration Sample	MS	MSD	Amt. Spiked	% Recovery MS	MSD	Avg.	% RPD
9115021-003A	ARSENIC (EPA 6010)	mg/kg	ND	55.9	50.6	50	112	101	106	10
9115021-003	CADMIUM (EPA 6010)	mg/kg	ND	4.16	4.15	5	83	83	83	0
9115021-003	CHROMIUM (EPA 6010)	mg/kg	12.8	29.5	31.6	20	84	94	89	12
9115021-003	COPPER (EPA 6010)	mg/kg	13.9	38.5	36.8	25	98	92	95	7
9115021-003	LEAD (EPA 6010)	mg/kg	5.88	47.7	49.7	50	84	88	86	5
9115021-003	NICKEL (EPA 6010)	mg/kg	9.06	50.1	51.9	50	82	86	84	4
9115021-003	ZINC (EPA 6010)	mg/kg	36.0	78.9	80.6	50	86	89	88	4
9115021-001	MERCURY (EPA 7471)	mg/kg	ND	0.182	0.180	0.175	104	103	104	1
9114412-020MS	LINDANE (EPA 8080)	ug/kg	ND	75.2	72.1	33.3	226	216	221	4
9114412-020MS	HEPTACHLOR (EPA 8080)	ug/kg	ND	73.0	68.0	33.3	219	204	212	7
9114412-020MS	ALDRIN (EPA 8080)	ug/kg	ND	66.7	72.3	33.3	200	217	208	8
9114412-020MS	DIELDRIN (EPA 8080)	ug/kg	ND	14.4	15.7	33.3	43	47	45	9
9114412-020MS	ENDRIN (EPA 8080)	ug/kg	ND	22.6	25.9	33.3	68	78	73	14
9114412-020MS	4,4'-DDT (EPA 8080)	ug/kg	ND	33.2	37.5	33.3	100	113	106	12
9114412-020C	ACENAPHTHENE (EPA 8100)	mg/kg	ND	2.94	3.23	3.30	89	98	94	9
9114412-020C	PYRENE (EPA 8100)	mg/kg	ND	2.31	2.57	3.30	70	78	74	11
9115015-001	1,1-DICHLOROETHENE (EPA 8240)	ug/kg	ND	47.0	34.3	50.0	94	69	82	31
9115015-001	TRICHLOROETHENE (EPA 8240)	ug/kg	ND	55.4	44.1	50.0	111	88	100	23
9115015-001	BENZENE (EPA 8240)	ug/kg	ND	58.5	48.3	50.0	117	97	107	19
9115015-001	TOLUENE (EPA 8240)	ug/kg	ND	65.2	57.3	50.0	130	115	122	13
9115015-001	CHLOROBENZENE (EPA 8240)	ug/kg	ND	62.2	50.3	50.0	124	101	112	21
9115006-037	CYANIDE, TOTAL (EPA 9012)	mg/kg	ND	47.5	48	50	95	96	96	1

Matrix Spike/Matrix Spike Duplicate Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
9114412-020C	29-MAY-1991	ACENAPHTHENE (EPA 8100)	G-9114413-001
	29-MAY-1991	PYRENE (EPA 8100)	G-9114413-001
9114412-020MS	24-JUN-1991	LINDANE (EPA 8080)	G-9114413-001
	24-JUN-1991	HEPTACHLOR (EPA 8080)	G-9114413-001
	24-JUN-1991	ALDRIN (EPA 8080)	G-9114413-001
	24-JUN-1991	DIELDRIN (EPA 8080)	G-9114413-001
	24-JUN-1991	ENDRIN (EPA 8080)	G-9114413-001
	24-JUN-1991	4,4'-DDT (EPA 8080)	G-9114413-001
9115006-037	7-JUN-1991	CYANIDE, TOTAL (EPA 9012)	G-9114413-001
9115015-001	3-JUN-1991	1,1-DICHLOROETHENE (EPA 8240)	G-9114413-001
	3-JUN-1991	TRICHLOROETHENE (EPA 8240)	G-9114413-001
	3-JUN-1991	BENZENE (EPA 8240)	G-9114413-001
	3-JUN-1991	TOLUENE (EPA 8240)	G-9114413-001
	3-JUN-1991	CHLOROBENZENE (EPA 8240)	G-9114413-001
9115021-001	4-JUN-1991	MERCURY (EPA 7471)	G-9114413-001
9115021-003	4-JUN-1991	CADMIUM (EPA 6010)	G-9114413-001
	4-JUN-1991	CHROMIUM (EPA 6010)	G-9114413-001
	4-JUN-1991	COPPER (EPA 6010)	G-9114413-001
	4-JUN-1991	LEAD (EPA 6010)	G-9114413-001
	4-JUN-1991	NICKEL (EPA 6010)	G-9114413-001
	4-JUN-1991	ZINC (EPA 6010)	G-9114413-001
9115021-003A	4-JUN-1991	ARSENIC (EPA 6010)	G-9114413-001

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A Corning Company

Laboratory Report

PARAMETRIX, INC.
13020 NORTHUP WAY, SUITE 8
BELLEVUE, WA 98005
ATTN: MR. BILL KANE
Project: (55-1738-28) NW COOPERAGE/ECOLOGY

Analysis No.: G-9114413-001
Date Sampled: 22-MAY-1991
Date Sample Rec'd: 23-MAY-1991
Sample Type: SOLID

Laboratory Control Sample Report

QC Batch	Parameter (Method)	Amt. Spiked	Units	Avg. Spike Recov.	Acceptable Range	Rel. Pct. Diff.	Acceptable Range
L91156022	ARSENIC (EPA 6010)	50	mg/kg	110	78-120	2.	20
L91156022	CADMIUM (EPA 6010)	5	mg/kg	91	63-126	1.	25
L91156022	CHROMIUM (EPA 6010)	20	mg/kg	101	63-126	3.	30
L91156022	COPPER (EPA 6010)	25	mg/kg	104	62-126	1.	30
L91156022	LEAD (EPA 6010)	50	mg/kg	98	61-126	3.	30
L91156022	NICKEL (EPA 6010)	50	mg/kg	98	61-126	1.	25
L91156022	ZINC (EPA 6010)	50	mg/kg	99	60-126	1.	30
L91156035	MERCURY (EPA 7471)	.175	mg/kg	100	51-125	7.	42
L91154013	LINDANE (EPA 8080)	33.3	ug/kg	102	39-113	2.	33
L91154013	HEPTACHLOR (EPA 8080)	33.3	ug/kg	105	36-114	11.	32
L91154013	ALDRIN (EPA 8080)	33.3	ug/kg	106	37-109	0.	30
L91154013	DIELDRIN (EPA 8080)	33.3	ug/kg	105	56-112	3.	24
L91154013	ENDRIN (EPA 8080)	33.3	ug/kg	71	52-124	24.	27
L91154013	4,4'-DDT (EPA 8080)	33.3	ug/kg	91	49-123	2.	25
L91157013	ACENAPHTHENE (EPA 8100)	3.30	mg/kg	116	22-127	3.	31
L91157013	PYRENE (EPA 8100)	3.30	mg/kg	105	15-138	4.	36
L91148030	1,1-DICHLOROETHENE (EPA 8240)	50.0	ug/kg	82	49-133	14.	15
L91148030	TRICHLOROETHENE (EPA 8240)	50.0	ug/kg	90	76-128	11.	15
L91148030	BENZENE (EPA 8240)	50.0	ug/kg	93	79-118	13.	14
L91148030	TOLUENE (EPA 8240)	50.0	ug/kg	92	75-118	13.	14
L91148030	CHLOROBENZENE (EPA 8240)	50.0	ug/kg	89	74-129	15.	14
L91158018	CYANIDE, TOTAL (EPA 9012)	5.00	mg/kg	98	69-124	1.	20

Laboratory Control Sample Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
L91148030	25-MAY-1991	1,1-DICHLOROETHENE (EPA 8240)	G-9114413-001
		TRICHLOROETHENE (EPA 8240)	G-9114413-001
		BENZENE (EPA 8240)	G-9114413-001
		TOLUENE (EPA 8240)	G-9114413-001
		CHLOROBENZENE (EPA 8240)	G-9114413-001
L91154013	24-MAY-1991	LINDANE (EPA 8080)	G-9114413-001
		HEPTACHLOR (EPA 8080)	G-9114413-001
		ALDRIN (EPA 8080)	G-9114413-001
		DIELDRIN (EPA 8080)	G-9114413-001
		ENDRIN (EPA 8080)	G-9114413-001
		4,4'-DDT (EPA 8080)	G-9114413-001
L91156022	4-JUN-1991	LEAD (EPA 6010)	G-9114413-001
		NICKEL (EPA 6010)	G-9114413-001
		CADMIUM (EPA 6010)	G-9114413-001
		ZINC (EPA 6010)	G-9114413-001
		COPPER (EPA 6010)	G-9114413-001
		CHROMIUM (EPA 6010)	G-9114413-001
		ARSENIC (EPA 6010)	G-9114413-001
L91156035	4-JUN-1991	MERCURY (EPA 7471)	G-9114413-001
L91157013	28-MAY-1991	ACENAPHTHENE (EPA 8100)	G-9114413-001
		PYRENE (EPA 8100)	G-9114413-001
L91158018	7-JUN-1991	CYANIDE, TOTAL (EPA 9012)	G-9114413-001

Enseco
A CORNING Company

June 6, 1991
Lab ID: 058585

Sylvia Fowler
Enseco-CRL
7440 Lincoln Way
Garden Grove, CA 92641

Dear Ms. Fowler:

Enclosed is the report for the one soil sample for your Parametrix, Inc Project (#55-1738-28), which was received at Enseco-Cal Lab on 29 May 1991.

The report consists of the following sections:

I Sample Description
II Analysis Request
III Quality Control Report
IV Analysis Results

If you have any questions, please feel free to call.

Sincerely,

Shelly Eyraud

Shelly Eyraud
Manager of Low Resolution Dioxin Services

ak

Enseco Incorporated
2544 Industrial Boulevard
West Sacramento, California 95691
916/372-1393 Fax: 916/372-7768

I Sample Description

See attached Sample Description Information.

The sample was received under chain-of-custody.

II Analysis Request

The following analytical test was requested.

Lab ID	Analysis Description
058585-0001	Cl_4-Cl_8 Dioxins/Furans plus 2,3,7,8-Substituted Isomers

III Quality Control

A. Project Specific QC. As requested, QC matrix spikes were performed using your samples. Results are on the attached Matrix Spike/Spike Duplicate Report.

B. Method Blank Results. A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the Analytical Results section.

C. Laboratory Control Samples - The LCS Program

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The DCS results associated with your sample are on the attached Laboratory Control Sample Report.

Accuracy is measured by Percent Recovery as in:

$$\% \text{ recovery} = \frac{\text{(measured concentration)}}{\text{(actual concentration)}} \times 100$$

Precision is measured using duplicate tests by Relative Percent Difference (RPD) as in:

$$\text{RPD} = \frac{\text{(\% recovery test 1 - \% recovery test 2)}}{\text{(\% recovery test 1 + \% recovery test 2)/2}} \times 100$$

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/-3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. These control limits are updated on a quarterly basis. In cases where there is not enough historical data, EPA limits or advisory limits are set, with the approval of the Quality Assurance department.

IV Analysis Results

Test methods include minor modifications of published EPA Methods such as reporting limits or parameter lists. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste sample are reported on an "as received" basis; i.e., no correction is made for moisture content, unless the method requires or the client requests that such correction be made.

Results are on the attached data sheets.

SAMPLE DESCRIPTION INFORMATION
for
Enseco - CRL

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
058585-0001-MS	SC-1 (G-9114413-001)	SOIL	22 MAY 91		29 MAY 91
058585-0001-SD	SC-1 (G-9114413-001)	SOIL	22 MAY 91		29 MAY 91
058585-0001-SA	SC-1 (G9114413-001)	SOIL	22 MAY 91		29 MAY 91
058585-0001-MB	Method Blank	SOIL			29 MAY 91

QC LOT ASSIGNMENT REPORT
Special Services - Low Resolution Mass Spectrometry

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
058585-0001-MS	SOLID	DXNFUR-S	16 MAY 91-A	-
058585-0001-SD	SOLID	DXNFUR-S	16 MAY 91-A	-
058585-0001-SA	SOLID	DXNFUR-S	16 MAY 91-A	-
058585-0001-MB	SOLID	DXNFUR-S	16 MAY 91-A	-

Enseco
A Corning Company

DUPLICATE CONTROL SAMPLE REPORT
Special Services - Low Resolution Mass Spectrometry

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: DXNFUR-S								
Matrix: SOLID								
QC Lot: 16 MAY 91-A								
Concentration Units: ng								
2,3,7,8-TCDF	10	7.60	7.60	7.60	76	60-140	0.0	50
1,2,3,7,8-PeCDF	10	6.90	7.00	6.95	70	60-140	1.4	50
1,2,3,4,7,8-HxCDF	10	6.30	9.90	8.10	81	60-140	44	50
1,2,3,4,6,7,8-HpCDF	10	7.40	11.0	9.20	92	60-140	39	50
OCDF	50	54.0	57.0	55.5	111	60-140	5.4	50
2,3,7,8-TCDD	10	7.30	7.80	7.55	76	60-140	6.6	50
1,2,3,7,8-PeCDD	10	9.40	9.20	9.30	93	60-140	2.2	50
1,2,3,4,7,8-HxCDD	10	8.60	8.50	8.55	86	60-140	1.2	50
1,2,3,4,6,7,8-HpCDD	10	10.0	9.00	9.50	95	60-140	11	50
OCDD	50	51.0	49.0	50.0	100	60-140	4.0	50

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A Corning Company

POLYCHLORINATED DIOXINS/FURANS
ISOMER SPECIFIC ANALYSIS
LOW RESOLUTION

Client Name: Enseco - CRL
Client ID: Method Blank
Lab ID: 058585-0001-MB
Matrix: SOIL Sampled: NA Received: NA
Authorized: 29 MAY 91 Prepared: 30 MAY 91 Analyzed: 03 JUN 91

Sample Amount 10.0 G
Percent Moisture NA

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/g	0.0043	
2,3,7,8-TCDF	ND	ng/g	0.0043	
PeCDFs (total)	ND	ng/g	0.0081	
1,2,3,7,8-PeCDF	ND	ng/g	0.0081	
2,3,4,7,8-PeCDF	ND	ng/g	0.0081	
HxCDFs (total)	ND	ng/g	0.021	
1,2,3,4,7,8-HxCDF	ND	ng/g	0.021	
1,2,3,6,7,8-HxCDF	ND	ng/g	0.021	
2,3,4,6,7,8-HxCDF	ND	ng/g	0.021	
1,2,3,7,8,9-HxCDF	ND	ng/g	0.021	
HpCDFs (total)	ND	ng/g	0.016	
1,2,3,4,6,7,8-HpCDF	ND	ng/g	0.016	
1,2,3,4,7,8,9-HpCDF	ND	ng/g	0.016	
OCDF	ND	ng/g	0.061	
Dioxins				
TCDDs (total)	ND	ng/g	0.0073	
2,3,7,8-TCDD	ND	ng/g	0.0073	
PeCDDs (total)	ND	ng/g	0.025	
1,2,3,7,8-PeCDD	ND	ng/g	0.025	
HxCDDs (total)	ND	ng/g	0.020	
1,2,3,4,7,8-HxCDD	ND	ng/g	0.020	
1,2,3,6,7,8-HxCDD	ND	ng/g	0.020	
1,2,3,7,8,9-HxCDD	ND	ng/g	0.020	
HpCDDs (total)	ND	ng/g	0.030	
1,2,3,4,6,7,8-HpCDD	ND	ng/g	0.030	
OCDD	ND	ng/g	0.045	

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Robert Hrabak Approved By: Shelly Eyraud

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

POLYCHLORINATED DIOXINS/FURANS
ISOMER SPECIFIC ANALYSIS (CONT.)
LOW RESOLUTION

Client Name: Enseco - CRL
Client ID: Method Blank
Lab ID: 058585-0001-MB
Matrix: SOIL
Authorized: 29 MAY 91

Sampled: NA
Prepared: 30 MAY 91

Received: NA
Analyzed: 03 JUN 91

Sample Amount 10.0 G
Percent Moisture NA

	% Recovery
13C-2,3,7,8-TCDF	79
13C-2,3,7,8-TCDD	77
13C-1,2,3,7,8-PeCDD	66
13C-1,2,3,6,7,8-HxCDD	65
13C-1,2,3,4,6,7,8-HpCDD	46
13C-OCDD	28

ND = Not detected
NA = Not applicable

Reported By: Robert Hrabak

Approved By: Shelly Eyraud

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

POLYCHLORINATED DIOXINS/FURANS
ISOMER SPECIFIC ANALYSIS
LOW RESOLUTION

Client Name: Enseco - CRL
Client ID: SC-1 (G9114413-001)
Lab ID: 058585-0001-SA
Matrix: SOIL Sampled: 22 MAY 91 Received: 29 MAY 91
Authorized: 29 MAY 91 Prepared: 30 MAY 91 Analyzed: 03 JUN 91

Sample Amount 10.8 G
Percent Moisture 11

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/g	0.0053	
2,3,7,8-TCDF	ND	ng/g	0.0053	
PeCDFs (total)	ND	ng/g	0.0089	
1,2,3,7,8-PeCDF	ND	ng/g	0.0089	
2,3,4,7,8-PeCDF	ND	ng/g	0.0089	
HxCDFs (total)	ND	ng/g	0.021	
1,2,3,4,7,8-HxCDF	ND	ng/g	0.021	
1,2,3,6,7,8-HxCDF	ND	ng/g	0.021	
2,3,4,6,7,8-HxCDF	ND	ng/g	0.021	
1,2,3,7,8,9-HxCDF	ND	ng/g	0.021	
HpCDFs (total)	ND	ng/g	0.019	
1,2,3,4,6,7,8-HpCDF	ND	ng/g	0.019	
1,2,3,4,7,8,9-HpCDF	ND	ng/g	0.019	
OCDF	ND	ng/g	0.077	
Dioxins				
TCDDs (total)	ND	ng/g	0.0082	
2,3,7,8-TCDD	ND	ng/g	0.0082	
PeCDDs (total)	ND	ng/g	0.027	
1,2,3,7,8-PeCDD	ND	ng/g	0.027	
HxCDDs (total)	ND	ng/g	0.023	
1,2,3,4,7,8-HxCDD	ND	ng/g	0.023	
1,2,3,6,7,8-HxCDD	ND	ng/g	0.023	
1,2,3,7,8,9-HxCDD	ND	ng/g	0.023	
HpCDDs (total)	0.42	ng/g	--	
1,2,3,4,6,7,8-HpCDD	0.24	ng/g	--	
OCDD	2.3	ng/g	--	

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Robert Hrabak Approved By: Shelly Eyraud

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Enseco
A Corning Company

POLYCHLORINATED DIOXINS/FURANS
ISOMER SPECIFIC ANALYSIS (CONT.)
LOW RESOLUTION

Client Name: Enseco - CRL
Client ID: SC-1 (G9114413-001)
Lab ID: 058585-0001-SA
Matrix: SOIL Sampled: 22 MAY 91 Received: 29 MAY 91
Authorized: 29 MAY 91 Prepared: 30 MAY 91 Analyzed: 03 JUN 91

Sample Amount 10.8 G
Percent Moisture 11

	% Recovery
13C-2,3,7,8-TCDF	70
13C-2,3,7,8-TCDD	72
13C-1,2,3,7,8-PeCDD	56
13C-1,2,3,6,7,8-HxCDD	59
13C-1,2,3,4,6,7,8-HpCDD	44
13C-OCDD	29

ND = Not detected
NA = Not applicable

Reported By: Robert Hrabak Approved By: Shelly Eyraud

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POLYCHLORINATED DIOXINS/FURANS

QUALITY CONTROL SUMMARY

Client Name: Enseco-CRL
Client ID: SC-1 (G-9114413-001) Matrix Spike
Lab ID: 058585-0001-MS
Matrix: SOIL Sampled: 22 MAY 91 Received: 29 MAY 91
Authorized: 29 MAY 91 Prepared: 30 MAY 91 Analyzed: 03 JUN 91

Column Type : DB-5
Sample Amount: 10.4 G

Parameters	NG Found in Sample	NG Spiked	NG Found in MS Sample	% Recovery
Furans				
2,3,7,8-TCDF	ND	10	8.2	82
1,2,3,7,8-PeCDF	ND	10	8.5	85
1,2,3,4,7,8-HxCDF	ND	10	9.2	92
1,2,3,4,6,7,8-HpCDF	ND	10	10	100
OCDF	ND	50	77	154
Dioxins				
2,3,7,8-TCDD	ND	10	7.9	79
1,2,3,7,8-PeCDD	ND	10	11	110
1,2,3,4,7,8-HxCDD	ND	10	9.4	94
1,2,3,4,6,7,8-HpCDD	2.3	10	8.7	87
OCDD	22	50	55	110

	% Recovery
13C-2,3,7,8-TCDF	74
13C-2,3,7,8-TCDD	79
13C-1,2,3,7,8-PeCDD	63
13C-1,2,3,4,7,8-HxCDD	64
13C-1,2,3,4,6,7,8-HpCDD	47
13C-OCDD	30

ND=Not Detected
NA=Not Applicable

Reported by: Robert Hrabak Approved by: Shelly Eyraud

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Version 070187

Enseco
A Corning Company

POLYCHLORINATED DIOXINS/FURANS

QUALITY CONTROL SUMMARY

Client Name: Enseco-CRL
Client ID: SC-1 (G-9114413-001) Matrix Spike Duplicate
Lab ID: 058585-0001-MSD
Matrix: SOIL Sampled: 22 MAY 91 Received: 29 MAY 91
Authorized: 29 MAY 91 Prepared: 30 MAY 91 Analyzed: 03 JUN 91

Column Type : DB-5
Sample Amount: 10.7 G

Parameters	NG Found in Sample	NG Spiked	NG Found in MS Sample	% Recovery
Furans				
2,3,7,8-TCDF	ND	10	8.1	81
1,2,3,7,8-PeCDF	ND	10	8.4	84
1,2,3,4,7,8-HxCDF	ND	10	9.8	98
1,2,3,4,6,7,8-HpCDF	ND	10	11	110
OCDF	ND	50	79	158
Dioxins				
2,3,7,8-TCDD	ND	10	8.1	81
1,2,3,7,8-PeCDD	ND	10	10	100
1,2,3,4,7,8-HxCDD	ND	10	9.9	99
1,2,3,4,6,7,8-HpCDD	2.3	10	7.6	76
OCDD	22	50	53	106

	% Recovery
13C-2,3,7,8-TCDF	72
13C-2,3,7,8-TCDD	79
13C-1,2,3,7,8-PeCDD	64
13C-1,2,3,4,7,8-HxCDD	67
13C-1,2,3,4,6,7,8-HpCDD	49
13C-OCDD	29

ND=Not Detected
NA=Not Applicable

Reported by: Robert Hrabak Approved by: Shelly Eyraud

The cover letter is an integral part of this report.
Version 070187

Enseco
A Corning Company

☒ 7440 Lincoln Way, Garden Grove, CA 92641, (714,
☐ 2810 Bunsen Ave., Unit A Ventura, CA 93003, (805) 650-0546
☐ 2325 Skyway Dr., Unit K, Santa Maria, CA 93455, (805) 922-2776
☐ 9537 Telstar Ave., Unit 118, El Monte, CA 91731, (818) 442-8400
☐ Mobile Labs, (800) ENSECO 8

CHAIN OF CUSTODY RECORD

Date 5-28-91 Page 1 of 1

Lab Number 6-911149 13

CLIENT Enseco-CRL Garden Grove

ADDRESS TC: Enseco-CAL Labs

PROJECT NAME (55-1738-28) Parametrix, Inc.

CONTRACT / PURCHASE ORDER / QUOTE #

PROJECT MANAGER Sylvia Faudi

PHONE NUMBER (714) 895-4342

SITE CONTACT

ANALYSES

Sample No. / Identification	Date	Time	Lab Sample Number	SAMPLE TYPE LIQ.	AIR	SOLID	No. of Containers	8270 - Diesel							Sample Condition/ REMARKS
SC-1	5/22		6-911149 13-01			X	1	X							

SAMPLERS: (Signature)

Relinquished by: (Signature) Mike J. Cornejo

Relinquished by: (Signature)

Received by: (Signature)

Received by: (Signature) — Date 5/28/91 Time 4:30 p.m.

Date Time

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Enseco Terms and Conditions, unless a contract or purchase order has been executed and is cited above.

Relinquished by: (Signature)

Date Time

Received for Laboratory by: Peter Baroff

Date RECEIVED	Time	Date ACCEPTED	Time
5/29/91	0825	5/29/91	0825

Method of Shipment:

Special Instructions:
Normal TAT Due by 6-5-91

Will Fax P/C & P.O.

SAMPLE DISPOSITION:
1. Storage time requested: _____ days
(Samples will be stored for 30 days without additional charges; thereafter storage charges will be billed at the published rates.)
2. Sample to be returned to client: Y N
(Enseco will dispose of unreturned samples at no extra charge. Disposal will be by incineration wherever possible; otherwise, as appropriate, according to legal requirements.)

ENS—1145

DISTRIBUTION: White with report, Yellow to Enseco, Pink to Courier, Gold to Sample Control

Field Sa. ,le/Chain of Custody Sheet

6-91, .413

Parametrix, Inc. • 13020 Northup Way, Suite 8 • Bellevue, Washington 98005

PROJECT NAME NW Cooperage PROJECT NO. 55-1738-28 CLIENT Ecology

SAMPLERS V. Martinez, K. Easthouse RECORDER VBM

MATRIX				# OF CONTAINERS AND PRESERVATIVE						LOCATION/NO.	DATE				STATION AND SAMPLE DESCRIPTION	MISCELLANEOUS INFORMATION
WATER	AIR	SEDIMENT	OTHER	UNPRESERVED	H_2SO_4	HNO_3	NAOH	NAOH AND ZINC ACETATE	OTHER		MONTH	DAY	YEAR	TIME		
		X		3						SC-1	05	22	91	1030	Soil composite (SC-1)	

TOTAL CONTAINERS :

LOCATION/NO.	MEASURING POINT	DEPTH TO WATER	TEMPERATURE DEGREES	pH	CONDUCTIVITY (UNITS)	VOLUME PURGED (GAL)

CHAIN OF CUSTODY RECORD (PLEASE PRINT)

RELINQUISHED BY: (NAME)	DATE	TIME	RECEIVED BY: (NAME)	DATE	TIME
Victoria B. Martinez	5-22-91	1030	Fed Ex		
FedEx	5/23	1030	[illegible]	5/23	1030

Parametrix, Inc. *Consultants in Engineering and Environmental Sciences*

13020 Northup Way Bellevue, WA 98005
206-455-2550 • Fax: 206-869-9556

July 5, 1991
55-1738-28

Mr. Bill Kane
Parametrix, Inc.
13020 Northup Way
Bellevue, WA 98005

Dear Mr. Kane,

Enclosed are the results of the static acute trout bioassay our Toxicology laboratory performed on the sediment sample labeled Slip Sed 2/DS-2. This sediment caused no significant mortality at 100 mg/l or 1000 mg/l.

The test was conducted according to Biological Testing Methods Part A - Static Acute Fish Toxicity Test (DOE 80-12).

If you have any questions, please contact me.

Amy Shields

Amy Shields

STATIC ACUTE FISH TOXICITY TEST

Sample Sediment
Source Northwest Cooperage
Date Collected May 29, 1991
Date Delivered May 31, 1991

Start Date June 10, 1991
End Date June 14, 1991
Project No. 55-1738-28
Test Fish Rainbow trout

Time 1530
Staff

Test Material Conc	Number Organisms/ Container	Mortality/24 hrs. 0	24	48	72	96	Total Mortality	pH 0	96	Specific Conductivity 0	96	Dissolved Oxygen (mg/L) 0	24	48	72	96	Temperature (°C) 0	24	48	72	96
ControlA	10	0	0	0	0	0	0	6.9	7.2	130	130	6.6	7.5	7.4	7.0	8.4	11.0	12.0	13.0	13.0	12.0
ControlB	10	0	0	0	0	0	0										11.0	12.0	13.0	13.0	12.0
ControlC	10	0	0	0	0	0	0										11.0	12.0	13.0	13.0	12.0
100mg/l A	10	0	0	0	0	0	0	7.1	7.2	140	130	6.6	7.4	7.0	6.9	7.4	11.0	12.0	13.0	13.0	12.0
100mg/l B	10	0	0	0	0	0	0										11.0	12.0	13.0	13.0	12.0
100mg/l C	10	0	0	0	0	0	0										11.0	12.0	13.0	13.0	12.0
1000mg/l	10	0	0	0	0	0	0	7.2	7.2	150	150	6.2	7.2	6.9	6.9	7.4	11.0	12.0	13.0	13.0	12.0
1000mg/l	10	0	0	0	0	0	0										11.0	12.0	13.0	13.0	12.0
1000mg/l	10	0	0	1	0	0	1										11.0	12.0	13.0	13.0	12.0

Comments Pore water salinity is 31 ppt.

Field Sa..ple/Chain of Custody Sheet

Parametrix, Inc. • 13020 Northup Way • Bellevue, Washington 98005

PROJECT NAME _____ PROJECT NO. _____ CLIENT _____

SAMPLERS _____ RECORDER _____

MATRIX				# OF CONTAINERS AND PRESERVATIVE						LOCATION/NO.	DATE				STATION AND SAMPLE DESCRIPTION	MISCELLANEOUS INFORMATION
WATER	AIR	SEDIMENT	OTHER	UNPRESERVED	H_2SO_4	HNO_3	NAOH	NAOH AND ZINC ACETATE	OTHER		MONTH	DAY	YEAR	TIME		
		X														
		X														

TOTAL CONTAINERS : 7

LOCATION/NO.	MEASURING POINT	DEPTH TO WATER	TEMPERATURE DEGREES	pH	CONDUCTIVITY (UNITS)	VOLUME PURGED (GAL)

CHAIN OF CUSTODY RECORD (PLEASE PRINT)

RELINQUISHED BY: (NAME)	DATE	TIME	RECEIVED BY: (NAME)	DATE	TIME

White Copy: Parametrix, Inc./Yellow Copy: Lab/Pink Copy: Client

6/87

Field Sampling Chain of Custody Sheet

Parametrix, Inc. • 13020 Northup Way • Bellevue, Washington 98005

PROJECT NAME Northwest Cooperage PROJECT NO. 55-1738-28 CLIENT Ecology

SAMPLERS Vicki Martinez RECORDER VBM

MATRIX: WATER	AIR	SEDIMENT	OTHER	# OF CONTAINERS AND PRESERVATIVE: UNPRESERVED	H_2SO_4	HNO_3	NAOH	NAOH AND ZINC ACETATE	OTHER	LOCATION/NO.	DATE: MONTH	DAY	YEAR	TIME	STATION AND SAMPLE DESCRIPTION	MISCELLANEOUS INFORMATION
		X									05	29	91		Slip Sed 2 (16 oz)	
		X									05	29	91		DS-2 (16 oz)	

TOTAL CONTAINERS: 2

LOCATION/NO.	MEASURING POINT	DEPTH TO WATER	TEMPERATURE DEGREES	pH	CONDUCTIVITY (UNITS)	VOLUME PURGED (GAL)

CHAIN OF CUSTODY RECORD (PLEASE PRINT)

RELINQUISHED BY: (NAME)	DATE	TIME	RECEIVED BY: (NAME)	DATE	TIME
Victoria B. Martinez	5/31/91	4:30	Amy K. [illegible]	[illegible]	4:30