A Department of Ecology Report

WASHINGTON STATE DEPARTMENT OF ECOLOGY

American Crossarm and Conduit Monitoring Results May 5 and October 14, 1998

Abstract

This document is one in a series describing the results of groundwater and surface water monitoring at the American Crossarm and Conduit (ACC) site. During 1998, samples were collected on May 5 and October 14 from four downgradient monitoring wells (MW-22, MW-23, MW-24, and MW-25) and two on-site surface water stations (ACCSW1 and ACCSW2). Prior to the October sampling, well MW-23 was damaged and subsequently has been decommissioned. All samples collected for this project were analyzed for polynuclear aromatic hydrocarbons (PAHs) and chlorinated phenolics.

In May and October, naphthalene, 2-methylnaphthalene, and 1-methylnaphthalene were the primary PAHs that were detected in the downgradient monitoring wells. In 1998, concentrations for naphthalene ranged from 0.012 to 0.027 µg/L, 2-methylnaphthalene from 0.0098 to 0.026 µg/L, and 1-methylnaphthalene from 0.0049 to 0.011 µg/L. PAH concentrations detected in 1998 are below standards for Safe Drinking Water Maximum Contaminant Levels (MCLs) of 0.2 µg/L. MTCA Method B (residential) cleanup standards have been established for carcinogenic PAHs (CPAHs) in groundwater beyond the facility boundary at 0.012 µg/L. In 1998, no PAHs classified as carcinogenic were detected in any of the monitoring wells. Naphthalene and 2-methylnaphthalene – as well as fluorene, phenanthrene and pyrene – were reported in 1997 as exceeding the MTCA Method B cleanup standard for CPAHs. None of these PAHs has been classified as carcinogenic and therefore does not exceed the cleanup standard.

Pentachlorophenol (PCP) was detected in MW-22 at an estimated concentration of 0.0033 µg/L in May and 0.0031 µg/L in October. PCP concentrations were below MTCA Method B cleanup standards of 0.729 µg/L. This is the first occurrence of PCP in any of the downgradient wells.

Most of the PAHs and chlorinated phenolics analyzed for were detected at both surface water stations during both sample events. All detected analytes in the surface water samples were far below established water quality criteria for fresh water (EPA 1992).

by Pamela B. Marti *Waterbody No. WA-1229829466607GW* *Ecology Report #99-341*
October 1999

Background

ACC of Chehalis, Washington (Figure 1) conducted woodcutting, milling, and treatment of electrical utility poles from the early 1930s to 1985. In 1988, ACC was added to the National Priorities List due to noncompliance of waste handling requirements, which resulted in the contamination of both on- and off-site soil, groundwater and surface water. Pentachlorophenol (PCP), polynuclear aromatic hydrocarbons (PAHs) and dioxins/furans were the primary contaminants identified. Remedial action at the ACC site, conducted by the EPA, consisted of the reduction of gross floating product on groundwater beneath the facility, off-site disposal of facility structures and the most contaminated soil, and containment of the remaining contaminated soil on the facility property.

After EPA cleanup activities were completed in the mid-1990s the operation and maintenance responsibilities for the site were transferred to the Department of Ecology. In 1997, Ecology initiated semi-annual sampling of downgradient monitoring wells and surface water to assess the effectiveness of the remedial action. This work is scheduled until the year 2001, at which time the monitoring program will be evaluated.

Results

Samples were collected on May 5 and October 14, 1998 from four downgradient monitoring wells (MW-22, MW-23, MW-24, and MW-25) and two on-site surface water stations (ACCSW1 and ACCSW2) (Figure 2). In October, samples were collected from only three monitoring wells, due to the loss of MW-23. Sampling procedures are discussed in Appendix A. All samples collected for this project were analyzed for polynuclear aromatic hydrocarbons (PAHs) and chlorinated phenolics. The quality of the data is acceptable for use for both sample rounds. Discussion of quality assurance along with the laboratory reporting sheets is presented in Appendix B.

Field Observations

Table 1 lists field observations for each sample location including well depth, static water level, pH, specific conductance, temperature, and purged volume. All field parameters were within expected ranges.

Since monitoring began in 1997, the condition of the monitoring well network (MW-22 to MW-25) has declined. These four wells were installed in 1991. The well logs describe the upper five to 12 feet of surface material as loose fill composed of wood chips and bark, with variable gravel content, which is very soft with limited bearing capacity. It appears that this layer is compressing and/or decomposing, causing the wells protective outer casings and concrete pads to sink below the top of the well casings. The uneven subsidence of the protective casing and concrete pad for well MW-22 is causing the well casing to bend. In addition, the property where the wells are located is being filled and graded. Prior to the October, sampling well MW-23 was damaged beyond repair while the property was cleared for more fill material. MW-23 was decommissioned in October 1998.

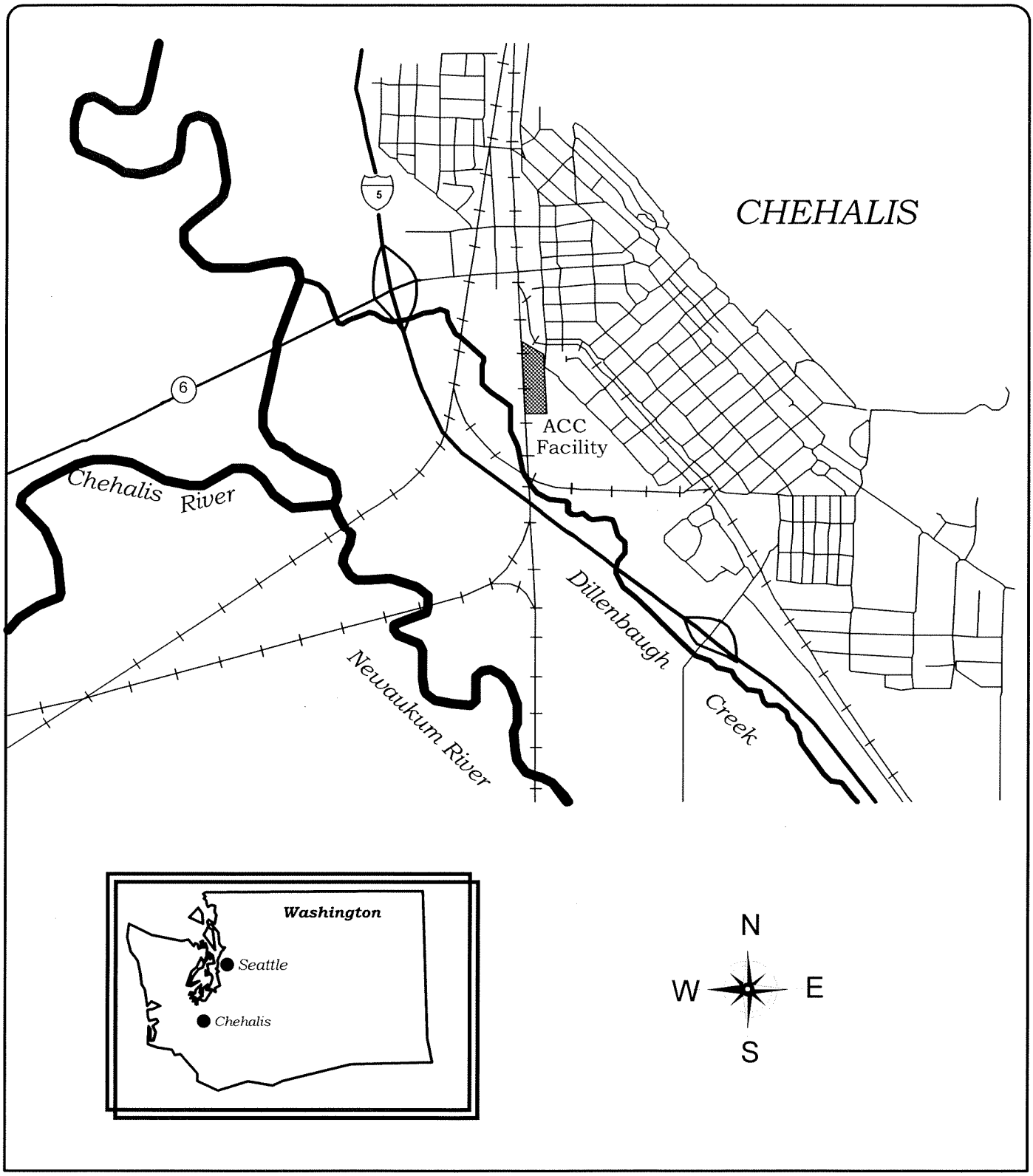

Figure 1: American Crossarm & Conduit Site Location

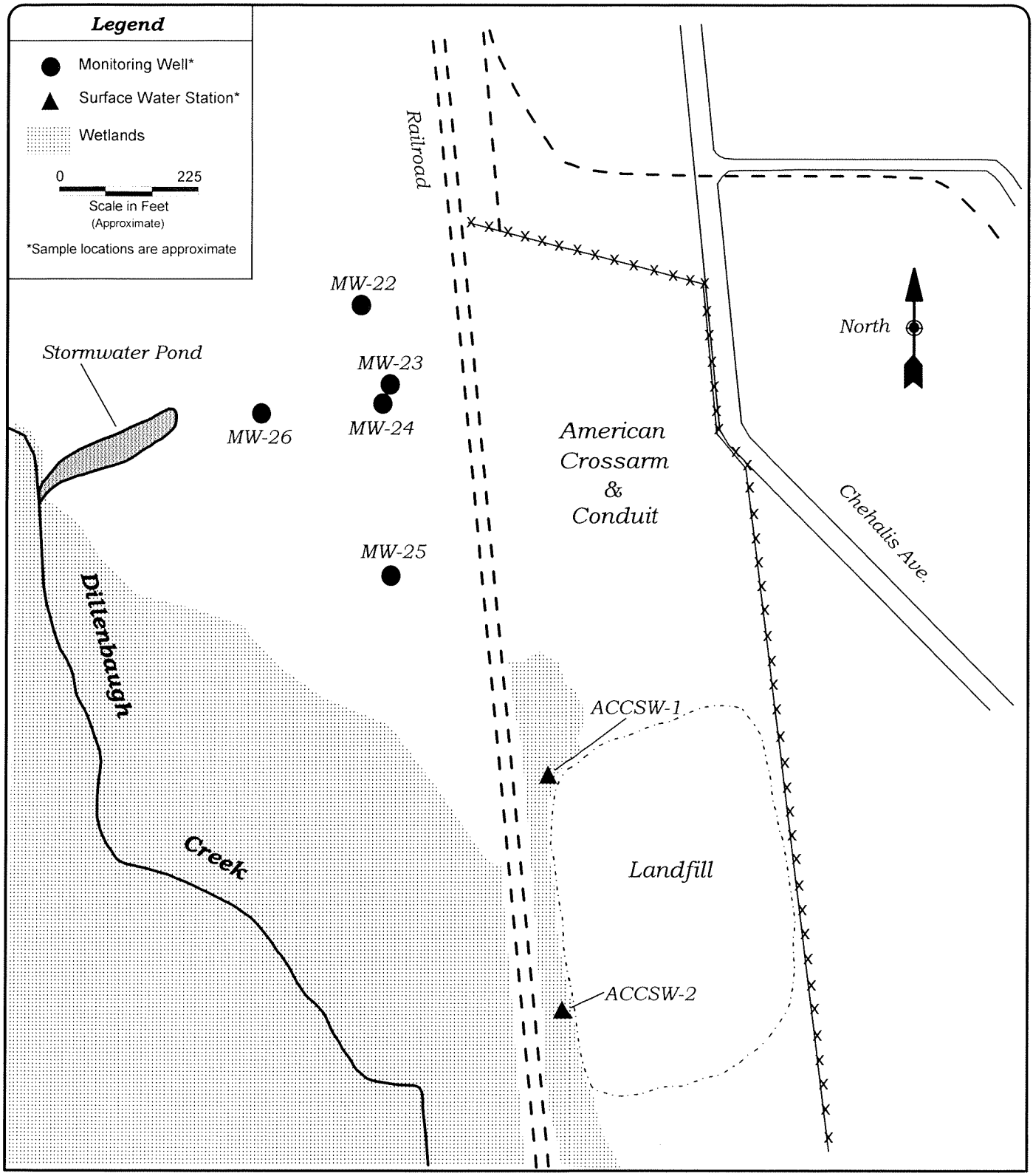

Figure 2: American Crossarm & Conduit Sample Locations

Table 1. Summary of Field Parameters Results for May and October 1998.

	MW-22	*MW-25*	*MW-23*	*MW-24*	*ACCSW1*	*ACCSW2*
Total Depth (feet)	35.73	39.85*	35.30*	42.90*	---	---
Depth to Water (feet)	3.54-5.03	2.35-3.65	1.67	2.51-3.93	---	---
pH (standard units)	6.8-6.7	6.9-6.5	6.8	6.9-6.8	7.5-6.3	7.2-5.2
Specific Conductance (umhos/cm)	530-520	415-420	420	430-470	338-250	312-160
Temperature (°C)	13.7-16.1	13.7-16.2	13.5	13.3-15.5	23.2-14.5	20.1-13.7
Purge Volume (gal)	12-20	11	11	11-15	---	---

* Approximately 4 inches were removed from these well casings because subsidence of the protective casing was blocking the well tops.

Analytical Results

All samples were analyzed for polynuclear aromatic hydrocarbons (PAHs) and chlorinated phenolics. PAHs were analyzed using EPA SW846 Method 8270 by SIM (Select Ion Monitoring) with a method detection limit of about 0.1 µg/L. Chlorinated phenolics were analyzed using EPA SW846 Method 8150 (modified) with a method detection limit of 0.01-1.0 µg/L. The detection limits achieved are generally lower then the stated method detection limit, which is required for this project to meet cleanup standards. Analytical results for the May and October sample events are summarized in Tables 2 and 3. PAH results have been grouped into low PAH (LPAH) and high PAH (HPAH) based on their molecular weights in relation to fluoranthene. Discussion of quality assurance along with the laboratory reporting sheets is presented in Appendix B. Analytical data for 1997 is presented in Appendix C.

In May and October, naphthalene, 2-methylnaphthalene, and 1-methylnaphthalene were the primary PAHs that were detected in the four monitoring wells. In May, concentrations for naphthalene ranged from 0.012 to 0.017 µg/L, 2-methylnaphthalene from 0.0098 to 0.012 µg/L, and 1-methylnaphthalene from 0.0049 to 0.0062 µg/L. Other PAHs were detected, but at concentrations below the analytical detection limit. In October, naphthalene (0.014-0.027 µg/L), 2-methylnaphthalene (0.014-0.026 µg/L) and 1-methylnaphthalene (0.0058J–0.011 µg/L) were the only analytes detected in the three wells. Pentachlorophenol (PCP) was detected in MW-22 at an estimated concentration of 0.0033 µg/L in May and 0.0031 µg/L in October.

Most of the PAHs analyzed for were detected at both surface water stations during both sample events. Table 4 shows the sum of both the low and high molecular weight PAHs. 2-methylnaphthalene and 1-methylnaphthalene, as well as the chlorinated phenolics, were also detected at both surface water stations as shown in Tables 2 and 3.

Table 2: Summary of Analytes Detected (ug/L) at American Crossarm and Conduit in May 1998

Sample Station	MW-22	MW-25	MW-23	MW-24	MW-24A (Duplicate)	ACCSW1	ACCSW2
Polynuclear Aromatic Hydrocarbons							
Naphthalene	**0.015**	**0.017**	**0.015**	**0.012**	**0.012**	**0.21**	**0.11**
Acenaphthylene	0.0066 U	0.0064 U	0.0068 U	0.0066 U	0.0066 U	0.0065 U	0.0065 U
Acenaphthene	**0.0026 J**	0.0064 U	**0.0033 J**	0.0066 U	0.0066 U	**0.22**	**0.12**
Fluorene	**0.0028 J**	0.0064 U	**0.0033 J**	0.0066 U	0.0066 U	**0.13**	**0.096**
Phenanthrene	0.0066 U	0.0064 U	0.0068 U	0.0066 U	0.0066 U	**0.16**	**0.11**
Anthracene	0.0066 U	0.0064 U	0.0068 U	0.0066 U	0.0066 U	**0.073**	**0.036**
Sum LPAH	**0.0204 J**	**0.017**	**0.0216 J**	**0.012**	**0.012**	**0.793**	**0.472**
Fluoranthene	0.0033 U	0.0032 U	0.0034 U	0.0033 U	0.0033 U	**0.24**	**0.047**
Pyrene	0.0066 U	0.0064 U	0.0068 U	0.0066 U	0.0066 U	**0.12**	**0.024**
Benzo(a)anthracene	0.0066 U	0.0064 U	0.0068 U	0.0066 U	0.0066 U	**0.019**	**0.0057 J**
Chrysene	0.0066 U	0.0064 U	0.0068 U	0.0066 U	0.0066 U	**0.026**	**0.0062 J**
Benzo(b)fluoranthene	0.0066 U	0.0064 U	0.0068 U	0.0066 U	0.0066 U	**0.02**	**0.0073 J**
Benzo(k)fluoranthene	0.0066 U	0.0064 U	0.0068 U	0.0066 U	0.0066 U	**0.0066 J**	**0.0037 J**
Benzo(a)pyrene	0.0066 U	0.0064 U	0.0068 U	0.0066 U	0.0066 U	**0.006 J**	**0.0043 J**
Ideno(1,2,3-cd)pyrene	0.0033 U	0.0032 U	0.0034 U	0.0033 U	0.0033 U	**0.0078 J**	0.0032 U
Dibenzo(a,h)anthracene	0.0033 U	0.0032 U	0.0034 U	0.0033 U	0.0033 U	0.0032 U	0.0032 U
Benzo(ghi)perylene	0.0033 U	0.0032 U	0.0034 U	0.0033 U	0.0033 U	**0.0069 J**	0.0032 U
Sum HPAH	0.0066 U	0.0064 U	0.0068 U	0.0066 U	0.0066 U	**0.4523 J**	**0.0982 J**
2-Methylnaphthalene	**0.01**	**0.012**	**0.01**	**0.0098**	**0.01**	**0.089**	**0.031**
1-Methylnaphthalene	**0.0054**	**0.0062**	**0.0054**	**0.0049**	**0.0053**	**0.08**	**0.026**
2-Chloronaphthalene	0.0066 U	0.0064 U	0.0068 U	0.0066 U	0.0066 U	0.0065 U	0.0065 U
Dibenzofuran	0.0033 U	0.0032 U	**0.0026 J**	0.0033 U	0.0033 U	**0.082**	**0.066**
Retene	**0.0034 J**	0.0064 U	0.0068 U	0.0066 U	0.0066 U	**0.024**	**0.021**
Chlorinated Phenolics							
2,4,6-Trichlorophenol	0.024 U	0.024 U	0.025 U	0.024 U	0.024 U	**0.018 J**	**0.013 J**
2,4,5-Trichlorophenol	0.024 U	0.024 U	0.025 U	0.024 U	0.024 U	**0.0065 J**	**0.013 NJ**
2,3,4,6-Tetrachlorophenol	0.022 U	0.022 U	0.023 U	0.022 U	0.022 U	**0.093**	**0.068**
2,3,4,5-Tetrachlorophenol	0.022 U	0.022 U	0.023 U	0.022 U	0.022 U	0.022 U	0.023 U
Pentachlorophenol	**0.0033 J**	0.02 U	0.021 U	0.02 U	0.02 U	0.02 U	0.021 U

U = The analyte was not detected at or above the reported value.

J = The analyte was positively identified. The associated numerical value is an estimate.

NJ = There is evidence that the analyte is present. The associated numerical result is an estimate.

Table 3: Summary of Analytes Detected (ug/L) at American Crossarm and Conduit in October 1998

Sample Station	MW-22	MW-22A (Duplicate)	MW-24	MW-25	ACCSW1	ACCSW2
Polynuclear Aromatic Hydrocarbons						
Naphthalene	**0.02**	**0.015**	**0.014**	**0.027**	**0.044**	**0.24**
Acenaphthylene	0.0062 U	0.0063 U	0.0063 U	0.0062 U	0.0063 U	0.0063 U
Acenaphthene	0.0062 U	0.0063 U	0.0063 U	0.0062 U	**0.5**	**0.19**
Fluorene	0.0062 U	0.0063 U	0.0063 U	0.0062 U	**0.044**	**0.15**
Phenanthrene	0.0062 U	0.0063 U	0.0063 U	0.0062 U	**0.018**	**0.096**
Anthracene	0.0062 U	0.0063 U	0.0063 U	0.0062 U	**0.11**	**0.029**
Sum LPAH	**0.02**	**0.015**	**0.014**	**0.027**	**0.716**	**0.705**
Fluoranthene	0.0062 U	0.0063 U	0.0063 U	0.0062 U	**0.46**	**0.039**
Pyrene	0.012 U	0.012 U	0.012 U	0.012 U	**0.36**	**0.022**
Benzo(a)anthracene	0.0062 U	0.0063 U	0.0063 U	0.0062 U	**0.043**	**0.0042 J**
Chrysene	0.0062 U	0.0063 U	0.0063 U	0.0062 U	**0.073**	**0.0072**
Benzo(b)fluoranthene	0.0062 U	0.0063 U	0.0063 U	0.0062 U	**0.047**	**0.007**
Benzo(k)fluoranthene	0.0062 U	0.0063 U	0.0063 U	0.0062 U	**0.014**	**0.0026**
Benzo(a)pyrene	0.0062 U	0.0063 U	0.0063 U	0.0062 U	**0.02**	**0.0049**
Ideno(1,2,3-cd)pyrene	0.012 U	0.012 U	0.012 U	0.012 U	**0.015**	0.0063 U
Dibenzo(a,h)anthracene	0.0062 U	0.0063 U	0.0063 U	0.0062 U	0.0063 U	0.0063 U
Benzo(ghi)perylene	0.0062 U	0.0063 U	0.0063 U	0.0062 U	**0.014 J**	**0.0039 J**
Sum HPAH	0.0062 U	0.0063 U	0.0063 U	0.0062 U	**1.046 J**	**0.908 J**
2-Methylnaphthalene	**0.022**	**0.014**	**0.014**	**0.026**	**0.018**	**0.048**
1-Methylnaphthalene	**0.0097**	**0.0058 J**	0.0063 U	**0.011**	**0.043**	**0.046**
Dibenzofuran	0.0062 U	0.0063 U	0.0063 U	0.0062 U	**0.07**	**0.091**
Retene	0.0062 U	0.0063 U	0.0063 U	0.0062 U	**0.027**	0.0063 U
Chlorinated Phenolics						
2,4,6-Trichlorophenol	0.047 U	0.047 U	0.048 U	0.047 U	0.049 U	0.047 U
2,4,5-Trichlorophenol	0.047 U	0.047 U	0.048 U	0.047 U	**0.0016 NJ**	0.047 U
2,3,4,6-Tetrachlorophenol	0.043 U	0.043 U	0.044 U	0.043 U	**0.0049 NJ**	**0.016 NJ**
2,3,4,5-Tetrachlorophenol	0.043 U	0.043 U	0.044 U	0.043 U	0.045 U	0.043 U
Pentachlorophenol	**0.0031 J**	**0.0031 NJ**	0.04 U	0.039 U	**0.17**	**0.024 NJ**

U = The analyte was not detected at or above the reported value.

J = The analyte was positively identified. The associated numerical value is an estimate.

NJ = There is evidence that the analyte is present. The associated numerical result is an estimate.

Table 4. Summary of PAH Results (µg/L) in Surface Water.

	May 1998		*October 1998*	
	ACCSW1	*ACCSW2*	*ACCSW1*	*ACCSW2*
LPAH	0.793	0.472	0.716	0.705
HPAH	0.4523 J	0.0982 J	1.046 J	0.908 J

J = The analyte was positively identified. The associated numerical result is an estimate.

Discussion

Groundwater and surface water downgradient of the facility are being monitored to determine if the selected remedy of off-site disposal and containment of some of the contaminated soil and sediment on the facility property has been an effective form of remediation. At the completion of remediation, long distance transport of PAHs in groundwater was considered very unlikely due to the location of the remaining contaminant plumes, the physical properties of PAHs, and the tight hydrogeologic setting. It was anticipated that remaining PAHs on the ACC property would either become bound to soil particles, microbiologically degrade, or be resolubalized into the water column. It was expected that MTCA Method A cleanup standards of 0.1 µg/L for carcinogenic PAHs (CPAHs) in groundwater would be met at the facility boundary due to these processes.

In May and October, naphthalene, 2-methylnaphthalene, and 1-methylnaphthalene were the primary PAHs that were detected in the downgradient monitoring wells. In May, other PAHs were detected, but at concentrations below the analytical detection limit. PAH concentrations are below standards for Safe Drinking Water MCLs of 0.2 µg/L. MTCA Method B (residential) cleanup standards have been established for CPAHs in groundwater beyond the facility boundary at 0.012 µg/L. In 1998, no PAHs classified as carcinogenic were detected in any of the downgradient monitoring wells. Naphthalene and 2-methylnaphthalene – as well as fluorene, phenanthrene and pyrene – were reported in 1997 as exceeding the MTCA Method B cleanup standard for CPAHs. None of these PAHs has been classified as carcinogenic and therefore does not exceed the cleanup standard.

Since beginning the monitoring program in 1997, naphthalene, 2-methylnaphthalene, and 1-methylnaphthalene are the primary PAHs detected in the downgradient monitoring wells. In 1990, naphthalene had been detected at a low concentration in well MW-24. The monitoring indicates that PAHs are migrating beyond the facility boundary to the downgradient monitoring wells. Of the PAHs analyzed, naphthalene, 2-methylnaphthalene, and 1-methylnaphthalene have a greater solubility due to their lower molecular weights. Water solubility is a direct function of molecular weight, with the lighter weight compounds having greater solubility. In general, however, water solubility is relatively low for all PAHs due to their high octanol/water partition coefficients.

PCP was also detected in well MW-22 in both May and October. This was the first occurrence of PCP in any of the downgradient wells. PCP was expected to undergo a fate similar to PAHs, such as absorption to soil particles and organic materials in the subsurface. Long-distance transport in groundwater was considered unlikely.

Most of the PAHs and chlorinated phenolics analyzed for were detected at both surface water stations during both sample events. Considering that these samples are collected adjacent to the landfill in which contaminated site debris was placed and a railroad track, the occurrence of PAHs and chlorinated phenolics in the surface water samples is not unexpected. In both May and October, the sum of the LPAH and HPAH decreased from the upstream station (ACCSW1) to the downstream station (ACCSW2). In the environment, PAHs can volatilize, become fixed to sediments, biodegrade, or be photo-oxidized. The physical and chemical properties of different PAHs vary greatly with respect to their molecular weights. Table 5 is a summary of ambient water quality criteria for fresh water established for select PAHs and chlorinated phenolics. All detected analytes in the surface water samples were far below the fresh water quality criteria (EPA 1992). For comparison, human health criteria for fresh water have also been included in Table 5.

Table 5. Summary of Water Quality and Human Health Criteria for Fresh Water (µg/L).

	Priority Pollutant	*Carcinogen*	*Fresh Acute Criteria*	*Fresh Chronic Criteria*	*Human Health Criteria*
PAHs					
Naphthalene	Y	N	2300	620	
2-Chloronaphthalene	Y	N	1,600		
Acenapthene	Y	N	1,700*	520*	
Fluorene	Y	N			1,300
Anthracene	Y	N			9,600
Fluoranthene	Y	N	3,980		300
Pyrene	Y	N			960
Benzo(a)anthracene	Y	Y			0.0028
Chrysene	Y	Y			0.0028
Benzo(b)fluoranthene	Y	Y			0.0028
Benzo(k)fluoranthene	Y	Y			0.0028
Benzo(a)pyrene	Y	Y			0.0028
Dibenzo(a,h)anthracene	Y	Y			0.0028
Indeno(1,2,3-cd)pyrene	Y	Y			0.0028
Chlorinated Phenolics					
2,4,6-Trichlorophenol	Y	Y		970	2.10
2,4,5-Trichlorophenal	N	N			
Pentachlorophenol (for a pH of 6.5)	Y	Y	5.49	3.46	0.28

* Insufficient data to develop criteria value.

(EPA. 1992. Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants; State Compliance Final Rule.)

Conclusions and Recommendations

- In 1998, naphthalene, 2-methylnaphthalene, and 1-methylnaphthalene were the primary PAHs detected in the downgradient wells. Although monitoring indicates that PAHs are migrating beyond the facility boundary, none of the PAHs detected exceed any established drinking water or cleanup standards. PAH concentrations detected in 1998 are below standards for Safe Drinking Water MCLs. MTCA Method B cleanup standards have been established for CPAHs in groundwater beyond the facility boundary. In 1998, no PAHs classified as carcinogenic were detected in any of the downgradient monitoring wells. Monitoring of the downgradient wells should continue as scheduled to the year 2001.

- Pentachlorophenol (PCP) was detected in MW-22 in both May and October. PCP concentrations were below MTCA Method B cleanup standards of 0.729 μg/L. This is the first occurrence of PCP in any of the downgradient wells.

- Most of the PAHs and chlorinated phenolics analyzed for were detected at both surface water stations during both sample events. All detected analytes in the surface water samples were far below established water quality criteria for fresh water.

- The condition of the downgradient monitoring wells is in decline. The monitoring wells were constructed in an area that has several feet of fill composed of wood chips and bark. This material is now compressing and/or decomposing which is causing the wells' protective outer casings and concrete pads to sink below the well tops, and in the case of MW-22, bend the well casing. It is uncertain how long the integrity of the wells will last under these conditions. Prior to the October sampling well MW-23 was damaged beyond repair while the property was being cleared for fill material. MW-23 was decommissioned in October 1998. The downgradient monitoring network should be evaluated.

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Contacts

Pam Marti — Washington State Department of Ecology
Environmental Assessment Program
(360) 407-6768

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Appendix A

Sampling Methods

Groundwater and surface water samples were collected on May 5 and October 14, 1998. Samples were collected from downgradient wells MW-22, MW-23, MW-24 and MW-25 and two on-site surface water stations, ACCSW1 and ACCSW2 (Figure 2).

The four monitoring wells were sampled using standard sampling techniques. Prior to sample collection, static water level measurements were recorded to 0.01 feet using an electronic water level probe. The probe was rinsed with deionized water after each use. All wells were purged and sampled using a stainless steel submersible pump with a pump rate of about 0.5-gpm. Samples were collected when pH, temperature and specific conductance readings stabilized (changes of 10% or less between measurements). The pump was decontaminated between wells by circulating laboratory grade detergent/water through the pump for five minutes, followed by a clean water rinse. Purge water was discharged to the ground near each well. All samples for PAHs and chlorinated phenolics were collected in 1-gallon jars with teflon lined lids.

Two surface water samples were collected to determine if on-site wetlands are receiving any contaminants from the former facility. The samples were collected from two areas considered representative of the site. The first sample location was at the outlet of a small seasonal pond which received surface runoff from the north half of the site. The second sample location was at a wetland area at the south end of the site, adjacent to the landfill. This station should represent runoff from most of the site, which would include possible leachate from the landfill. Surface water samples were collected using decontaminated stainless steel beakers, and transferred to 1-gallon sample jars. The surface water was assumed to be fully mixed, and the sample collected at mid-depth and as close to the center of flowing water as could be reached from the bank. Temperature, pH, and specific conductance were measured at the time each sample was collected.

Upon sample collection and proper labeling, samples were stored in an ice-filled cooler. Chain-of-custody procedures were followed in accordance with Manchester Laboratory protocol (Ecology, 1994).

Appendix B

Quality Assurance Samples

In general, the quality of the data is acceptable for use for all sample rounds. Quality control samples collected in the field consisted of blind duplicate samples. Blind duplicate samples were collected from well MW-24A in May and MW-22 in October. Duplicate samples provide an estimate of combined sampling and laboratory precision. The numeric comparison of duplicate results is expressed as the relative percent difference or RPD. RPDs are the ratio of the difference and the mean of the duplicate results expressed as a percentage. The RPDs for PAH results in May were within 7%, and in October within 44%. RPDs calculated for low concentrations such as these are often not representative of the overall precision.

In addition to field quality control samples, laboratory blanks, fortified laboratory blanks, matrix spikes, and surrogate compound recoveries were performed in the laboratory. Due to the low detection levels achieved with the SIM mode analysis for PAHs, low levels of some target compounds were detected in the laboratory blanks. The laboratory reported that due to laboratory procedures the detected results in the samples are real and do not require qualification, even though the target analytes were detected in the laboratory blanks. Fortified laboratory blanks were analyzed in place of matrix spikes for the May samples. Overall, fortified laboratory blank results and surrogate compound recoveries, as well as matrix spike results, were within acceptable limits.

Appendix C

Summary of Analytes Detected (ug/L) at American Crossarm and Conduit on January 1997

Sample Station	MW-22	MW-25	MW-23	MW-24	MW-24A (Duplicate)	ACCSW1	ACCSW2
Polynuclear Aromatic Hydrocarbons							
Naphthalene	0.014 U	**0.032**	**0.12**	**0.069**	**0.043**	**0.061**	**0.015**
Acenaphthylene	0.0074 U	0.0078 U	**0.0051 J**	0.0077 U	0.0075 U	**0.019**	**0.0057 J**
Acenaphthene	0.0074 U	0.0078 U	**0.0014 J**	0.0077 U	**0.00094 J**	**0.06**	**0.0058 J**
Fluorene	0.0074 U	**0.0037 J**	**0.014**	**0.0097**	**0.004 J**	**0.04**	**0.0055 J**
Phenanthrene	**0.0035 J**	**0.012**	**0.039**	**0.022**	**0.0099 J**	**0.03**	**0.0085**
Anthracene	0.0074 U	**0.0023 J**	**0.0032 J**	**0.0037 J**	**0.0028 J**	**0.035**	**0.016**
Sum LPAH	**0.0035 J**	**0.05 J**	**0.1827**	**0.1044 J**	**0.06064 J**	**0.245**	**0.0565 J**
Fluoranthene	0.0074 U	**0.0012 J**	**0.0068 J**	**0.0055 J**	**0.0021 J**	**0.042**	**0.012**
Pyrene	0.0074 U	0.0078 U	**0.0055 J**	**0.028**	0.0075 U	**0.041**	**0.012**
Benzo(a)anthracene	0.0074 U	0.0078 U	0.0076 U	0.0077 U	0.0075 U	**0.0061 J**	**0.00067 J**
Chrysene	0.0074 U	0.0078 U	**0.0027 J**	**0.0025 J**	0.0075 U	**0.014**	**0.0037 J**
Benzo(b)fluoranthene	0.0074 U	0.0078 U	0.019 U	0.019 U	0.019 U	**0.0071 J**	0.019 U
Benzo(k)fluoranthene	0.0074 U	0.0078 U	0.0076 U	0.0077 U	0.0075 U	0.0078 U	0.0078 U
Benzo(a)pyrene	0.0074 U	0.0078 U	0.0076 U	0.0077 U	0.0075 U	**0.0024 J**	0.0078 U
Indeno(1,2,3-cd)pyrene	0.0074 U	0.0078 U	0.0076 U	0.0077 U	0.0075 U	**0.0023 J**	0.0078 U
Dibenzo(a,h)anthracene	0.018 U	0.02 U	0.019 U	0.019 U	0.019 U	0.02 U	0.019 U
Benzo(ghi)perylene	0.0074 U	0.0078 U	0.0076 U	0.0077 U	0.0075 U	**0.0025 J**	0.0078 U
Sum HPAH	0.0074 U	**0.0012 J**	**0.015 J**	**0.036 J**	**0.0021 J**	**0.1174 J**	**0.02837 J**
2-Methylnaphthalene	**0.0097 J**	**0.017 J**	**0.029**	**0.007 J**	**0.0078 J**	**0.022**	0.0053 U
1-Methylnaphthalene	**0.0038 J**	**0.007 J**	**0.015 J**	**0.0094 J**	**0.0057 J**	**0.031**	**0.0034 J**
2-Chloronaphthalene	0.0074 U	0.0078 U	0.0076 U	0.0077 U	0.0075 U	0.0078 U	0.0078 U
Dibenzofuran	0.0074 U	0.0078 U	0.00095 U	0.0077 U	0.00033 U	**0.021**	**0.0024 J**
Retene	0.0074 U	0.0078 U	0.0076 U	0.0077 U	0.0075 U	**0.0062 J**	**0.00086 J**
Chlorinated Phenolics							
2,4,6-Trichlorophenol	0.029 U	0.031 U	0.031 U	0.031 U	0.030 U	0.031 U	0.031 U
2,4,5-Trichlorophenol	0.029 U	0.031 U	0.031 U	0.031 U	0.030 U	0.031 U	0.031 U
2,3,4,6-Tetrachlorophenol	0.029 U	0.031 U	0.031 U	0.031 U	0.030 U	**0.13**	**0.071**
2,3,4,5-Tetrachlorophenol	0.029 U	0.031 U	0.031 U	0.031 U	0.030 U	0.031 U	0.031 U
Pentachlorophenol	0.029 U	0.031 U	0.031 U	0.031 U	0.030 U	**0.58**	**0.35**

U = The analyte was not detected at or above the reported value.

J = The analyte was positively identified. The associated numerical value is an estimate.

Appendix C (cont'd)

Summary of Analytes Detected (ug/L) at American Crossarm and Conduit on September/December 1997

Sample Station	MW-22	MW-25	MW-23	MW-24	MW-24A (Duplicate)	ACCSW1	ACCSW2
Polynuclear Aromatic Hydrocarbons[1]							
Naphthalene	0.0071 U	**0.01**	**0.014**	0.0067 U	0.0064 U	**0.29**	**0.12**
Acenaphthylene	0.0066 U	0.0063 U	**0.00056 J**	0.0067 U	0.0064 U	**0.013**	**0.0053 J**
Acenaphthene	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	**0.4**	**0.11**
Fluorene	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	**0.18**	**0.051**
Phenanthrene	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	**0.065**	**0.024**
Anthracene	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	**0.11**	**0.029**
Sum LPAH	0.0066 U	**0.01**	**0.01456 J**	0.0067 U	0.0064 U	**1.058**	**0.3393 J**
Fluoranthene	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	**0.23**	**0.031**
Pyrene	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	**0.16**	**0.021**
Benzo(a)anthracene	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	**0.021**	**0.0029 J**
Chrysene	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	**0.031**	**0.0037 J**
Benzo(b)fluoranthene	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	**0.018 J**	**0.0031 J**
Benzo(k)fluoranthene	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	**0.0064 J**	**0.0011 J**
Benzo(a)pyrene	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	**0.013**	**0.0018 J**
Indeno(1,2,3-cd)pyrene	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	**0.0073**	**0.0012 J**
Dibenzo(a,h)anthracene	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	**0.0012 J**	0.0064 U
Benzo(ghi)perylene	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	**0.007**	**0.0016 J**
Sum HPAH	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	**0.4949 J**	**0.0674 J**
2-Methylnaphthalene	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	**0.14**	**0.035**
1-Methylnaphthalene	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	**0.16**	**0.043**
2-Chloronaphthalene	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	0.0064 U	0.0065 U
Dibenzofuran	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	**0.1**	**0.026**
Retene	0.0066 U	0.0063 U	0.0064 U	0.0067 U	0.0064 U	**0.017**	**0.0024 J**
Chlorinated Phenolics[2]							
2,4,6-Trichlorophenol	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
2,4,5-Trichlorophenol	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
2,3,4,6-Tetrachlorophenol	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	**0.008**	**0.004**
2,3,4,5-Tetrachlorophenol	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
Pentachlorophenol (PCP)	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	**0.007 J**	**0.005 J**

U = The analyte was not detected at or above the reported value.

J = The analyte was positively identified. The associated numerical value is an estimate.

[1] = PAH results from samples collected in December 1997.

[2] = Chlorinated phenolic results from samples collected in September 1997.

MANCHESTER ENVIRONMENTAL LABORATORY
7411 Beach Drive East, Port Orchard Washington 98366

June 24, 1998

Subject: **American Crossarm**

Samples: 98198060 through 98198066

Case No. 1374-98

Officer: Pam Marti

By: Karin Feddersen KF

SEMIVOLATILE ORGANICS
Polynuclear Aromatic Hydrocarbons

ANALYTICAL METHODS:

The samples were extracted following the Manchester modification of the EPA SW 846 8270 procedure with capillary GC/MS analysis of the sample extracts. Routine QA/QC procedures were performed with the analyses with one exception. Insufficient sample volume was available to prepare matrix spikes. Duplicate blank spikes were prepared instead.

HOLDING TIMES:

All sample and extraction holding times were within the recommended limits.

BLANKS:

Low levels of some target analytes were detected in the laboratory blanks. An analyte is considered native to the sample when the concentration is at least five times that present in the associated method blanks.

SURROGATES:

The primary surrogates for PAH analyses with silica gel cleanup are D10-Pyrene and D14-Terphenyl. 2-Fluorobiphenyl recoveries better reflect the more volatile PAH's, such as the Naphthalenes. All surrogate spike recoveries were within acceptable QC limits.

BLANK SPIKE:

Two fortified blanks, OFW8128A1 and OFW8128A2, were extracted and analyzed with these samples to evaluate data precision. The results have been included for your information. All recoveries were above 50%.

SUMMARY:

The data is acceptable for use as reported.

DATA QUALIFIER CODES:

U	-	The analyte was not detected at or above the reported value.
J	-	The analyte was positively identified. The associated numerical value is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are unusable for all purposes.
NAF	-	Not analyzed for.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range.
bold	-	The analyte was present in the sample. (Visual Aid to locate detected compound on report sheet.)

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Polyaromatic Hydrocarbons (PNA's)

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Sample: 98198060 **Date Received:** 05/06/98 **Method:** SW8270
Field ID: MW-22 **Date Prepared:** 05/08/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 06/16/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**.015**	
2-Methylnaphthalene	**.01**	
1-Methylnaphthalene	**.0054**	
2-Chloronaphthalene	.0066	U
Acenaphthylene	.0066	U
Acenaphthene	**.0026**	**J**
Dibenzofuran	.0033	U
Fluorene	**.0028**	**J**
Phenanthrene	.0066	U
Anthracene	.0066	U
Fluoranthene	.0033	U
Pyrene	.0066	U
Retene	**.0034**	**J**
Benzo(a)anthracene	.0066	U
Chrysene	.0066	U
Benzo(b)fluoranthene	.0066	U
Benzo(k)fluoranthene	.0066	U
Benzo(a)pyrene	.0066	U
Indeno(1,2,3-cd)pyrene	.0033	U
Dibenzo(a,h)anthracene	.0033	U
Benzo(ghi)perylene	.0033	U

Surrogate Recoveries

2-Fluorobiphenyl	**91**	%
D10-Pyrene	**98**	%
D14-Terphenyl	**97**	%

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Analysis Report for

Polyaromatic Hydrocarbons (PNA's)

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Sample: 98198061 **Date Received:** 05/06/98 **Method:** SW8270
Field ID: MW-25 **Date Prepared:** 05/08/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 06/16/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**.017**	
2-Methylnaphthalene	**.012**	
1-Methylnaphthalene	**.0062**	
2-Chloronaphthalene	.0064	U
Acenaphthylene	.0064	U
Acenaphthene	.0064	U
Dibenzofuran	.0032	U
Fluorene	.0064	U
Phenanthrene	.0064	U
Anthracene	.0064	U
Fluoranthene	.0032	U
Pyrene	.0064	U
Retene	.0064	U
Benzo(a)anthracene	.0064	U
Chrysene	.0064	U
Benzo(b)fluoranthene	.0064	U
Benzo(k)fluoranthene	.0064	U
Benzo(a)pyrene	.0064	U
Indeno(1,2,3-cd)pyrene	.0032	U
Dibenzo(a,h)anthracene	.0032	U
Benzo(ghi)perylene	.0032	U

Surrogate Recoveries

2-Fluorobiphenyl	**87**	%
D10-Pyrene	**99**	%
D14-Terphenyl	**98**	%

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Department of Ecology

Analysis Report for

Polyaromatic Hydrocarbons (PNA's)

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Sample: 98198062 **Date Received:** 05/06/98 **Method:** SW8270
Field ID: MW-23 **Date Prepared:** 05/08/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 06/16/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**.015**	
2-Methylnaphthalene	**.01**	
1-Methylnaphthalene	**.0054**	
2-Chloronaphthalene	.0068	U
Acenaphthylene	.0068	U
Acenaphthene	**.0033**	**J**
Dibenzofuran	**.0026**	**J**
Fluorene	**.0033**	**J**
Phenanthrene	.0068	U
Anthracene	.0068	U
Fluoranthene	.0034	U
Pyrene	.0068	U
Retene	.0068	U
Benzo(a)anthracene	.0068	U
Chrysene	.0068	U
Benzo(b)fluoranthene	.0068	U
Benzo(k)fluoranthene	.0068	U
Benzo(a)pyrene	.0068	U
Indeno(1,2,3-cd)pyrene	.0034	U
Dibenzo(a,h)anthracene	.0034	U
Benzo(ghi)perylene	.0034	U

Surrogate Recoveries

2-Fluorobiphenyl	**89**	%
D10-Pyrene	**100**	%
D14-Terphenyl	**96**	%

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Analysis Report for

Polyaromatic Hydrocarbons (PNA's)

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Sample: 98198063 **Date Received:** 05/06/98 **Method:** SW8270
Field ID: MW-24 **Date Prepared:** 05/08/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 06/16/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**.012**	
2-Methylnaphthalene	**.0098**	
1-Methylnaphthalene	**.0049**	
2-Chloronaphthalene	.0066	U
Acenaphthylene	.0066	U
Acenaphthene	.0066	U
Dibenzofuran	.0033	U
Fluorene	.0066	U
Phenanthrene	.0066	U
Anthracene	.0066	U
Fluoranthene	.0033	U
Pyrene	.0066	U
Retene	.0066	U
Benzo(a)anthracene	.0066	U
Chrysene	.0066	U
Benzo(b)fluoranthene	.0066	U
Benzo(k)fluoranthene	.0066	U
Benzo(a)pyrene	.0066	U
Indeno(1,2,3-cd)pyrene	.0033	U
Dibenzo(a,h)anthracene	.0033	U
Benzo(ghi)perylene	.0033	U

Surrogate Recoveries

2-Fluorobiphenyl	**87**	%
D10-Pyrene	**100**	%
D14-Terphenyl	**93**	%

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Department of Ecology

Analysis Report for

Polyaromatic Hydrocarbons (PNA's)

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Sample: 98198064 **Date Received:** 05/06/98 **Method:** SW8270
Field ID: MW-24A **Date Prepared:** 05/08/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 06/16/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**.012**	
2-Methylnaphthalene	**.01**	
1-Methylnaphthalene	**.0053**	
2-Chloronaphthalene	.0066	U
Acenaphthylene	.0066	U
Acenaphthene	.0066	U
Dibenzofuran	.0033	U
Fluorene	.0066	U
Phenanthrene	.0066	U
Anthracene	.0066	U
Fluoranthene	.0033	U
Pyrene	.0066	U
Retene	.0066	U
Benzo(a)anthracene	.0066	U
Chrysene	.0066	U
Benzo(b)fluoranthene	.0066	U
Benzo(k)fluoranthene	.0066	U
Benzo(a)pyrene	.0066	U
Indeno(1,2,3-cd)pyrene	.0033	U
Dibenzo(a,h)anthracene	.0033	U
Benzo(ghi)perylene	.0033	U

Surrogate Recoveries

2-Fluorobiphenyl	**88**	%
D10-Pyrene	**103**	%
D14-Terphenyl	**99**	%

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Analysis Report for

Polyaromatic Hydrocarbons (PNA's)

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Sample: 98198065 **Date Received:** 05/06/98 **Method:** SW8270
Field ID: ACCSW1 **Date Prepared:** 05/08/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 06/16/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**.21**	
2-Methylnaphthalene	**.089**	
1-Methylnaphthalene	**.08**	
2-Chloronaphthalene	.0065	U
Acenaphthylene	.0065	U
Acenaphthene	**.22**	
Dibenzofuran	**.082**	
Fluorene	**.13**	
Phenanthrene	**.16**	
Anthracene	**.073**	
Fluoranthene	**.24**	
Pyrene	**.12**	
Retene	**.024**	
Benzo(a)anthracene	**.019**	
Chrysene	**.026**	
Benzo(b)fluoranthene	**.02**	
Benzo(k)fluoranthene	**.0066**	**J**
Benzo(a)pyrene	**.006**	**J**
Indeno(1,2,3-cd)pyrene	**.0078**	**J**
Dibenzo(a,h)anthracene	.0032	U
Benzo(ghi)perylene	**.0069**	**J**

Surrogate Recoveries

2-Fluorobiphenyl	**83**	%
D10-Pyrene	**89**	%
D14-Terphenyl	**84**	%

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Analysis Report for

Polyaromatic Hydrocarbons (PNA's)

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Sample: 98198066 **Date Received:** 05/06/98 **Method:** SW8270
Field ID: ACCSW2 **Date Prepared:** 05/08/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 06/16/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**.11**	
2-Methylnaphthalene	**.031**	
1-Methylnaphthalene	**.026**	
2-Chloronaphthalene	.0065	U
Acenaphthylene	.0065	U
Acenaphthene	**.12**	
Dibenzofuran	**.066**	
Fluorene	**.096**	
Phenanthrene	**.11**	
Anthracene	**.036**	
Fluoranthene	**.047**	
Pyrene	**.024**	
Retene	**.021**	
Benzo(a)anthracene	**.0057**	**J**
Chrysene	**.0062**	**J**
Benzo(b)fluoranthene	**.0073**	**J**
Benzo(k)fluoranthene	**.0037**	**J**
Benzo(a)pyrene	**.0043**	**J**
Indeno(1,2,3-cd)pyrene	.0032	U
Dibenzo(a,h)anthracene	.0032	U
Benzo(ghi)perylene	.0032	U

Surrogate Recoveries

2-Fluorobiphenyl	**82**	**%**
D10-Pyrene	**84**	**%**
D14-Terphenyl	**76**	**%**

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Department of Ecology

Analysis Report for

Polyaromatic Hydrocarbons (PNA's)

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Sample: OBW8128A1 **Method:** SW8270

Project Officer: Pam Marti **Date Prepared:** 05/08/98 **Matrix:** Water

Date Analyzed: 06/16/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**.0024**	**J**
2-Methylnaphthalene	**.0004**	**J**
1-Methylnaphthalene	**.0026**	**J**
2-Chloronaphthalene	.02	U
Acenaphthylene	.02	U
Acenaphthene	.02	U
Dibenzofuran	.01	U
Fluorene	.02	U
Phenanthrene	**.0088**	**J**
Anthracene	.02	U
Fluoranthene	.01	U
Pyrene	.02	U
Retene	.02	U
Benzo(a)anthracene	.02	U
Chrysene	.02	U
Benzo(b)fluoranthene	.02	U
Benzo(k)fluoranthene	.02	U
Benzo(a)pyrene	.02	U
Indeno(1,2,3-cd)pyrene	.01	U
Dibenzo(a,h)anthracene	.01	U
Benzo(ghi)perylene	.01	U

Surrogate Recoveries

2-Fluorobiphenyl	**86**	**%**
D10-Pyrene	**107**	**%**
D14-Terphenyl	**101**	**%**

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Department of Ecology

Analysis Report for

Polyaromatic Hydrocarbons (PNA's)

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Sample: OBW8128A2 **Method:** SW8270

Date Prepared: 05/08/98 **Matrix:** Water

Project Officer: Pam Marti **Date Analyzed:** 06/16/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**.0022**	**J**
2-Methylnaphthalene	**.000047**	**J**
1-Methylnaphthalene	**.0024**	**J**
2-Chloronaphthalene	.02	U
Acenaphthylene	.02	U
Acenaphthene	.02	U
Dibenzofuran	.01	U
Fluorene	.02	U
Phenanthrene	**.0088**	**J**
Anthracene	.02	U
Fluoranthene	.01	U
Pyrene	.02	U
Retene	.02	U
Benzo(a)anthracene	.02	U
Chrysene	.02	U
Benzo(b)fluoranthene	.02	U
Benzo(k)fluoranthene	.02	U
Benzo(a)pyrene	.02	U
Indeno(1,2,3-cd)pyrene	.01	U
Dibenzo(a,h)anthracene	.01	U
Benzo(ghi)perylene	.01	U

Surrogate Recoveries

2-Fluorobiphenyl	**84**	**%**
D10-Pyrene	**108**	**%**
D14-Terphenyl	**102**	**%**

Authorized By: _____ Release Date: 6/24/98

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Polyaromatic Hydrocarbons (PNA's)

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Sample: OFW8128A1 **Method:** SW8270

Project Officer: Pam Marti **Date Prepared:** 05/08/98 **Matrix:** Water

Date Analyzed: 06/16/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**84**	
2-Methylnaphthalene	**88**	
1-Methylnaphthalene		NAF
2-Chloronaphthalene		NAF
Acenaphthylene	**87**	
Acenaphthene	**83**	
Dibenzofuran	**81**	
Fluorene	**85**	
Phenanthrene	**87**	
Anthracene	**85**	
Fluoranthene	**96**	
Pyrene	**91**	
Retene		NAF
Benzo(a)anthracene	**99**	
Chrysene	**99**	
Benzo(b)fluoranthene	**98**	
Benzo(k)fluoranthene	**82**	
Benzo(a)pyrene	**89**	
Indeno(1,2,3-cd)pyrene	**108**	
Dibenzo(a,h)anthracene	**113**	
Benzo(ghi)perylene	**101**	

Surrogate Recoveries

2-Fluorobiphenyl	**83**	%
D10-Pyrene	**96**	%
D14-Terphenyl	**97**	%

Authorized By: _____ Release Date: 6/24/98 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Polyaromatic Hydrocarbons (PNA's)

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Sample: OFW8128A2 **Method:** SW8270

Date Prepared: 05/08/98 **Matrix:** Water

Project Officer: Pam Marti **Date Analyzed:** 06/16/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**81**	
2-Methylnaphthalene	**85**	
1-Methylnaphthalene		NAF
2-Chloronaphthalene		NAF
Acenaphthylene	**85**	
Acenaphthene	**83**	
Dibenzofuran	**81**	
Fluorene	**84**	
Phenanthrene	**87**	
Anthracene	**87**	
Fluoranthene	**94**	
Pyrene	**92**	
Retene		NAF
Benzo(a)anthracene	**95**	
Chrysene	**95**	
Benzo(b)fluoranthene	**100**	
Benzo(k)fluoranthene	**85**	
Benzo(a)pyrene	**90**	
Indeno(1,2,3-cd)pyrene	**112**	
Dibenzo(a,h)anthracene	**115**	
Benzo(ghi)perylene	**101**	

Surrogate Recoveries

2-Fluorobiphenyl	**82**	%
D10-Pyrene	**98**	%
D14-Terphenyl	**93**	%

Authorized By: _____ Release Date: _____ Page: 1

Manchester Environmental Laboratory

7411 Beach Dr E, Port Orchard Washington 98366

CASE NARRATIVE

August 25, 1998

Subject: American Crossarm & Conduit Project

Sample(s): 98198060-66

Officer(s): Pam Marti

By: Bob Carrell
Organics Analysis Unit

CHLORINATED PHENOLS ANALYSIS

ANALYTICAL METHOD(S): (Draft EPA Method 8085)

The water samples for chlorinated phenols were extracted following Manchester Laboratory's standard operating procedure for the extraction of herbicides from water. The water samples were hydrolyzed at pH > 12, extracted with methylene chloride at pH < 2, solvent exchanged and derivatized along with the method blanks. These extracts were analyzed by capillary Gas Chromatography and Atomic Emission Detection (GC/AED). Confirmation of herbicides is performed by Gas Chromatography and Ion-Trap mass spectrometry (GC/ITD) or comparisons of elemental ratios of hetero-atoms to empirical formulas.

The method utilizes compound independent calibration (CIC) for quantitation of detected compounds. A calibration validation is performed each time CIC is used for target compounds. This is done by comparison of CIC to a single point calibration (SPC) of the target analyte being quantitated.

All analytes have a respective practical quantitation limit (PQL) that is higher than the corresponding method detection limit (MDL). If a target analyte is detected and its identification is unambiguously confirmed at a concentration below its PQL, the reported concentration is qualified as an estimate, ' J' qualifier.

BLANKS:

No target compounds were detected in the laboratory blanks. Hence, the blanks demonstrate the system was free from contamination.

HOLDING TIMES:

All samples were extracted and analyzed within the method holding times.

SURROGATES:

The 2,4,6-tribromophenol surrogate recoveries were acceptable, ranging from 63% to 102%

MATRIX SPIKING:

Not applicable.

COMMENTS:

The data is useable as qualified.

DATA QUALIFIER CODES

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are unusable for all purposes.
NAF	-	Not analyzed for.
N	-	For organic analytes there is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
NC	-	Not Calculated
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range.

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Lab ID: OBW8128B1 **Method:** SW8085
QC Type: Laboratory Method Blank **Date Prepared:** 05/08/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 05/12/98 **Units:** ug/L

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	0.025	U
2,4,5-Trichlorophenol	0.025	U
2,3,4,6-Tetrachlorophenol	0.023	U
2,3,4,5-Tetrachlorophenol	0.023	U
Pentachlorophenol	0.021	U

Surrogate Recoveries

2,4,6-Tribromophenol	**68**	**%**

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Lab ID: OBW8128B2 **Method:** SW8085
QC Type: Laboratory Method Blank **Date Prepared:** 05/08/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 05/12/98 **Units:** ug/L

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	0.025	U
2,4,5-Trichlorophenol	0.025	U
2,3,4,6-Tetrachlorophenol	0.023	U
2,3,4,5-Tetrachlorophenol	0.023	U
Pentachlorophenol	0.021	U

Surrogate Recoveries

2,4,6-Tribromophenol	**72**	**%**

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Sample: 98198060 **Date Collected:** 05/05/98 **Method:** SW8085
Field ID: MW-22 **Date Prepared:** 05/08/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 05/12/98 **Units:** ug/L

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	0.024	U
2,4,5-Trichlorophenol	0.024	U
2,3,4,6-Tetrachlorophenol	0.022	U
2,3,4,5-Tetrachlorophenol	0.022	U
Pentachlorophenol	**0.0033**	**J**

Surrogate Recoveries

2,4,6-Tribromophenol	**63**	%

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Sample: 98198061 **Date Collected:** 05/05/98 **Method:** SW8085
Field ID: MW-25 **Date Prepared:** 05/08/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 05/12/98 **Units:** ug/L

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	0.024	U
2,4,5-Trichlorophenol	0.024	U
2,3,4,6-Tetrachlorophenol	0.022	U
2,3,4,5-Tetrachlorophenol	0.022	U
Pentachlorophenol	0.020	U

Surrogate Recoveries

2,4,6-Tribromophenol	**87**	**%**

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Sample: 98198062 **Date Collected:** 05/05/98 **Method:** SW8085
Field ID: MW-23 **Date Prepared:** 05/08/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 05/12/98 **Units:** ug/L

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	0.025	U
2,4,5-Trichlorophenol	0.025	U
2,3,4,6-Tetrachlorophenol	0.023	U
2,3,4,5-Tetrachlorophenol	0.023	U
Pentachlorophenol	0.021	U

Surrogate Recoveries

2,4,6-Tribromophenol	**87**	**%**

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Sample: 98198063 **Date Collected:** 05/05/98 **Method:** SW8085
Field ID: MW-24 **Date Prepared:** 05/08/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 05/12/98 **Units:** ug/L

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	0.024	U
2,4,5-Trichlorophenol	0.024	U
2,3,4,6-Tetrachlorophenol	0.022	U
2,3,4,5-Tetrachlorophenol	0.022	U
Pentachlorophenol	0.020	U

Surrogate Recoveries

2,4,6-Tribromophenol	**73**	**%**

Authorized By: Barnell Release Date: 8-27-98 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Sample: 98198064 **Date Collected:** 05/05/98 **Method:** SW8085
Field ID: MW-24A **Date Prepared:** 05/08/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 05/12/98 **Units:** ug/L

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	0.024	U
2,4,5-Trichlorophenol	0.024	U
2,3,4,6-Tetrachlorophenol	0.022	U
2,3,4,5-Tetrachlorophenol	0.022	U
Pentachlorophenol	0.020	U

Surrogate Recoveries

2,4,6-Tribromophenol	**72**	**%**

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Sample: 98198065 **Date Collected:** 05/05/98 **Method:** SW8085
Field ID: ACCSW1 **Date Prepared:** 05/08/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 05/12/98 **Units:** ug/L

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	**0.018**	**J**
2,4,5-Trichlorophenol	**0.0065**	**J**
2,3,4,6-Tetrachlorophenol	**0.093**	
2,3,4,5-Tetrachlorophenol	0.022	U
Pentachlorophenol	0.020	U

Surrogate Recoveries

2,4,6-Tribromophenol	**96**	**%**

Authorized By: Russell Release Date: 8-27-98 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 1374-98

Sample: 98198066
Field ID: ACCSW2
Project Officer: Pam Marti

Date Collected: 05/05/98
Date Prepared: 05/08/98
Date Analyzed: 05/12/98

Method: SW8085
Matrix: Water
Units: ug/L

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	**0.013**	**J**
2,4,5-Trichlorophenol	**0.013**	**NJ**
2,3,4,6-Tetrachlorophenol	**0.068**	
2,3,4,5-Tetrachlorophenol	0.023	U
Pentachlorophenol	0.021	U

Surrogate Recoveries

2,4,6-Tribromophenol	**102**	**%**

Authorized By: _____ Release Date: 8-27-98 Page: 1

MANCHESTER ENVIRONMENTAL LABORATORY
7411 Beach Drive East, Port Orchard Washington 98366
December 23, 1998

Subject:	**American Crossarm & Conduit**
Samples:	98428040, 98428041, 98428043, 98428044, 98428045, 98428046
Project ID:	3379-98
Project Officer:	Pam Marti
By:	Karin Feddersen KF

SEMIVOLATILE ORGANICS
Polynuclear Aromatic Hydrocarbons

ANALYTICAL METHODS:

The samples were extracted following the Manchester Laboratory's modification of EPA SW-846 method 8270, using isotopic dilution. The sample extracts were analyzed by capillary Gas Chromatograph Mass Spectrometer (GC/MS). Single Ion Monitoring (SIM) mode was used to achieve low detection limits. Routine QA/QC procedures were performed with the analyses with one exception. Insufficient sample volume was available to prepare matrix spikes.

HOLDING TIMES:

All sample and extraction holding times were within the recommended limits.

BLANKS:

Low levels of some target analytes were detected in the laboratory blanks. An analyte is considered native to the sample when the concentration is at least five times that present in the associated method blanks.

SURROGATES:

The Extraction internal standards/surrogates for PAH analysis were added to each sample, and used to quantitate analyte recoveries. All surrogate spike recoveries were within acceptable QC limits.

SUMMARY:

The data is acceptable for use as reported.

DATA QUALIFIER CODES:

U	-	The analyte was not detected at or above the reported value.
J	-	The analyte was positively identified. The associated numerical value is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are unusable for all purposes.
NAF	-	Not analyzed for.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range.
bold	-	The analyte was present in the sample. (Visual Aid to locate detected compound on report sheet.)

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

PAHs NOAA list

Project Name: American Crossarm & Conduit **LIMS Project ID:** 3379-98

Lab ID: OBW8292A2 **Method:** SW8270
QC Type: Laboratory Method Blank **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/25/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**.0017**	**J**
2-Methylnaphthalene	**.0022**	**J**
1-Methylnaphthalene	**.0012**	**J**
2,6-Dimethylnaphthalene	.0067	U
Acenaphthylene	.0067	U
Acenaphthene	.0067	U
Dibenzofuran	.0067	U
Fluorene	**.0011**	**J**
Dibenzothiophene	.0067	U
Phenanthrene	**.00097**	**J**
Anthracene	.0067	U
Fluoranthene	**.00028**	**J**
Pyrene	.013	U
Retene	.0067	U
Benzo(a)anthracene	.0067	U
Chrysene	**.0006**	**J**
Benzo(b)fluoranthene	.0067	U
Benzo(k)fluoranthene	.0067	U
Benzo(a)pyrene	.0067	U
Indeno(1,2,3-cd)pyrene	.0067	U
Dibenzo(a,h)anthracene	.0067	U
Benzo(ghi)perylene	.0067	U

Surrogate Recoveries

Naphthalene-D8	**55**	**%**
2-Methylnaphthalene-D10	**51**	**%**
1-Methylnaphthalene-D10	**53**	**%**
2,6-Dimethylnaphthalene-D12	**47**	**%**
Acenaphthylene-D8	**54**	**%**
Acenaphthene-D10	**55**	**%**
Fluorene-D10	**55**	**%**
Dibenzothiophene-D8	**59**	**%**
Phenanthrene-D10	**58**	**%**
Anthracene-D10	**55**	**%**
Fluoranthene-D10	**61**	**%**
Pyrene-D10	**61**	**%**
Benzo(a)anthracene-D12	**60**	**%**

Surrogate Recoveries (continue)

Chrysene-D12	**61**	**%**
Benzo(b)fluoranthene-D12	**61**	**%**
Benzo(k)fluoranthene-D12	**63**	**%**
Benzo(a)pyrene-D12	**58**	**%**
Indeno(1,2,3cd)pyrene-D12	**57**	**%**
Dibenzo(a,h)anthraene-D14	**55**	**%**
Benzo(g,h,i)perylene-D12	**58**	**%**

Authorized By: _____ Release Date: 12/23/98 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

PAHs NOAA list

Project Name: American Crossarm & Conduit **LIMS Project ID:** 3379-98

Lab ID: OBW8292A1 **Method:** SW8270
QC Type: Laboratory Method Blank **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/25/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**.0027**	**J**
2-Methylnaphthalene	**.0033**	**J**
1-Methylnaphthalene	**.0019**	**J**
2,6-Dimethylnaphthalene	**.0019**	**J**
Acenaphthylene	.0067	U
Acenaphthene	.0067	U
Dibenzofuran	.0067	U
Fluorene	**.0012**	**J**
Dibenzothiophene	**.000013**	**J**
Phenanthrene	**.00093**	**J**
Anthracene	.0067	U
Fluoranthene	**.00038**	**J**
Pyrene	**.0004**	**J**
Retene	.0067	U
Benzo(a)anthracene	.0067	U
Chrysene	**.00084**	**J**
Benzo(b)fluoranthene	.0067	U
Benzo(k)fluoranthene	.0067	U
Benzo(a)pyrene	.0067	U
Indeno(1,2,3-cd)pyrene	.0067	U
Dibenzo(a,h)anthracene	**.0017**	**J**
Benzo(ghi)perylene	.0067	U

Surrogate Recoveries

Naphthalene-D8	**50**	**%**
2-Methylnaphthalene-D10	**48**	**%**
1-Methylnaphthalene-D10	**49**	**%**
2,6-Dimethylnaphthalene-D12	**44**	**%**
Acenaphthylene-D8	**52**	**%**
Acenaphthene-D10	**54**	**%**
Fluorene-D10	**54**	**%**
Dibenzothiophene-D8	**58**	**%**
Phenanthrene-D10	**58**	**%**
Anthracene-D10	**56**	**%**
Fluoranthene-D10	**63**	**%**
Pyrene-D10	**63**	**%**
Benzo(a)anthracene-D12	**62**	**%**

Surrogate Recoveries (continue)

Chrysene-D12	**63**	**%**
Benzo(b)fluoranthene-D12	**63**	**%**
Benzo(k)fluoranthene-D12	**65**	**%**
Benzo(a)pyrene-D12	**61**	**%**
Indeno(1,2,3cd)pyrene-D12	**60**	**%**
Dibenzo(a,h)anthraene-D14	**60**	**%**
Benzo(g,h,i)perylene-D12	**62**	**%**

Authorized By: _____ Release Date: 12/23/98 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

PAHs NOAA list

Project Name: American Crossarm & Conduit **LIMS Project ID:** 3379-98

Sample: 98428046 **Date Collected:** 10/14/98 **Method:** SW8270
Field ID: ACCW2 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/25/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**.24**	
2-Methylnaphthalene	**.048**	
1-Methylnaphthalene	**.046**	
Acenaphthylene	.0063	U
Acenaphthene	**.19**	
Dibenzofuran	**.091**	
Fluorene	**.15**	
Phenanthrene	**.096**	
Anthracene	**.029**	
Fluoranthene	**.039**	
Pyrene	**.022**	
Retene	.0063	U
Benzo(a)anthracene	**.0042**	J
Chrysene	**.0072**	
Benzo(b)fluoranthene	**.007**	
Benzo(k)fluoranthene	**.0026**	J
Benzo(a)pyrene	**.0049**	J
Indeno(1,2,3-cd)pyrene	.0063	U
Dibenzo(a,h)anthracene	.0063	U
Benzo(ghi)perylene	**.0039**	J

Surrogate Recoveries

Naphthalene-D8	**54**	**%**
2-Methylnaphthalene-D10	**53**	**%**
1-Methylnaphthalene-D10	**55**	**%**
2,6-Dimethylnaphthalene-D12	**51**	**%**
Acenaphthylene-D8	**59**	**%**
Acenaphthene-D10	**58**	**%**
Fluorene-D10	**59**	**%**
Dibenzothiophene-D8	**60**	**%**
Phenanthrene-D10	**61**	**%**
Anthracene-D10	**55**	**%**
Fluoranthene-D10	**62**	**%**
Pyrene-D10	**60**	**%**
Benzo(a)anthracene-D12	**58**	**%**
Chrysene-D12	**55**	**%**
Benzo(b)fluoranthene-D12	**58**	**%**

Surrogate Recoveries (continued)

Benzo(k)fluoranthene-D12	**53**	**%**
Benzo(a)pyrene-D12	**54**	**%**
Indeno(1,2,3cd)pyrene-D12	**55**	**%**
Dibenzo(a,h)anthraene-D14	**54**	**%**
Benzo(g,h,i)perylene-D12	**54**	**%**

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

PAHs NOAA list

Project Name: American Crossarm & Conduit **LIMS Project ID:** 3379-98

Sample: 98428045 **Date Collected:** 10/14/98 **Method:** SW8270
Field ID: ACCSW1 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/25/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**.044**	
2-Methylnaphthalene	**.018**	
1-Methylnaphthalene	**.043**	
Acenaphthylene	.0063	U
Acenaphthene	**.5**	
Dibenzofuran	**.07**	
Fluorene	**.044**	
Phenanthrene	**.018**	
Anthracene	**.11**	
Fluoranthene	**.46**	
Pyrene	**.36**	
Retene	**.027**	
Benzo(a)anthracene	**.043**	
Chrysene	**.073**	
Benzo(b)fluoranthene	**.047**	
Benzo(k)fluoranthene	**.014**	
Benzo(a)pyrene	**.02**	
Indeno(1,2,3-cd)pyrene	**.015**	
Dibenzo(a,h)anthracene	.0063	U
Benzo(ghi)perylene	**.014**	

Surrogate Recoveries

Naphthalene-D8	**51**	%
2-Methylnaphthalene-D10	**47**	%
1-Methylnaphthalene-D10	**47**	%
2,6-Dimethylnaphthalene-D12	**43**	%
Acenaphthylene-D8	**58**	%
Acenaphthene-D10	**56**	%
Fluorene-D10	**60**	%
Dibenzothiophene-D8	**58**	%
Phenanthrene-D10	**59**	%
Anthracene-D10	**55**	%
Fluoranthene-D10	**63**	%
Pyrene-D10	**57**	%
Benzo(a)anthracene-D12	**54**	%
Chrysene-D12	**52**	%
Benzo(b)fluoranthene-D12	**51**	%

Surrogate Recoveries (continued)

Benzo(k)fluoranthene-D12	**47**	%
Benzo(a)pyrene-D12	**48**	%
Indeno(1,2,3cd)pyrene-D12	**46**	%
Dibenzo(a,h)anthraene-D14	**46**	%
Benzo(g,h,i)perylene-D12	**46**	%

Authorized By: _____ Release Date: 12/23/98

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

PAHs NOAA list

Project Name: American Crossarm & Conduit **LIMS Project ID:** 3379-98

Sample: 98428044 **Date Collected:** 10/14/98 **Method:** SW8270
Field ID: MW-24 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/25/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**.014**	
2-Methylnaphthalene	**.014**	
1-Methylnaphthalene	.0063	U
Acenaphthylene	.0063	U
Acenaphthene	.0063	U
Dibenzofuran	.0063	U
Fluorene	.0063	U
Phenanthrene	.0063	U
Anthracene	.0063	U
Fluoranthene	.0063	U
Pyrene	.012	U
Retene	.0063	U
Benzo(a)anthracene	.0063	U
Chrysene	.0063	U
Benzo(b)fluoranthene	.0063	U
Benzo(k)fluoranthene	.0063	U
Benzo(a)pyrene	.0063	U
Indeno(1,2,3-cd)pyrene	.012	U
Dibenzo(a,h)anthracene	.0063	U
Benzo(ghi)perylene	.0063	U

Surrogate Recoveries

Naphthalene-D8	**53**	**%**
2-Methylnaphthalene-D10	**51**	**%**
1-Methylnaphthalene-D10	**51**	**%**
2,6-Dimethylnaphthalene-D12	**47**	**%**
Acenaphthylene-D8	**51**	**%**
Acenaphthene-D10	**53**	**%**
Fluorene-D10	**53**	**%**
Dibenzothiophene-D8	**56**	**%**
Phenanthrene-D10	**56**	**%**
Anthracene-D10	**54**	**%**
Fluoranthene-D10	**61**	**%**
Pyrene-D10	**60**	**%**
Benzo(a)anthracene-D12	**58**	**%**
Chrysene-D12	**60**	**%**
Benzo(b)fluoranthene-D12	**60**	**%**

Surrogate Recoveries (continued)

Benzo(k)fluoranthene-D12	**60**	**%**
Benzo(a)pyrene-D12	**57**	**%**
Indeno(1,2,3cd)pyrene-D12	**55**	**%**
Dibenzo(a,h)anthraene-D14	**53**	**%**
Benzo(g,h,i)perylene-D12	**56**	**%**

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

PAHs NOAA list

Project Name: American Crossarm & Conduit **LIMS Project ID:** 3379-98

Sample: 98428043 **Date Collected:** 10/14/98 **Method:** SW8270
Field ID: MW-22A **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/25/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**.015**	
2-Methylnaphthalene	**.014**	
1-Methylnaphthalene	**.0058**	**J**
Acenaphthylene	.0063	U
Acenaphthene	.0063	U
Dibenzofuran	.0063	U
Fluorene	.0063	U
Phenanthrene	.0063	U
Anthracene	.0063	U
Fluoranthene	.0063	U
Pyrene	.012	U
Retene	.0063	U
Benzo(a)anthracene	.0063	U
Chrysene	.0063	U
Benzo(b)fluoranthene	.0063	U
Benzo(k)fluoranthene	.0063	U
Benzo(a)pyrene	.0063	U
Indeno(1,2,3-cd)pyrene	.012	U
Dibenzo(a,h)anthracene	.0063	U
Benzo(ghi)perylene	.0063	U

Surrogate Recoveries

Naphthalene-D8	**57**	**%**
2-Methylnaphthalene-D10	**54**	**%**
1-Methylnaphthalene-D10	**55**	**%**
2,6-Dimethylnaphthalene-D12	**52**	**%**
Acenaphthylene-D8	**56**	**%**
Acenaphthene-D10	**56**	**%**
Fluorene-D10	**57**	**%**
Dibenzothiophene-D8	**59**	**%**
Phenanthrene-D10	**59**	**%**
Anthracene-D10	**57**	**%**
Fluoranthene-D10	**61**	**%**
Pyrene-D10	**61**	**%**
Benzo(a)anthracene-D12	**59**	**%**
Chrysene-D12	**59**	**%**
Benzo(b)fluoranthene-D12	**60**	**%**

Surrogate Recoveries (continued)

Benzo(k)fluoranthene-D12	**60**	**%**
Benzo(a)pyrene-D12	**56**	**%**
Indeno(1,2,3cd)pyrene-D12	**55**	**%**
Dibenzo(a,h)anthraene-D14	**53**	**%**
Benzo(g,h,i)perylene-D12	**55**	**%**

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

PAHs NOAA list

Project Name: American Crossarm & Conduit **LIMS Project ID:** 3379-98

Sample: 98428041 **Date Collected:** 10/14/98 **Method:** SW8270
Field ID: MW-25 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/25/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**.027**	
2-Methylnaphthalene	**.026**	
1-Methylnaphthalene	**.011**	
Acenaphthylene	.0062	U
Acenaphthene	.0062	U
Dibenzofuran	.0062	U
Fluorene	.0062	U
Phenanthrene	.0062	U
Anthracene	.0062	U
Fluoranthene	.0062	U
Pyrene	.012	U
Retene	.0062	U
Benzo(a)anthracene	.0062	U
Chrysene	.0062	U
Benzo(b)fluoranthene	.0062	U
Benzo(k)fluoranthene	.0062	U
Benzo(a)pyrene	.0062	U
Indeno(1,2,3-cd)pyrene	.012	U
Dibenzo(a,h)anthracene	.0062	U
Benzo(ghi)perylene	.0062	U

Surrogate Recoveries

Naphthalene-D8	**52**	**%**
2-Methylnaphthalene-D10	**49**	**%**
1-Methylnaphthalene-D10	**50**	**%**
2,6-Dimethylnaphthalene-D12	**45**	**%**
Acenaphthylene-D8	**54**	**%**
Acenaphthene-D10	**53**	**%**
Fluorene-D10	**54**	**%**
Dibenzothiophene-D8	**56**	**%**
Phenanthrene-D10	**56**	**%**
Anthracene-D10	**54**	**%**
Fluoranthene-D10	**60**	**%**
Pyrene-D10	**60**	**%**
Benzo(a)anthracene-D12	**59**	**%**
Chrysene-D12	**59**	**%**
Benzo(b)fluoranthene-D12	**59**	**%**

Surrogate Recoveries (continued)

Benzo(k)fluoranthene-D12	**59**	**%**
Benzo(a)pyrene-D12	**56**	**%**
Indeno(1,2,3cd)pyrene-D12	**54**	**%**
Dibenzo(a,h)anthraene-D14	**53**	**%**
Benzo(g,h,i)perylene-D12	**55**	**%**

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Analysis Report for

PAHs NOAA list

Project Name: American Crossarm & Conduit **LIMS Project ID:** 3379-98

Sample: 98428040 **Date Collected:** 10/14/98 **Method:** SW8270
Field ID: MW-22 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/25/98 **Units:** ug/L

Analyte	Result	Qualifier
Naphthalene	**.02**	
2-Methylnaphthalene	**.022**	
1-Methylnaphthalene	**.0097**	
Acenaphthylene	.0062	U
Acenaphthene	.0062	U
Dibenzofuran	.0062	U
Fluorene	.0062	U
Phenanthrene	.0062	U
Anthracene	.0062	U
Fluoranthene	.0062	U
Pyrene	.012	U
Retene	.0062	U
Benzo(a)anthracene	.0062	U
Chrysene	.0062	U
Benzo(b)fluoranthene	.0062	U
Benzo(k)fluoranthene	.0062	U
Benzo(a)pyrene	.0062	U
Indeno(1,2,3-cd)pyrene	.012	U
Dibenzo(a,h)anthracene	.0062	U
Benzo(ghi)perylene	.0062	U

Surrogate Recoveries

Naphthalene-D8	**48**	%
2-Methylnaphthalene-D10	**44**	%
1-Methylnaphthalene-D10	**45**	%
2,6-Dimethylnaphthalene-D12	**40**	%
Acenaphthylene-D8	**51**	%
Acenaphthene-D10	**51**	%
Fluorene-D10	**52**	%
Dibenzothiophene-D8	**55**	%
Phenanthrene-D10	**55**	%
Anthracene-D10	**52**	%
Fluoranthene-D10	**60**	%
Pyrene-D10	**60**	%
Benzo(a)anthracene-D12	**57**	%
Chrysene-D12	**57**	%
Benzo(b)fluoranthene-D12	**57**	%

Surrogate Recoveries (continued)

Benzo(k)fluoranthene-D12	**59**	%
Benzo(a)pyrene-D12	**54**	%
Indeno(1,2,3cd)pyrene-D12	**52**	%
Dibenzo(a,h)anthraene-D14	**50**	%
Benzo(g,h,i)perylene-D12	**53**	%

Authorized By: _____ Release Date: 12/23/98

Manchester Environmental Laboratory

7411 Beach Dr E, Port Orchard Washington 98366

CASE NARRATIVE

December 17, 1998

Subject: American Crossarm and Conduit Project

Sample(s): 98428040-41 and 98428043-46

Officer(s): Pam Marti

By: Bob Carrell
Organics Analysis Unit

ACID HERBICIDE ANALYSIS

ANALYTICAL METHOD(S): (Draft EPA Method 8085)

The water samples for acid herbicides were extracted following Manchester Laboratory's standard operating procedure for the extraction of herbicides. The herbicide samples were hydrolyzed at pH > 12, extracted with methylene chloride at pH < 2, solvent exchanged and derivatized along with two method blanks. These extracts were analyzed by capillary Gas Chromatography and Atomic Emission Detection (GC/AED). Confirmation of herbicides is performed by Gas Chromatography and Ion-Trap mass spectrometry (GC/ITD) or comparisons of elemental ratios of hetero-atoms to empirical formulas.

The method utilizes compound independent calibration (CIC) for quantitation of detected compounds. A calibration validation is performed each time CIC is used for target compounds. This is done by comparison of CIC to a single point calibration (SPC) of the target analyte being quantitated.

All analytes have a respective practical quantitation limit (PQL) that is higher than the corresponding method detection limit (MDL). If a target analyte is detected and its identification is unambiguously confirmed at a concentration below its PQL, the reported concentration is qualified as an estimate, ' J' qualifier.

BLANKS:

No target compounds were detected in the laboratory blanks, thus demonstrating that the system was free from contamination.

HOLDING TIMES:

All samples were extracted and analyzed within the method holding times.

SURROGATES:

The 2,4,6-tribromophenol surrogate recoveries were acceptable, ranging from 47% to 116%.

MATRIX SPIKING:

The matrix spike recoveries were acceptable, ranging from 27% to 142%, except for picloram (LMX1 17% and LMX2 13%). The calculated relative percent differences (RPD's) between the two matrix spikes for all compounds were acceptable, ranging from 1% to 32%.

COMMENTS:

Due to a fortunate oversight in not recognizing that, of the normal herbicide target compounds, only the chlorinated phenolics were requested, the samples were prepared for the entire herbicide list. Because of this, I was able to identify the presence of and quantitate several additional herbicide compounds in samples 98428045 and 98428046. In sample 98428046 these compounds existed at levels higher than those found for PCP in any of the samples.

The target analytes picloram and dinoseb received the 'UJ' qualifier because we traditionally experience highly variable recoveries for these compounds.

The data is useable as qualified.

DATA QUALIFIER CODES

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are unusable for all purposes.
NAF	-	Not analyzed for.
N	-	For organic analytes there is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
NC	-	Not Calculated
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range.

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 3379-98

Lab ID: OBW8289C1 **Method:** SW8085
QC Type: Laboratory Method Blank **Date Prepared:** 10/16/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/28/98 **Units:** ug/L

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	0.050	U
3,5-Dichlorobenzoic Acid	0.083	U
4-Nitrophenol	0.15	U
2,4,5-Trichlorophenol	0.050	U
Dicamba I	0.083	U
2,3,4,6-Tetrachlorophenol	0.046	U
MCPP (Mecoprop)	0.17	U
MCPA	0.17	U
Dichlorprop	0.092	U
Bromoxynil	0.083	U
2,4-D	0.083	U
2,3,4,5-Tetrachlorophenol	0.046	U
Trichlopyr	0.070	U
Pentachlorophenol	0.042	U
2,4,5-TP (Silvex)	0.067	U
2,4,5-T	0.067	U
2,4-DB	0.10	U
Dinoseb	0.13	UJ
Bentazon	0.13	U
Ioxynil	0.083	U
Picloram	0.083	UJ
Dacthal (DCPA)	0.067	U
2,4,5-TB	0.075	U
Acifluorfen (Blazer)	0.33	U
Diclofop-Methyl	0.13	U

Surrogate Recoveries

2,4,6-Tribromophenol	**47**	**%**

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 3379-98

Lab ID: OBW8289C2 **Method:** SW8085
QC Type: Laboratory Method Blank **Date Prepared:** 10/16/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/28/98 **Units:** ug/L

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	0.050	U
3,5-Dichlorobenzoic Acid	0.083	U
4-Nitrophenol	0.15	U
2,4,5-Trichlorophenol	0.050	U
Dicamba I	0.083	U
2,3,4,6-Tetrachlorophenol	0.046	U
MCPP (Mecoprop)	0.17	U
MCPA	0.17	U
Dichlorprop	0.092	U
Bromoxynil	0.083	U
2,4-D	0.083	U
2,3,4,5-Tetrachlorophenol	0.046	U
Trichlopyr	0.070	U
Pentachlorophenol	0.042	U
2,4,5-TP (Silvex)	0.067	U
2,4,5-T	0.067	U
2,4-DB	0.10	U
Dinoseb	0.13	UJ
Bentazon	0.13	U
Ioxynil	0.083	U
Picloram	0.083	UJ
Dacthal (DCPA)	0.067	U
2,4,5-TB	0.075	U
Acifluorfen (Blazer)	0.33	U
Diclofop-Methyl	0.13	U

Surrogate Recoveries

2,4,6-Tribromophenol	**91**	**%**

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 3379-98

Sample: 98428040 **Date Collected:** 10/14/98 **Method:** SW8085
Field ID: MW-22 **Date Prepared:** 10/16/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/28/98 **Units:** ug/L

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	0.047	U
3,5-Dichlorobenzoic Acid	0.078	U
4-Nitrophenol	0.14	U
2,4,5-Trichlorophenol	0.047	U
Dicamba I	0.078	U
2,3,4,6-Tetrachlorophenol	0.043	U
MCPP (Mecoprop)	0.16	U
MCPA	0.16	U
Dichlorprop	0.086	U
Bromoxynil	0.078	U
2,4-D	0.078	U
2,3,4,5-Tetrachlorophenol	0.043	U
Trichlopyr	0.066	U
Pentachlorophenol	**0.0031**	**J**
2,4,5-TP (Silvex)	0.063	U
2,4,5-T	0.063	U
2,4-DB	0.094	U
Dinoseb	0.12	UJ
Bentazon	0.12	U
Ioxynil	0.078	U
Picloram	0.078	UJ
Dacthal (DCPA)	0.063	U
2,4,5-TB	0.071	U
Acifluorfen (Blazer)	0.31	U
Diclofop-Methyl	0.12	U

Surrogate Recoveries

2,4,6-Tribromophenol	75	%

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 3379-98

Sample: 98428041 **Date Collected:** 10/14/98 **Method:** SW8085
Field ID: MW-25 **Date Prepared:** 10/16/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/28/98 **Units:** ug/L

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	0.047	U
3,5-Dichlorobenzoic Acid	0.078	U
4-Nitrophenol	0.14	U
2,4,5-Trichlorophenol	0.047	U
Dicamba I	0.078	U
2,3,4,6-Tetrachlorophenol	0.043	U
MCPP (Mecoprop)	0.16	U
MCPA	0.16	U
Dichlorprop	0.086	U
Bromoxynil	0.078	U
2,4-D	0.078	U
2,3,4,5-Tetrachlorophenol	0.043	U
Trichlopyr	0.066	U
Pentachlorophenol	0.039	U
2,4,5-TP (Silvex)	0.063	U
2,4,5-T	0.063	U
2,4-DB	0.094	U
Dinoseb	0.12	UJ
Bentazon	0.12	U
Ioxynil	0.078	U
Picloram	0.078	UJ
Dacthal (DCPA)	0.063	U
2,4,5-TB	0.071	U
Acifluorfen (Blazer)	0.31	U
Diclofop-Methyl	0.12	U

Surrogate Recoveries

2,4,6-Tribromophenol	**86**	**%**

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 3379-98

Sample: 98428041 (Matrix Spike - LMX1) **Date Collected:** 10/14/98 **Method:** SW8085
Field ID: MW-25 **Date Prepared:** 10/16/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/28/98 **Units:** % Recovery

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	114	
3,5-Dichlorobenzoic Acid	78	
4-Nitrophenol	34	
2,4,5-Trichlorophenol	142	
Dicamba I	43	
2,3,4,6-Tetrachlorophenol	116	
MCPP (Mecoprop)	73	
MCPA	71	
Dichlorprop	72	
Bromoxynil	110	
2,4-D	64	
2,3,4,5-Tetrachlorophenol	111	
Trichlopyr	64	
Pentachlorophenol	117	
2,4,5-TP (Silvex)	73	
2,4,5-T	63	
2,4-DB	67	
Dinoseb	103	
Bentazon	100	
Ioxynil	77	
Picloram	17	
Dacthal (DCPA)	75	
2,4,5-TB	64	
Acifluorfen (Blazer)	55	
Diclofop-Methyl	62	

Surrogate Recoveries

2,4,6-Tribromophenol	116	%

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 3379-98

Sample: 98428041 (Matrix Spike - LMX2) **Date Collected:** 10/14/98 **Method:** SW8085
Field ID: MW-25 **Date Prepared:** 10/16/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/28/98 **Units:** % Recovery

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	83	
3,5-Dichlorobenzoic Acid	68	
4-Nitrophenol	27	
2,4,5-Trichlorophenol	103	
Dicamba I	37	
2,3,4,6-Tetrachlorophenol	84	
MCPP (Mecoprop)	63	
MCPA	57	
Dichlorprop	66	
Bromoxynil	87	
2,4-D	53	
2,3,4,5-Tetrachlorophenol	90	
Trichlopyr	63	
Pentachlorophenol	89	
2,4,5-TP (Silvex)	75	
2,4,5-T	61	
2,4-DB	67	
Dinoseb	100	
Bentazon	88	
Ioxynil	80	
Picloram	13	
Dacthal (DCPA)	62	
2,4,5-TB	63	
Acifluorfen (Blazer)	58	
Diclofop-Methyl	58	

Surrogate Recoveries

2,4,6-Tribromophenol	86	%

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 3379-98

Sample: 98428043 **Date Collected:** 10/14/98 **Method:** SW8085
Field ID: MW-22A **Date Prepared:** 10/16/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/28/98 **Units:** ug/L

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	0.047	U
3,5-Dichlorobenzoic Acid	0.078	U
4-Nitrophenol	0.14	U
2,4,5-Trichlorophenol	0.047	U
Dicamba I	0.078	U
2,3,4,6-Tetrachlorophenol	0.043	U
MCPP (Mecoprop)	0.16	U
MCPA	0.16	U
Dichlorprop	0.086	U
Bromoxynil	0.078	U
2,4-D	0.078	U
2,3,4,5-Tetrachlorophenol	0.043	U
Trichlopyr	0.066	U
Pentachlorophenol	**0.0031**	**NJ**
2,4,5-TP (Silvex)	0.063	U
2,4,5-T	0.063	U
2,4-DB	0.094	U
Dinoseb	0.12	UJ
Bentazon	0.12	U
Ioxynil	0.078	U
Picloram	0.078	UJ
Dacthal (DCPA)	0.063	U
2,4,5-TB	0.071	U
Acifluorfen (Blazer)	0.31	U
Diclofop-Methyl	0.12	U

Surrogate Recoveries

2,4,6-Tribromophenol	**68**	**%**

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 3379-98

Sample: 98428044 **Date Collected:** 10/14/98 **Method:** SW8085
Field ID: MW-24 **Date Prepared:** 10/16/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/28/98 **Units:** ug/L

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	0.048	U
3,5-Dichlorobenzoic Acid	0.079	U
4-Nitrophenol	0.14	U
2,4,5-Trichlorophenol	0.048	U
Dicamba I	0.079	U
2,3,4,6-Tetrachlorophenol	0.044	U
MCPP (Mecoprop)	0.16	U
MCPA	0.16	U
Dichlorprop	0.087	U
Bromoxynil	0.079	U
2,4-D	0.079	U
2,3,4,5-Tetrachlorophenol	0.044	U
Trichlopyr	0.067	U
Pentachlorophenol	0.040	U
2,4,5-TP (Silvex)	0.064	U
2,4,5-T	0.064	U
2,4-DB	0.095	U
Dinoseb	0.12	UJ
Bentazon	0.12	U
Ioxynil	0.079	U
Picloram	0.079	UJ
Dacthal (DCPA)	0.064	U
2,4,5-TB	0.072	U
Acifluorfen (Blazer)	0.32	U
Diclofop-Methyl	0.12	U

Surrogate Recoveries

2,4,6-Tribromophenol	**84**	**%**

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 3379-98

Sample: 98428045 **Date Collected:** 10/14/98 **Method:** SW8085
Field ID: ACCSW1 **Date Prepared:** 10/16/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/28/98 **Units:** ug/L

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	0.049	U
3,5-Dichlorobenzoic Acid	0.081	U
4-Nitrophenol	0.14	U
2,4,5-Trichlorophenol	**0.0016**	**NJ**
Dicamba I	0.081	U
2,3,4,6-Tetrachlorophenol	**0.0049**	**NJ**
MCPP (Mecoprop)	**0.016**	**J**
MCPA	0.16	U
Dichlorprop	0.089	U
Bromoxynil	0.081	U
2,4-D	0.081	U
2,3,4,5-Tetrachlorophenol	0.045	U
Trichlopyr	0.069	U
Pentachlorophenol	**0.17**	
2,4,5-TP (Silvex)	0.065	U
2,4,5-T	0.065	U
2,4-DB	0.098	U
Dinoseb	0.12	UJ
Bentazon	0.12	U
Ioxynil	0.081	U
Picloram	0.081	UJ
Dacthal (DCPA)	0.065	U
2,4,5-TB	0.073	U
Acifluorfen (Blazer)	0.33	U
Diclofop-Methyl	0.12	U

Surrogate Recoveries

2,4,6-Tribromophenol	**48**	**%**

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: American Crossarm & Conduit **LIMS Project ID:** 3379-98

Sample: 98428046 **Date Collected:** 10/14/98 **Method:** SW8085
Field ID: ACCW2 **Date Prepared:** 10/16/98 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/28/98 **Units:** ug/L

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	0.047	U
3,5-Dichlorobenzoic Acid	0.079	U
4-Nitrophenol	0.14	U
2,4,5-Trichlorophenol	0.047	U
Dicamba I	0.079	U
2,3,4,6-Tetrachlorophenol	**0.016**	**NJ**
MCPP (Mecoprop)	**0.080**	**J**
MCPA	0.16	U
Dichlorprop	0.087	U
Bromoxynil	0.079	U
2,4-D	**0.27**	
2,3,4,5-Tetrachlorophenol	0.043	U
Trichlopyr	**0.27**	
Pentachlorophenol	**0.024**	**NJ**
2,4,5-TP (Silvex)	0.063	U
2,4,5-T	0.063	U
2,4-DB	0.094	U
Dinoseb	0.12	UJ
Bentazon	0.12	U
Ioxynil	0.079	U
Picloram	0.079	UJ
Dacthal (DCPA)	0.063	U
2,4,5-TB	0.071	U
Acifluorfen (Blazer)	0.31	U
Diclofop-Methyl	0.12	U

Surrogate Recoveries

2,4,6-Tribromophenol	**100**	**%**

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Appendix C

Historical Results
American Crossarm & Conduit
1997 Data